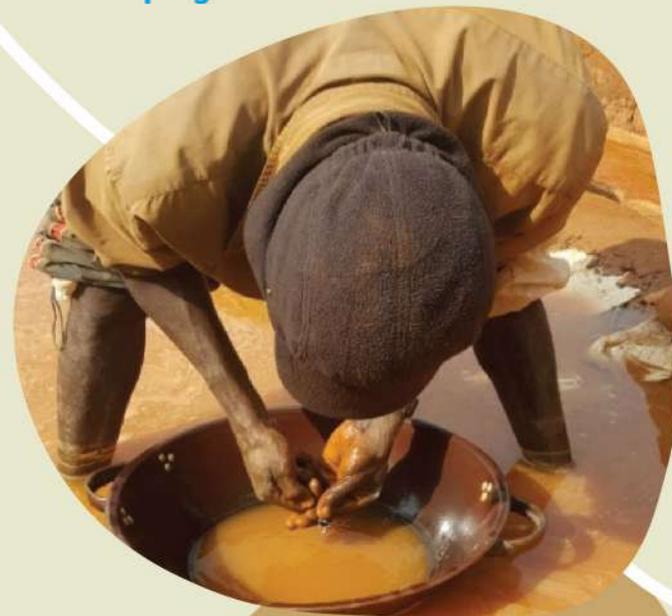
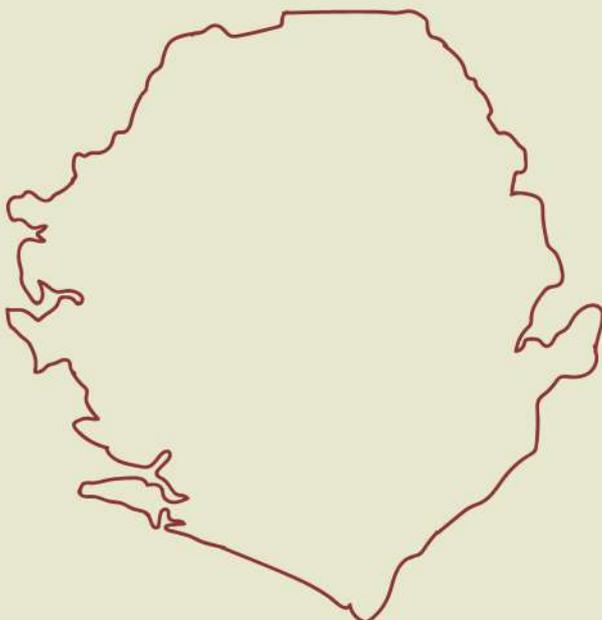




Republic of Sierra Leone

National Action Plan for Reducing Mercury Use in the Artisanal and Small-scale Gold Mining (ASGM) Sector in Sierra Leone

April 2020



ENVIRONMENT PROTECTION
AGENCY SIERRA LEONE

ACKNOWLEDGEMENTS

The Government of the Republic of Sierra Leone (GoSL), through the Environment Protection Agency-Sierra Leone (EPA-SL), would like to thank the Global Environment Facility (GEF) for funding the development of this National Action Plan (NAP) for the artisanal and small-scale gold mining (ASGM) sector. GoSL would also like to thank the United Nations Environment Programme (UN Environment), the implementing agency, for the support and the advice it has provided under the NAP Global Component.

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- Mohamed Abdulai Kamara, Ag. Manager, Northern Province
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- Prof. Foday Moriba Jaward (PhD)
- The Government Ministries, Departments and Agencies of the National Coordination Mechanism
- Chiefdom authorities, NGOs, universities and donors
- Press and civil society organizations (CSOs)
- Private sector stakeholders, such as financial institutions and mining representatives
- The national and international consultants who have developed the NAP's ASGM overview

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FOREWORD

The New Direction Government of His Excellency, Rt. Brigadier Dr. Julius Madda Bio, recognizes that Artisanal and Small-scale Gold Mining (ASGM) is an important source for job creation, poverty alleviation and broad-based socio-economic development in Sierra Leone and in other parts of the world. However, the sector, which is largely informal, is associated with various environmental and health issues. Most notably, it has been identified as the major source of the anthropogenic release of global anthropogenic atmospheric mercury emissions to the environment. Mercury is a heavy metal which, due to its high mobility, bioaccumulation and persistence in the environment, constitutes a global menace to human health.

As a responsible member of the global community, Sierra Leone has ratified the Minamata Convention on Mercury on the 1st November, 2016. With technical support from the United Nations Institute for Training and Research (UNITAR), Environment Protection Agency-Sierra Leone (EPA-SL) has embarked on a journey to develop Sierra Leone's National Action Plan (NAP). The project was funded by the Global Environment Facility (GEF) and implemented by the United Nations Environment Programme (UNEP).

The NAP's goal is to formalize, sensitize and assist miners, traders, their communities and other relevant stakeholders in an inclusive and comprehensive manner, in order to mitigate the sector's negative social, environmental and health impacts and to unlock the sector's full development potential. The reduction of mercury use and the mitigation of its harmful impacts is among the NAP's key priorities.

In a nutshell, the NAP presents an overview of Sierra Leone's ASGM sector, which is followed by a mapping of the sector's positive and negative impacts and the articulation of a national vision for the sector. Based on this vision, various objectives are set to address the sector's key issues. Subsequently, a set of mutually reinforcing implementation strategies are presented. Finally, a detailed workplan is put forward.

It would not have been possible to develop this document without critical inputs obtained from various stakeholders. Ranging from miners, traders and Chiefdom authorities at the local level, to key Government Ministries, Departments and Agencies and donors at the national level – each of the sector's stakeholders have been engaged during the NAP's field study and during consultation workshops.

To conclude, the NAP serves as an unprecedented opportunity to transform the ASGM sector in a sustainable and an inclusive manner. Along with the Minamata Initial Assessment, it will serve as a roadmap for guiding Sierra Leone's compliance with the Minamata Convention on Mercury. And indeed, it will support Sierra Leone in addressing wider national development priorities as identified in the Medium-term National Development Plan 2019-2023, Vision 2035, UN Agenda 2030 and AU Agenda 2063.

Prof. Foday Moriba Jaward (PhD)

Minister

Ministry of the Environment – Sierra Leone

His Excellency Rt. Brigadier Dr. Julius Maada Bio
President of the Republic of Sierra Leone

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ACRONYMS

ACC-SL	Sierra Leone Anti-corruption Commission
AGM	Artisanal Gold Mining
AM	Artisanal Mining
AMV	African Mining Vision
ASGM	Artisanal and Small-scale Gold Mining
ASM	Artisanal and Small-scale Mining
CDA	Community Development Agreement
CDF	Community Development Fund
CEDAW	Convention on the Elimination of All forms of Discrimination Against Women
CHOs	Community Health Officers
DACDF	Diamond Area Community Development Fund
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative
EPA-SL	Environment Protection Agency Sierra Leone
ESHIA	Environmental Social and Health Impact Assessment
ESOs	Environmental and Safety Officers
FIU	Financial Intelligence Unit
GEF	Global Environment Facility
GIS	Geographic Information System
GoSL	Government of Sierra Leone
HED	Health Education Department
KPCS	Kimberly Process Certification Scheme
LSM	Large-scale Mining
MAF	Ministry of Agriculture and Forestry
MDAs	Ministries, departments and agencies
MEST	Ministry of Education, Science and Technology
MFAIC	Ministry of Foreign Affairs and International Cooperation
MFMR	Ministry of Fisheries and Marine Resources
MIA	Ministry of Internal Affairs
MLH	Ministry of Lands and Housing
MLGRD	Ministry of Local Government and Rural Development
MLSS	Ministry of Labour and Social Security
MMMR	Ministry of Mines and Mineral Resources
MMO	Mines Monitoring Officer
MoHS	Ministry of Health and Sanitation

ACRONYMS

MoE	Ministry of Energy
MoF	Ministry of Finance
MoJ	Ministry of Justice
MoPED	Ministry of Planning and Economic Development
MRU	Mano River Union
MSWGCA	Ministry of Social Welfare, Gender and Children's Affairs
MTA	Ministry of Transport and Aviation
MTCA	Ministry of Tourism and Cultural Affairs
MTNDP	Medium-term National Development Plan
MTI	Ministry of Trade and Industry
MWI	Ministry of Works and Infrastructure
MWR	Ministry of Water Resources
MoY	Ministry of Youth
NAP	National Action Plan
NASSIT	National Social Security Insurance Trust
NGO	Non-government Organization
NICCM	National Inter-sectoral Committee on Chemicals Management
NMA	National Minerals Agency
NRA	National Revenue Authority
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
SGBP	State Gold-Buying Programme
SLEITI	Sierra Leone Extractive Industry Transparency Initiative
SSM	Small-scale Mining
SSGM	Small-scale Gold Mining
TIN	Taxpayer Identification Numbers
UNEP	United Nations Environment Program
UNITAR	United Nations Institute for Training and Research
WHO	World Health Organization

GLOSSARY OF TERMS

Artisanal and Small-scale Gold Mining (ASGM) means gold mining conducted by individual miners or small enterprises with limited capital investment and production;¹

ASGM actor: A person involved in the domestic ASGM supply chain (diggers, processors, license holders, licenses traders, unlicensed traders, goldsmiths, exporters)

ASGM stakeholder: A person or an institution indirectly involved in ASGM (customary chiefs, village chiefs, youth leaders, farmers, shop holders, health officials, and representatives of provincial and district-level NMA and EPA-SL offices).

Artisanal mining operations means mining operations that do not exceed a depth of ten metres;²

Formalization of the ASGM sector can be understood as A process that ensures that ASGM actors are licensed and organized in representative entities that represent their needs; policies are implemented, monitored, and enforced; and ASGM actors receive technical, administrative, and financial support that empowers them to adhere to requirements prescribed by national regulations.³

Miner: A general term referring to a person directly involved in production. Most of them are manual miners, such as diggers and processors, while some are license holders.

Small-scale mining means the intentional winning of minerals in mechanised operations not exceeding twenty metres in depth or involving the sinking of shafts, driving of adits, or other various underground openings;⁴

1 Minamata Convention on Mercury: Article 2

2 Mines and Minerals Act, 2009: Section 1

3 UNITAR & UN Environment, 2018. Handbook for Developing National ASGM Formalization Strategies within National Action Plans. Geneva, Switzerland: UNITAR & UN Environment. <https://www.unitar.org/cwm/mercury-0>

4 Mines and Minerals Act, 2009: Section 1

01 Executive summary

The Minamata Convention on Mercury is a global treaty to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. Sierra Leone ratified the Convention on 1 November 2016. To facilitate early implementation of the Convention, the Environmental Protection Agency – Sierra Leone (EPA-SL) has executed the Global Environment Facility (GEF)-funded project *Development of the Minamata Initial Assessment (MIA) and the National Action Plan (NAP) for Artisanal and Small-scale Gold Mining (ASGM) in Sierra Leone*. The project has benefited from technical assistance from United Nations Institute for Training and Research (UNITAR) and was implemented by UN Environment, which has provided assistance through the NAP Global Component.

The process of developing the NAP has included the execution of an inception workshop, desk and field research, the drafting of the present document, as well as various stakeholder engagement and sensitization initiatives. During the inception workshop, a National Inter-sectoral Committee on Chemicals Management (NICCM) was established with the mandate of making the strategic decisions for the NAP and for supporting both the MIA and the NAP development. The mechanism is hosted by EPA-SL and hosts various Ministries Departments and Agencies (MDAs) of relevance for ASGM and mercury. Relevant stakeholders from ASGM communities, chiefdom authorities, MDAs, civil society, donors and the private sector have further been consulted during the field study and during two stakeholder engagement workshops which took place in Makeni and Freetown in March 2019.

One of the key steps in the NAP development was gaining a better understanding of the sector with the development of the ASGM overview. In January and February 2018, consultants from EPA-SL and UNITAR visited each of Sierra Leone's main ASGM areas where they spoke with more than 300 stakeholders. Based on this study, it has been estimated that the sector hosts **80,000 artisanal gold miners who produce an estimated 2.94 tonnes of gold annually**. When using a spot gold price of \$42.7/g, the estimated annual **export value** of mined gold is over **\$125,000,000**.⁵ The sector provides many people (and especially young men and single mothers) in rural areas with economically viable livelihoods that enable them to feed their families and to pay their children's school fees. At the same time, the sector, which is largely informal, has substantial environmental and health impacts. These include the contamination of water sources and the degradation of lands by mining pits which are categorically not reclaimed after the mining activities end.

At the time of writing, mercury use was limited to three sites in Sierra Leone's ASGM sector, which is mainly alluvial in nature. This includes two artisanal gold mining (AGM) sites where mercury was only used for processing mine tailings, and for liberating gold from hard rock ore. The third site concerns a foreign-owned small-scale mining company operating a dredge on a river. **Altogether, the total average estimate of mercury use in Sierra Leone's ASGM sector per year is 352kg**. However, in view of rapidly near-surface gold deposits, more mechanization and mercury use could be expected in the future if no action is taken to tackle the root causes of mercury use: the sector's informality and limited access to better mining methods. Moreover, small-scale gold mining (SSGM) companies, which are foreign owned and largely operate under the radar, require further investigation and close monitoring.

⁵ Spot gold price on 11 February 2018. <https://goldprice.org/fr/spot-gold.html>. Accessed on 22/05/2018.

Based on the ASGM overview, a national vision for Sierra Leone's ASGM sector has been developed. This vision includes the mapping of the sector's positive and negative impacts on a variety of development indicators, which was done during the mentioned stakeholder engagement workshops. Subsequently, the (sub)sector's impacts are ranked with reference to the development priorities identified in Sierra Leone's Medium-term National Development Plan 2019-2023, and the desired future for the sector is articulated in a national vision statement. Drawing on this vision, the NAP's general goals was formulated as follows:

“To formalize, sensitize and assist miners, traders, their communities and other relevant stakeholders in an inclusive and comprehensive manner, in order to mitigate the sector's negative social, environmental and health impacts and to unlock the sector's full development potential”

Under this goal, various objectives have been formulated, including mercury reduction targets. For AGM, the objective is to reduce mercury use with 30% in 2022, with 50% in 2024, and to completely eliminate it in 2029. For SSGM, the objective is to reduce mercury use with 50% in 2022, and to completely eliminate it in 2024. Beyond mercury use, objectives for addressing many other key issues in the sector are included.

To realize the NAP's ambitious goal and objectives, the following implementation strategies are discussed:

- **Actions for eliminating 'worst practices'.** This addresses notably the practices of open burning of amalgams and the burning of amalgams and acid in residential areas.
- **Sierra Leone's ASGM formalization strategy.** As a policy priority in Sierra Leone, this strategy introduces distinct approaches formalizing a part of the AGM sector in 'artisanal mining zones' and for formalizing the entire SSGM sector throughout the country. One of the strategy's components includes a market-based mechanism for encouraging mercury-free gold.
- **Strategy for introducing better mining practices.** This strategy discusses various workflows of improved mining methods that can be tested and introduced in each of Sierra Leone's ASGM subsectors with the aim to gradually reduce mercury use and mitigate wider impacts.
- **Strategy for managing mercury trade.** Building on the formalization strategy, this strategy introduces additional measures for managing mercury supply, demand and trade.
- **Strategy for involving stakeholders in NAP implementation.** This strategy presents mechanisms for institutionalizing stakeholder engagement at both the national and the local level.
- **Public health strategy.** This strategy sets out various steps for gathering more health data about the ASGM sector, training health workers, and strengthening the national health system.
- **Strategy to prevent the exposure of vulnerable populations to mercury use in ASGM.** Focusing on the root causes of vulnerability, this strategy introduces steps for addressing gender equality and child labour in ASGM, and for preventing women and children's exposure to mercury.

- **Strategy for providing ASGM miners, traders and affected communities with information.** This strategy presents an outreach plan and steps for institutionalizing ASGM and mercury issues.

Finally, the implementation strategies and their respective activities are summarized in a detailed work plan. After the work plan, a monitoring and evaluation mechanism is presented. NAP implementation is estimated to cost \$22,385,000, or Le199,226,500,000.⁶ About half of this has already been funded.

⁶ Using an exchange rate of 1\$=Le8,900, observed on 12/06/2019. Note that an older exchange rate is used in the rest of the document, which reflects the appropriate rate during the time of research in the ASGM sector.

02 Introduction and Background

Worldwide, the artisanal and small-scale gold mining (ASGM) sector provides direct livelihoods for an estimated 16 million, and indirect livelihoods for some 100 million people.^{7,8} However, the sector, which is largely informal, also constitutes 37% of the global anthropogenic atmospheric mercury emissions to the environment.⁹ Mercury is a heavy metal which causes adverse neurological and other health effects, particularly on unborn children and infants. The global transport of mercury in the environment was a key reason for taking the decision that global action to address the problem of mercury pollution was required. Member States of the United Nations have therefore negotiated the Minamata Convention on Mercury, a global treaty to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.

As a responsible member of the global community, Sierra Leone is committed to support global action in the protection of the environment and of human health. This commitment is manifested by the fact that Sierra Leone, during its relatively short contemporary period of stable democracy, is signatory and party to a number of international environment and health-related conventions/protocols. The Environment Protection Agency-Sierra Leone (EPA-SL), Sierra Leone's national authority appointed to protect the environment, participated in the signing ceremony in Kumoto, Japan, to sign the Minamata Convention on Mercury on the 12th August 2014. Two years later, Sierra Leone ratified the Convention on November the 1st, 2016.

As a Party to the Minamata Convention on Mercury, Sierra Leone has embarked on a journey to develop a National Action Plan to reduce the use of mercury in the ASGM sector, and more generally, to unlock the sector's full sustainable development potential. This is a part of the project entitled "Development of the Minamata Initial Assessment (MIA) and the National Action Plan (NAP) for Artisanal and Small-scale Gold Mining (ASGM) in Sierra Leone" funded by the Global Environment Facility (GEF). The project is executed by EPA-SL with the technical support from United Nations Institute for Training and Research (UNITAR), and implemented by UN Environment, which has also provided technical assistance through the NAP Global Component (e.g. the provision of guidelines and tools, dissemination of knowledge).

In Sierra Leone, little attention has been paid to the ASGM sector, as national and international development efforts have largely focused on diamonds. Nevertheless, the ASGM sector, which has rapidly increased in size in recent years with the high gold price, provides many people (and especially young men and single mothers) in rural areas with livelihoods that enable them to feed their families and to pay their children's school fees. The sector also has important knock-on effects on the local economy, as it creates demand for agricultural products and other goods and services.

7 Seccatore, J., Veiga, M., Origliasso, C., Marin, T. and De Tomi, G., 2014. "An Estimation of the Artisanal Small-Scale Production of Gold in the World." *Science of The Total Environment* 496 (October): 662–67. <https://doi.org/10.1016/j.scitotenv.2014.05.003>.

8 Stylo, M. S., De Haan, J. S. and Davis, K., forthcoming. Collecting, managing and translating data into National Action Plans for Artisanal and Small Scale Gold Mining. Manuscript submitted for publication with The Extractive Industries and Society.

9 UNEP, 2013. "Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport." UNEP Chemicals Branch, Geneva, Switzerland. <http://wedocs.unep.org/bitstream/handle/20.500.11822/7984/-Global%20Mercury%20Assessment-201367.pdf?sequence=3&isAllowed=y>

At the same time, the sector, which remains largely informal, has increasingly pressing environmental and health impacts that are of public concern. These include, among other things, the degradation of land, the contamination of water resources, contributions to deforestation, and, in certain cases, the uncontrolled use of hazardous chemicals, such as mercury and acid.

Against this backdrop, Sierra Leone’s ASGM sector is related to virtually all the Sustainable Development Goals (SDGs), and each of Sierra Leone’s development priorities.¹⁰

As articulated in Vision 2035, Sierra Leone aspires to become an inclusive, green, middle-income country by 2035. This would be accomplished by the creation of a stable, export-led economy; the mobilization of government revenues; the alleviation of poverty and creation of employment; the enhancement of life expectancy and access to housing and service delivery; the reduction of maternal, under-five and infant mortality and enhancement of access to modern hospitals; and finally, the creation of a peaceful and cohesive nation.

The *Medium-term National Development Plan* (MTNDP) sets out the pathway for the next five years towards achieving this vision. The mantra of the new Plan is Education for Development, with education as the bedrock of long-term, sustainable growth and transformation of Sierra Leone’s economy. This plan aims to achieve four goals by 2023:

- Goal 1** A diversified, resilient green economy
- Goal 2** A nation with educated, empowered, and healthy citizens capable of realizing their fullest potential
- Goal 3** A society that is peaceful, cohesive, secure, and just
- Goal 4** A competitive economy with a well-developed infrastructure

The MTNDP also underscores the importance of creating jobs for the burgeoning youth population with a view to maintaining social stability, empowering and protecting women and children, scaling up efforts to increase and manage revenues from extractive activities, and enforcing mechanisms to curb illicit financial flows and tax evasion. Regarding mineral resources, it lists among its key policy priorities the need to “formalize the artisanal mining sector”. Moreover, it lists the ambition to mitigate the environmental and health impacts stemming from artisanal and small-scale mining (ASM).

Each of these issues is reflected in the *Artisanal Mining Policy for Sierra Leone* (hereafter: Artisanal Mining Policy 2018) developed by the Ministry of Mines and Mineral Resources (MMMR) in collaboration with the National Minerals Agency (NMA), which sets out a clear framework to guide actions to the improvement of ASM governance. This framework positions the ASM sector as a primary driving force of local economic development and rural livelihoods, and guides the sustainable formalization of the sector. It puts specific emphasis on gold, including the promotion of the production and sale of “ecological gold” that is processed without any chemicals.

As such, the NAP serves as an unprecedented opportunity to transform the ASGM sector in a sustainable manner, fully in line with Sierra Leone’s development priorities as identified in the MTNDP 2019-2023, Vision 2035, UN Agenda 2030 and AU Agenda 2063.

¹⁰ See sections 3 and 4 for a comparison of ASGM’s positive and negative impacts and their relations to the MTNDP’s various policy clusters.

The process of developing the NAP, which has included the conduct of an inception workshop, desk and field research, the drafting of the present document, as well as various stakeholder engagement and sensitization initiatives, has been led by EPA-SL with technical assistance from UNITAR. During the inception workshop, a National Inter-sectoral Committee on Chemicals Management (NICCM) was established which has a mandate of coordinating and making the strategic decisions for the NAP and for supporting both the MIA and the NAP development. The NICCM will also be in charge for all other chemicals related multilateral agreement and national issues. The mechanism is hosted by EPA-SL and hosts various Ministries Departments and Agencies (MDAs) of relevance for ASGM and mercury, notably the Ministry of Agriculture and Forestry (MAF), the NMA, the National Revenue Authority (NRA), the Ministry of Fisheries and Marine Resources (MFMR), the Ministry of Trade and Industry (MTI), the Ministry of Labour and Social Security (MLSS), the Ministry of Health and Sanitation (MoHS), the Ministry of Social Welfare, Gender and Children's Affairs (MSWGCA), Decentralization Secretariat, the Ministry of Local Government and Rural Development (MLGRD), the Ministry of Mines and Minerals Resources (MMMR), National Water Resources Management Agency (NWRMA), Ministry of Water Resources (MWR), Ministry of Youth Affairs, National Youth Commission, and the Sierra Leone Extractive Industry Transparency Initiative (SLEITI).¹¹

Relevant stakeholders from civil society (including NGOs and universities) and the private sector (including representatives from ASGM communities), which are also members of the NICCM, participated in the inception/engagement workshop and raised issues that needed to be considered during the NAP development. Among the issues raised, a key point that was made included the importance of providing ASGM miners with technical and financial assistance and alternative methods or technologies for extracting and processing gold. These and other issues are addressed by the present document.

Relevant stakeholders from ASGM communities, chiefdom authorities, MDAs, civil society, donors and the private sector have further been consulted during the field study and have provided valuable inputs to this end (see section 3 below for more details). They have further actively supported the NAP drafting process, including in two stakeholder engagement workshops which took place in Makeni and Freetown in March 2019. During this workshop, they have supported the articulation of a national vision for the ASGM sector, and provided further inputs to the NAP's goals, mercury reduction targets, and various implementation strategies.

11 See annex 1 for further details on the NICCM

03 National ASGM Overview

This section presents a summary of the National ASGM Overview that was produced for the NAP by EPA-SL, with technical support from UNITAR and UN Environment, between December 2017 and May 2018. It briefly introduces the methodology used, and subsequently summarizes each of the topics investigated in the ASGM Overview. Finally, it highlights limitations of the study, and discusses the need for further research. Further details can be found in the Nation ASGM Overview report (in the view of space, this detailed document is not attached to the NAP but it can be downloaded from EPA-SL's website).¹² Annex 2 includes a table that presents an overview of geology and mining practices used in the visited ASGM areas.

3.1. Methodology

The study employed a mixed methods approach, combining quantitative, qualitative and geospatial data collected from both primary and secondary sources. The research methodology was based on UNITAR's *Socio-economic ASGM Research Methodology*¹³ and UN Environment's *Estimating Mercury Use and Documenting Practices in Artisanal and Small-Scale Gold Mining*¹⁴. The study was carried out in four phases:

1

First, the **literature was reviewed** to ensure that the ASGM Overview builds on existing knowledge. Moreover, a **legal and institutional capacity assessment** was undertaken, including an assessment of the legal frameworks governing mercury and ASM, as well as the institutional capacity in place for implementing these frameworks (with a specific focus on regional NMA and EPA-SL offices and health clinics in ASGM communities).

2

Second, **key-informant interviews** were conducted in Freetown and all visited provinces, chiefdoms and districts. This included interviews with government officials, paramount chiefs, NGOs and other experts to get a broad overview of the sector and to highlight data gaps.

3

Third, a **field study** was undertaken. The research team visited 15 different ASGM communities and nearby towns located in 10 chiefdoms spreading over four regions of the country. In these areas, semi-structured interviews, group discussions and participant observations were held with the actors involved in the domestic gold supply chain, including diggers, processors, license holders, small-scale operators, gold traders, goldsmiths, and exporters. In addition, further stakeholders in the community were interviewed, including health workers, community leaders, youth leaders, farmers, and local shop holders. During this phase, **more than 300 stakeholders were interviewed**, including a significant proportion of women.

4

Fourth, information on the scale of operation and environmental impacts from ASGM activity was collected using geospatial data obtained with the use of **GPS, satellite imaging and drones**.

12 http://cwm.unitar.org/cwmplatformscms/site/assets/files/1162/nationalasgmovertviewsierraleone2019_final-1.pdf

Environment Protection Agency Sierra Leone, 2019. The ASGM Overview of Sierra Leone. Environment Protection Agency, Freetown, Sierra Leone. <https://epa.gov.sl/?p=743>

13 UNITAR, 2018. *Socio-economic ASGM Research Methodology*. Geneva, Switzerland. Authors: J.S. De Haan & B. Turner. <http://www.unitar.org/cwm/portfolio-projects/artisanal-and-small-scale-gold-mining-asgm>

14 O'Neill, J.D., and Telmer, K.H., 2017. *Estimating Mercury Use and Documenting Practices in Artisanal and Small-Scale Gold Mining (ASGM)*. Geneva, Switzerland: UN Environment. <http://wedocs.unep.org/handle/20.500.11822/22892>

FIGURE 1

Research team in the field (see annex : A. After engaging a Chinese owned SSGM company; B. Interviewing a Community Health Officer (CHO); C & E. Engaging regional mines officers of NRA in Kono and Makeni respectively; D. At Algom mining company, Baomahun; F. A mechanized sluice box at Baomahun; G. Interviewing youth miners; H. Engaging community stakeholders



An important limitation of this study is that it is largely based on observations and interviews with miners involved in artisanal gold mining (AGM) and less so with small-scale gold mining (SSGM) companies. This is due to the fact that presence of many SSGM companies (which largely operate without valid mining licenses) was not known beforehand, and also because the encountered companies were reluctant to share much information. This issue urgently requires further research.

3.2. Previous experiences in addressing ASM

Most of the past initiatives to address ASM have focused on artisanal diamond mining. Key initiatives in the diamond sector include the Diamond Area Community Development Fund (DACDF), the Kimberly Process Certification Scheme (KPCS) and the Extractive Industries Transparency Initiative (EITI). While a more detailed assessment can be found elsewhere¹⁵, some key lessons learned from these initiatives include the need to ensure:

- Participation in decision-making by community members, including typically-excluded groups such as youth and women;
- Monitoring and oversight by civil society;
- Simple processes that are feasible in Sierra Leone's resource-limited context;
- Capacity building of relevant MDAs and civil society actors to strengthen good governance;
- Addressing the underlying causes of the sector's informality, such as poverty and inequality.

Interventions that have so far engaged with the gold mining sector have mainly focused on legal aspects of mining with the aim of ensuring that artisanal miners possess the required licenses and are in compliance with national regulations. Several sensitization activities have also been undertaken to raise awareness about the sector's environmental and health impacts. In addition, a strategic environmental assessment of the ASM sector in Sierra Leone (SEA)¹⁶ has been jointly undertaken by EPA and NMA. However, at the time of writing this document, there had been no initiatives providing ASGM actors with direct administrative, technical and financial assistance.

3.3. Demographic, social and economic information

Sierra Leone remains among the world's poorest countries, ranking 184th out of 189 countries in the Human Development Index in 2017. Decades of economic decline, 11 years of armed conflict and the more recent Ebola crisis have had dramatic consequences on the economy. Poverty remains widespread with more than 60% of the population living on less than \$1.25 a day and unemployment and illiteracy levels remain high¹⁷. This is particularly so among youth, with approximately 70% of them unemployed or underemployed¹⁸. This remains an important challenge, especially when considering that Sierra Leone has a youthful population, with 63% of the population below the age of 25 years, and that the country's population is expected to double by the end of the century¹⁹.

In the areas visited, agriculture and mining remain the main economic sectors. Many individuals were observed to be involved in both mining and farming activities to diversify their livelihoods. Agriculture is principally practiced on a subsistence basis, especially in the country's Northern and Western regions, and many farmers have reported that they face significant marketing challenges. In the Eastern and Southern regions, there are more farmers who grow crops for commercial purposes, such as cacao, palm oil and coffee. In terms of mining, diamonds and gold are the minerals mostly mined.

¹⁵ For example, see:

Maconachie, R., 2008. Diamond mining, governance initiatives and post-conflict development in Sierra Leone.

Maconachie, R., 2012. The Diamond Area Community Development Fund: micropolitics and community-led development in post-war Sierra Leone. *High-value natural resources and post-conflict peacebuilding*: 261-273.

¹⁶ EPA & NMA, 2016. Strategic environmental assessment of the artisanal mining sector in Sierra Leone (SEA).

¹⁷ UNDP, 2016. Human Development Report 2016. Human Development for Everyone. http://hdr.undp.org/sites/default/files/HDR2016_EN_Overview_Web.pdf

¹⁸ UNDP's web page of Sierra Leone. <http://www.sl.undp.org/content/sierraleone/en/home/countryinfo/>. Accessed on 23/03/2018.

¹⁹ https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf. Accessed on 29/03/2018.

In recent years, many diamond miners have started mining gold in response to a decline in diamond deposits and a rapid increase in the international gold price, while in the Northern region, there are also miners who have shifted from gold to coltan mining (commonly called “black stone” in Sierra Leone) as this mineral was recently detected with gold deposits in the region.

Access to education is another important development challenge in Sierra Leone, especially in rural areas. In the areas visited, there were primary or secondary schools within an average 3 km radius from the demarcated artisanal mining (AM) activity. However, it was consistently reported that parents need to pay informal school fees to enable their children to access primary schools, because the respective schools and their teachers are not formally approved by the Ministry of Education and hence are not remunerated through official channels.

3.4. Size and geographical distribution of the ASGM sector

In official terms, 142 kg of gold was officially exported from Sierra Leone in 2017 of value Le45,475,500,000 (\$6,063,400)^{20,21}. Furthermore, 154 AGM licenses were issued in 2016, and 130 in 2017, meaning that on average, there have been 142 active licenses throughout the year in 2017²². Since according to the regulations, there should not be more than 50 miners working under each license, it could be assumed that officially, there would no more than 7,100 miners producing no more than 142 kg of gold in 2017 operating within a minimum area of 71 hectares²³.

However, based on the data collected in the field study, it has been estimated that **950 hectares** of land is occupied by roughly **80,000 artisanal gold miners who produce an estimated 2.94 tonnes of gold annually**²⁴. When using a spot gold price of \$42.7/g, the estimated annual **export value** of mined gold is over **\$125,000,000**²⁵.

All gold that is currently produced in Sierra Leone is either on an artisanal or on a small-scale basis²⁶. The geographical distribution of AGM operations is illustrated in Figure 1. As can be seen in the figure, AGM mainly occurs in Tonkolili, Koinadugu, Karene, Kono, Kenema, Kailahun and Bo. Simply speaking, AGM takes place either directly on the greenstone belt areas, where hard rock or alluvial deposits can be mined, or along the rivers flowing from the greenstone belts, where mining is only alluvial. In some districts, such as Kono, gold mining occurs alongside diamond mining.

20 Exchange rate at the time of research: \$1= Le7,500. This rate is used throughout the rest of the document.

21 The gold spot price on 11 February 2018 was \$42.7/g. This price is used throughout the document.

22 Licenses are valid for 1 year and can be renewed up to three times for a period not exceeding one year at a time.

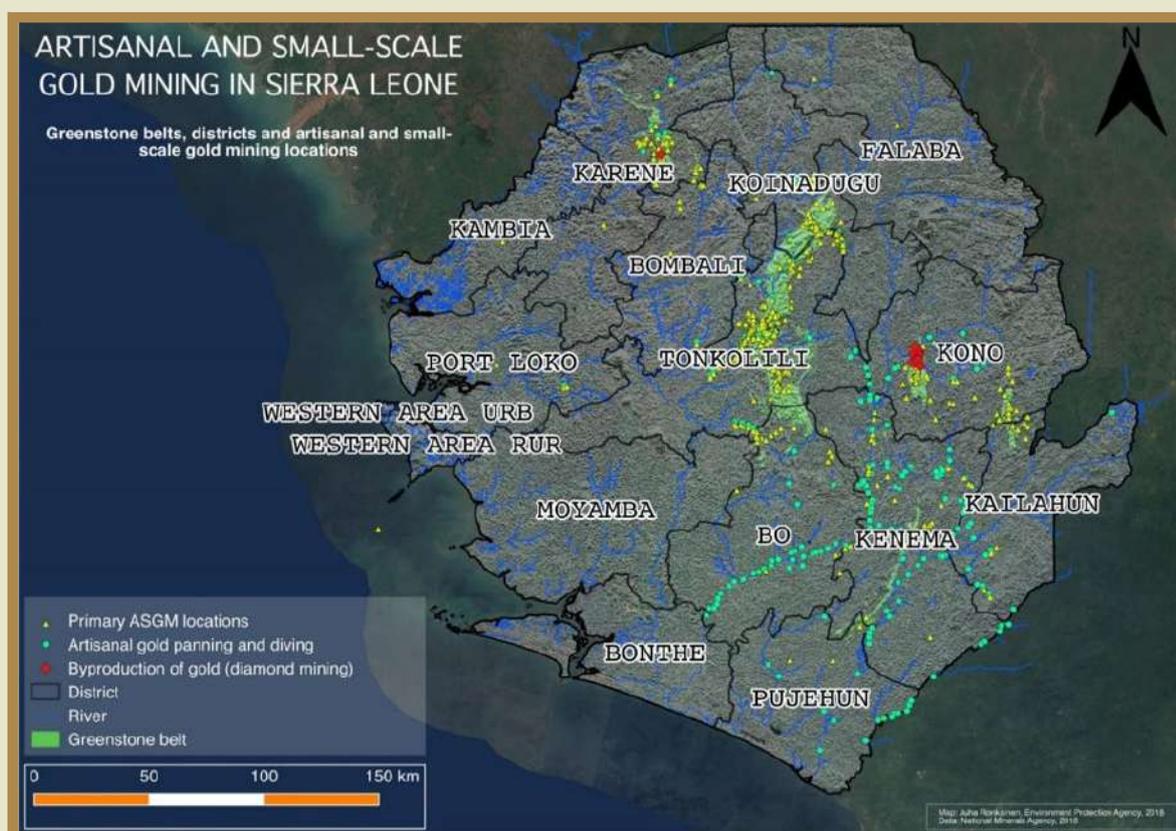
23 According to the Mines and Minerals Act 2009, AM licenses can be a maximum of half-an-hectare.

24 The methods used for estimating gold production, ASGM workforce and mercury use are explained in section 3.1 of the ASGM Overview Report (see footnote 12)

25 Spot gold price on 11 February 2018. <https://goldprice.org/fr/spot-gold.html>. Accessed on 22/05/2018.

26 Although one large-scale gold mining company, Dayu Mining Company Limited, has in the meantime started mining gold concentrate in Masumbiri, Simiria chiefdom. Moreover, at the time of research, several other industrial gold mining companies were doing exploration, and they may start gold production in the near future, including in Baomahun, Valunia chiefdom

FIGURE 2 The geographical distribution of AGM operations in Sierra Leone²⁷



The scale of SSGM (*not* illustrated in the figure above) was not known prior to the field research. One licensed SSGM company was known to be operating in Makonie but investigations revealed at least six other SSGM companies operating with heavy machinery (i.e. excavators and dredges) and without exploitation licenses in Komaru and Yele. These unlicensed companies were reluctant to share much information and seemed to have local political support; they were difficult to investigate and urgently require further study (as mentioned before).

3.5. Legal and regulatory status

The Mines and Minerals Act, 2009, and the National Minerals Agency Act, 2012, are the principal legislative instruments regulating Sierra Leone’s mining sector. The 2012 Act establishes NMA as the key institution responsible for regulating the mining sector. Its mandate includes the promotion of the development of the minerals sector by managing the administration and regulation of mineral rights and trade, and providing technical and other support, including geological survey and data collection activities.

The 2009 Mines and Minerals Act defines “artisanal mining operations” (AM) as “mining operations that do not exceed a depth of ten meters”.²⁸ Furthermore, it stipulates that AM can be carried out by individuals, co-operatives, joint venture, partnerships or corporate bodies under the name of a Sierra

²⁷ See section 3.8 for explanation of some of the terminology used in this figure

²⁸ As opposed to definitions adopt in international regulations such as the Minamata Convention on Mercury, this definition of ASM does not explicitly refer to the scale of operation in terms of technology used

Leonean person in possession of an AM license. Licenses are valid for 1 year and can be renewed up to three times for a period not exceeding one year at a time but cannot be transferred to other individuals. AM may be carried out in an area not larger than 0.5 hectare and not employing more than 50 mining workers (laborers) per mining license. The Act also stipulates miners' obligations to protect the environment. For AM, this only includes the license holder's obligation to carry out rehabilitation and reclamation of a mined-out area. However, given the fact that many gold deposits are gradually declining, and many miners now use more advanced tools to extract ore, there is emerging consensus that a new definition for AM must be adopted soon in Sierra Leone to accommodate the changing nature of the subsector, as reflected in the Artisanal Mining Policy 2018²⁹.

"Small-scale mining" (SSM) is defined under the same Act as "the intentional winning of minerals in mechanised operations not exceeding twenty metres in depth or involving the sinking of shafts, driving of adits, or other various underground openings". This activity should cover a land area between one hectare and no more than 100 hectares. With regards to validity and transferability of licenses, the same conditions of AM apply. However, small-scale miners have more obligations than artisanal miners, including the requirement to obtain an environmental impact assessment (EIA) license in accordance with the 2008 Environmental Protection Agency-Sierra Leone Act, prior to applying for a SSM license.

To apply for an AM or SSM license, applicants must first obtain consent in the form of a certified agreement to use the land for mining purposes with the local Chiefdom Mining Allocation Committee. After this, applicants for an AM license may apply for a license at the regional and district offices of the NMA, and applicants for SSM licenses may apply for a license at the Mining Cadastre Office in Freetown. The environmental impact assessment (EIA) licenses are issued by EPA-SL, at a cost pre-defined by a fee log-scale taking into consideration various aspects regarding mining techniques and surrounding environment.

3.6. Leadership and organization of artisanal gold mining at the local levels

Since there are no formal ASGM federations or other forms of ASGM representation at the national level (besides the government infrastructure described in the preceding section), it is most relevant to consider ASGM miners' organization at the *local* level. At the local level, there are no formal structures such as cooperatives, but there are fairly consistent forms of *informal* organization. Most of the people involved in AM activity are organized in 'gangs', small groups of 4-10 people, while others choose to work individually. Gangs are usually established by a 'gang leader' who gathers labourers to work for him or her, or by an external 'supporter' who supports the gang leader and his/her gang financially. The gang leader or supporter motivates people to work for them by offering food, and in some cases cigarettes and alcohol³⁰. In an alluvial mine site, gangs typically consist of several 'diggers' who dig most of the gravel with shovels; 'washers' who wash the ore in sluice boxes; and one 'panner' who pans the concentrate. In a hard rock mine site, gangs are usually bigger as this type of mining requires more physical effort and also includes the tasks of crushing the ore and transporting it from deep in the pits to the surface and to the processing site.

Only a small portion of the gangs and individuals visited operated under an active license. In those cas-

29 Such a new definition will be captured in an amendment of the Mines and Minerals Act 2009, which is expected to be published in 2019

30 In some cases, the gang leader is involved in the work, while in other cases, he or she only supervises the work and motivates and supports the workers. The gang leader may also appoint one of the labourers as a 'team leader' who is responsible for overseeing the work in the gang leader's absence.

es, the number of miners typically exceeded the prescribed number of 50 labourers per license. Community chiefs and paramount chiefs allow this because, according to them, “these people need a living”. The license holders (who are understood as the ‘artisanal miner’ under the 2009 Mines and Minerals Act) are typically community leaders, chiefdom leaders and businessmen, and they may also be the leader of mining gangs.

FIGURE 3 A ‘mining gang’ in Makong



In terms of benefit sharing, most gangs maintain a rule of ‘50/50’: 50% of the ‘winnings’ is for the labourers, and 50% is for the gang leader. The winnings in this case may refer to both the recovered gold, ore or concentrate, as well as to the cash obtained through gold sales. In the former case, the gang leader usually buys the labourers’ 50% to sell it. The gang leader uses his/her winnings to recover several costs, which typically include food for the gang labourers (typically Le5,000/day/labourer), shovels, renting or buying costs for a water pump and its fuel (in alluvial settings), and occasionally buying medicines for gang labourers who are sick. The remaining 50% is then shared equally among the labourers.

Besides this, several payments are made to various authorities. Diggers who operate under a mining license, usually have to pay a percentage to the license owner. The license owner typically pays a license fee of Le1,750,000 which is distributed over the landowner, the chiefdom administration and the Paramount Chief.³¹ Besides this, income tax (Le150,000/year), a manager’s certificate (Le100,000) and financial supporter’s certificate (Le250,000) need to be paid, though this is rarely enforced in practice. There have also been reports of additional payments being made to other authorities, including bribes that are paid to Mines Monitoring Officers (MMOs), in particular by artisanal miners that do not operate under a license, and the payment of ‘water rates’ to the chiefdom authorities.³² In the exceptional case of Komahun, artisanal miners were (at the time of research) required to pay additional charges to chiefdom authorities simply for continuing their mining activities on an area that was allegedly within the concession of an exploration license owned by a Chinese company with a dubious legal set-up (see the ASGM Overview report for further details).

3.7. Gold trade

The majority of the gold produced in Sierra Leone is smuggled to Guinea, and another large part to Liberia. Out of the estimated gold produced annually (2,944kg in AGM only), only a small fraction of the gold produced is exported through official channels to these and other countries (142kg in 2017). Moreover, only few licensed dealers were identified in the study.³³

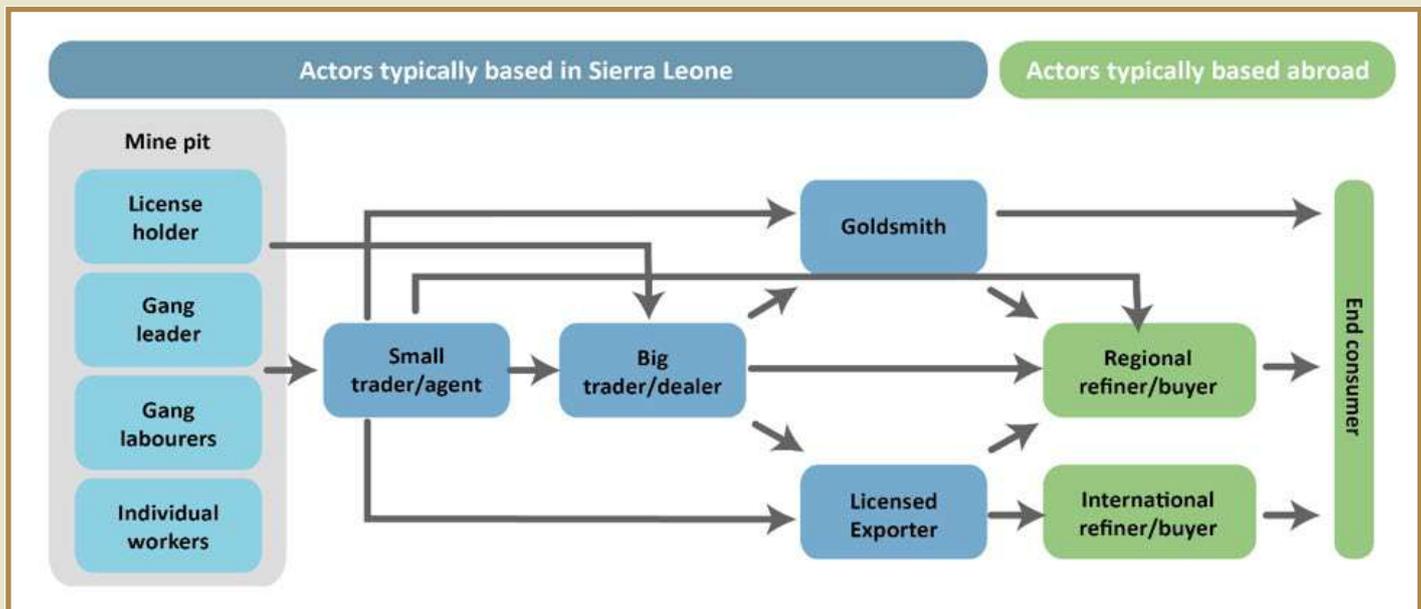
³¹ The license fee includes a license fee (Le250,000), demarcation fee (Le250,000), monitoring fee (Le250,000), application fee (Le100,000), rehabilitation fee (Le150,000) as well as additional payments to chiefdom and other authorities which could include surface rent and development fees and vary between chiefdoms

³² For further details on these, refer to sections 4.7.3 and 4.6.1 of the ASGM Overview report (see footnote 12)

³³ Out of the 26 licensed dealers and 9 licensed dealers’ agents listed in NMA’s online repository by the time of research, very few could be traced. <https://sierraleone.revenue.gov.org/dashboard>. Accessed on 22/5/2018.

The diverse legal and (more common) illegal trade routes and actors involved can be best understood by considering Sierra Leone's AGM supply chain illustrated in figure 4 below. It should be noted that this supply chain contains a diversity of actors which may or may not be present and who may take different roles in different situations.

FIGURE 4 Sierra Leone's diverse AGM supply chain



At the level of the mine pit, gold may be sold both by gang labourers, individual workers, gang leaders and in some cases, by license owners. These actors then typically sell the gold to small, unlicensed traders who are usually the agents of bigger traders to whom they sell the gold. The small traders may be based in towns close to the mine site or in towns in the same district. In some cases, the gold is sold from the mine pit directly to a big trader. These big traders are typically based in one of the country's regional and district capitals, such as Makeni, Magburaka, Bo, Kenema or Koidu, or in the capital, Freetown. In yet other cases, the small trader may be the agent of a regional buyer and smuggles the gold over the border to neighbouring Guinea or Liberia to sell to his 'boss'.

Most of the traders, both licensed and unlicensed, are not organized in formal entities but rather work together with their family and close friends who may serve as buying agents. The trade routes chosen, and investments made are largely determined by principles of trust and loyalty in social relationships between actors within and outside the country, as well as kinship and family ties. For example, most traders only sell to Guinea when they have good friends or business partners there. Moreover, Fulani typically work for Fulani and Mandingos typically work for Mandingos.

In addition to this, gold buyers often invest in mining gangs, which may take the form of financial and material loans in the form of shovels, water pumps or crushers.³⁴ Such investments may be loaned directly to the gang leader, or indirectly through smaller traders who work on a commission basis and subsequently invest it in various mining gangs. Gold buyers typically pre-finance mining gangs by giving interest-free loans under the agreement that the beneficiaries have to sell back to the supporter, in contrast to external supporters who do not buy gold, and typically charge an interest rate. Since small traders and miners often depend on this support in the face of limited access to formal forms of finance, they generally stay faithful to their buyers by selling exclusively to them.

34 The lowest and highest investments in AGM production reported concern Le250.000 and Le20.000.000 respectively

Finally, it should be noted that gold produced in Sierra Leone is often sold at rates that are remarkably close to the world market price (for example, a gang leader in Dalakuru reported to receive 89% of this price). This could be partly explained by the fact that gold is used as a currency which can be directly used to pay for goods and services, and can be directly traded for foreign currencies. However, it also underscores the risk that the gold may be used for criminal activities, such as money laundering or narcotics and arms trade.³⁵

3.8. Mining and processing information

Most of ASGM in Sierra Leone is alluvial, meaning that gold mining occurs in or around riverbeds or at the bottom of hills. The sector is characterized by rudimentary tools, although the decline in near-surface gold deposits cause many artisanal miners to go deeper than the 10 m limit prescribed by the 2009 Mines and Minerals Act and has, in a few places, lead to the use of excavators. In the majority of alluvial sites, gravel is extracted with the use of shovels in open pits, or in some areas in vertical shafts called 'Malian pits' or 'Damas', supported by tree branches. The gold is subsequently concentrated by gravitational processes, including sluice boxes and panning. In such sites, gold occurs in a free form as nuggets, flakes or gold sands. Another form of alluvial mining that was often observed in rivers, is locally referred to as 'diving'. This involves a miner who dives into the water from a canoe to collect gravel from the bottom of the river in buckets. The gravel is then sluiced and panned. Mercury use was not observed in any of the purely alluvial mine sites. -

Hard rock mining was only encountered in Dalakuru, Komahun, Masumbirie, Maranda, Baomahun and Makong, where gold is hosted by quartz veins in primary gold deposits. In those sites, ore was extracted with the use of hammers and wedges in open pits or in tunnels. Subsequently, the ore is crushed, which is typically done manually using a mallet or a hammer, and milled using a mortar or a stick with a steel tube. In certain mine sites, notably Komahun, Masumbirie and Maranda, mechanical Guinean-made hammer mills were used. Finally, the crushed and milled ore is concentrated through sluicing and panning.

SSGM in Sierra Leone principally uses two methods of extracting and processing ore. In the first method, ore is extracted with the use of excavators. The ore is then washed in big, sometimes mechanized, sluices. The sluice carpets are washed and the concentrate is panned. In the second method, ore is extracted manually with shovels and is subsequently loaded on a dredge that rotates buckets of ore and drops them in a mechanized sluice. The carpets from the sluices are washed in a large bowl and gold is recovered by panning.

3.9. Baseline estimates of mercury use in ASGM

Mercury use has been observed in two AGM communities visited: Baomahun and Komahun (both hard rock sites). In Komahun, mercury was used only for processing mine tailings, which were re-processed once or twice (with sluices and pans, no whole ore amalgamation was observed) because they still contained gold which was not recovered in the first treatment. In Baomahun, mercury was used for the primary ore recovered from the hard rocks. The miners in these two sites have been estimated to use on average 188kg of mercury per year³⁶. Based on the various measurement carried out both in Kumaru and Baomahun, and the information on the mercury price, the standard mercury:gold ratio for concentrate amalgamation of 1.3:1 was adopted for this study³⁷.

35 Hunter, M. & Smith, A., 2017. Follow the Money: Financial Flows linked to Artisanal and Small-Scale Gold Mining in Sierra Leone. Global Initiative against Transnational Organized Crime.

36 The methods used for estimating gold production, ASGM workforce and mercury use are explained in section 3.1 of the ASGM overview report (see footnote 12)

37 This 'standard estimate' applies to concentrate amalgamation and is based on the work done by Kevin Telmer and Marcello Veiga (Telmer, 2009)

The figure below illustrates the mercury use that has commonly been observed in these sites.

FIGURE 5 *Mercury use in Komahun*



In addition, a foreign SSGM company (M&S Ventures) operating with a 15 meter-long dredge on a river has been reported by its own workers to use mercury for treating ore tailings, although this was not observed in the short time that the researchers had available to visit the company³⁸. Based on the data collected, the estimated average annual mercury use in this site is 165kg³⁹.

The total average estimate of mercury use in Sierra Leone's ASGM sector per year is 352kg. This is fairly close to the relatively low estimate given by the 2013 UN Environment Global Mercury Assessment (225kg), but much smaller than the high estimate given in the 2018 assessment (4,125-12,375 kg).⁴⁰

38 The company in question was extracting ore under an exploration license. In addition to this company, a handful of other companies were encountered in the field which were not operating under an (extraction) license. More information about this can be found in the full research report.

39 Given the time constraints of the field study, as well as limited available information about small-scale gold mining companies operation in Sierra Leone, this is a rough estimate which needs further research

40 UNEP Chemicals and Health Branch, 2013. Global mercury Assessment 2013: Sources, Releases and Environmental Transport. UNEP, Geneva; and UNEP Chemicals and Health Branch, forthcoming. Global mercury Assessment 2018: Sources, Releases and Environmental Transport. UNEP, Geneva (in preparation)

Mercury is used by both men and women. People have little awareness of mercury's environmental and health impacts, and the people who did know that mercury is harmful, displayed little understanding of its exact impacts.⁴¹ No whole ore amalgamation has been witnessed, but mercury-gold amalgams were burnt openly without the use of retorts or other mercury-capturing devices. In one community, amalgams were burnt by small gold traders in the mining camp which hosts temporary local residents, and in the other community, the amalgams were exclusively burnt up in the hills, away from local residents.

It is no surprise that mercury use is not widespread in Sierra Leone because most of the gold deposits available for artisanal miners are alluvial in nature and host gold in the form of sands or nuggets, which can normally be recovered with simple gravimetric methods. Nevertheless, in view of the mobile nature of AM in Sierra Leone and declining gold deposits, the situation might change in the future, especially as near-surface gold deposits are gradually declining. In addition, it must be noted that allegedly, mercury has previously been used by SSGM and large-scale mining (LSM) companies in the localities of Masumbiri, Maranda, Laminaya and Kampala. The mined areas in those localities may thus be contaminated with mercury, posing a risk to the local environment and those that depend on it.

3.10. Mercury supply, trade and demand

In the areas where mercury use was observed, most miners did not know where mercury was coming from because only a few people were involved in the mercury trade. This had to do with the fact that mercury was very expensive: it was reported in Komahun (in early February 2018) to cost Le80,000 and Le100,000 for a small cup (more precisely, the cap of a water bottle), which is equivalent to 1 oz (\$0.37-0.64/g). In contrast, in December 2017, the same amount of mercury would only cost Le40,000/oz (i.e. \$0.19/gram); the price has thus more than doubled in only a matter of two months. According to local informants, this was due to scarcity of mercury in Sierra Leone.

Interviewed mercury users reported buying mercury from Liberia, Guinea, Cote D'Ivoire, Ghana and Dubai. Liberia was most frequently mentioned. These reports resonate with other studies of mercury trade in Sub-Saharan Africa that illustrate a trade route in West Africa in which mercury is diffused from Togo to other countries in the region, entering Sierra Leone through Liberia and Guinea.⁴² Mercury is supplied by foreign businessmen buying gold from Sierra Leonean mines, through local buyers that work for them. The local traders buying the mercury from these businessmen supply the miners with mercury and buy their gold. Besides this, they usually sell part of the mercury to others to make more cash, as it has now become a very lucrative business in Sierra Leone.

3.11. Impacts on local development

"In gold mining, you are assured of your survival. You know that at the end of the day, you can have your Le50,000. They are there to survive and to help their families."⁴³

Despite the significant environmental and health impacts (see section 3.15), Sierra Leone's ASGM sector continues to provide many men and women in rural areas with much-needed economically viable livelihoods. Based on this field study, AGM miners in Sierra Leone have been found to earn between Le11,250-88,000 (\$1.48-11.58) on a daily basis, and Le28,320 (\$3.73) per day on average.⁴⁴

41 For example, some stakeholders believed that exposure to mercury causes death, which is very seldomly the case and typically occurs only after chronic and extensive exposure

42 World Bank, 2016. Mercury trade and use for artisanal and small-scale gold mining in Sub-Saharan Africa - Final Report. https://wedocs.unep.org/bitstream/handle/20.500.11822/26445/Mercury_Trade_Africa.pdf?sequence=1&isAllowed=y

43 Paramount chief, Baoma chiefdom

44 It should be mentioned that taking into account the seasonality of alluvial gold mining, on average, artisanal miners work only 7 months per year (the other months are typically used for farming or other activities)

This is significantly more money than is earned in most other livelihoods pursued in rural areas. When miners were asked what motivated them to engage in ASGM, virtually all of them answered that they mine gold because they need “fast money” to feed their families and to pay their children’s school fees.⁴⁵ This fast cash is difficult to be earned in other livelihood activities such as agriculture, which is done mainly on a subsistence basis and whose modest returns are earned on a long term basis. Revenues earned from ASGM activities were further reported to be spent on clothes, books and medicines for their families, as well as on inputs for agricultural activity or investments in other businesses.

Besides ASGM’s significance for the miners and their families, the sector has significant spillover effects on other local economic sectors. For instance, the sector creates markets for farmers and small traders. Indeed, during the visits in mine sites, the researchers often observed children and women selling foodstuffs such as maizepap, bread and groundnuts to miners. It also attracts other goods and services, especially in established ASGM communities such as Komahun which host many shops of traders, restaurants and hairdressers, and where many bike riders operate. In these places, demand for such products and services is high, and as a result, prices are typically also higher. As was explained by a shop owner in Komahun, who lived in Makeni before but had moved to Komahun with his wife to sell goods:

“wherever there is mining, demand is high... for example, if some certain good costs Le5,000 in Koidu, it could cost Le6,000 here”

This finding is particularly important for agriculture, because farmers have reported to face severe marketing challenges as they have limited means to transport their produce to suburban areas where demand and prices are higher, as has been investigated and documented more extensively in other studies conducted in Sierra Leone.⁴⁶

At the same time, the sector also has negative impacts on agriculture. Namely, since many miners do not rehabilitate the land after mining activities have ended, farmers cannot use this land for farming anymore, and in some cases, farmers have taken it upon themselves to recover the land. Moreover, as was mentioned before, near surface gold deposits are declining and artisanal miners now have to dig deeper to extract ore from rich gold deposits, which decreases the earnings they earn relative to the efforts they put into extraction and processing activities. On top of this, while most community leaders and Paramount Chiefs appreciate the sector’s contribution to local job creation, there is a sense of frustration that the sector, since it is largely informal and controlled by foreign gold buyers, does not realize its full development potential in their communities.

Still, when considering the wider national context, ASGM seems to have positive net effects on local development, even in its informal state. This is especially so for youth who are in need of viable jobs, and for mothers who need to feed their families (see the sections below).

3.12. Women in ASGM

Women have a special role in Sierra Leone’s AGM sector. Whereas historically, men have dominated the diamond sector in the hope to get rich one day, women have steadily focused on gold.

45 This is particularly important because as mentioned before, in most communities visited, education isn’t free

46 For example, see:

- Cartier, L. E., & Bürge, M., 2011. Agriculture and artisanal gold mining in Sierra Leone: alternatives or complements? *Journal of International Development*, 23, 1080-1099.
- Maconachie, R. 2011. “Re-agrarianizing Livelihoods in Post-conflict Sierra Leone? Mineral Wealth and Rural Change in Artisanal and Small-scale Mining Communities.” *Journal of International Development* 23 (8): 1054–67.
- Hilson, G. 2011. “Artisanal Mining, Smallholder Farming and Livelihood Diversification in Rural Sub-Saharan Africa: An Introduction.” *Journal of International Development* 23 (8): 1031–41.

As discussed before, this has to do with the fact that gold mining brings more stable returns than diamonds. This is an important attribute for women as traditional caregivers for their families. The majority of women involved in ASGM are single mothers, whose husbands/man have either passed away or have abandoned them. They carry most of the responsibilities in their household, and many of them are involved in agricultural activities as well as mining.

In more productive gold mines, women make up to 15% of the workforce, focusing on the final concentration of the ore by panning. However, when recognizing that the ubiquitous gold panning, present in countless rivers and streams, is almost exclusively carried out by women, it can be estimated that women make almost half (47%) of the entire ASGM population in Sierra Leone. Most women in Sierra Leone's ASGM sector work on an individual basis, panning in the river, and sometimes in groups where they wash and pan ore.

Women face gender-specific challenges in the sector. They face more difficulty in joining mining groups which are dominated and ruled by men, unless their husband, a relative or a close friend is part of the group and invites her. They cannot access hard rock mining sites as they are often not allowed to go up in the hills as a result of superstitious beliefs and security concerns. In addition, women face difficulty in accessing land due to historical gender norms and due to their difficulty in accessing finance. This is related to women's market access, since it is often the gold buyers that invest in ASGM operations. However, given that women are often excluded from mining groups, it is less viable for gold buyers to invest in women's operations as their production is lower. Consequently, women rarely have fixed buyers, and sell to whoever wants to buy, often at lower prices. Finally, women face difficulties in improving their positions in the supply chain (e.g. becoming a gang leader or gold trader) because of prevailing gender norms and limited market knowledge, and low levels of education (e.g. most of them don't know how to handle a simple calculator to determine gold prices).

Despite these challenges, many women still chose to pursue a livelihood in ASGM, because they believe that it is an activity that is economically more viable than other options and is directly available. While some women want to stay in the sector on the long term, combining it with agriculture and other activities, most of them pursue this livelihood with the aim of eventually raising enough capital to pursue other activities such as starting a small business.

3.13. Youth in ASGM

The majority of artisanal miners are young men (15-35 years). When local youth leaders were asked about the challenges youth are faced with, the typical answer was: "the biggest challenge facing youth is unemployment". Nowadays, youth want to have jobs that enable them to get fast cash, which is an important reason why many youth prefer to be a bike rider or a gold miner, rather than a farmer.

The ASGM sector enables youth to earn fast cash to meet their own and their families' needs. However, most youth want to engage in ASGM temporarily rather than on a permanent basis. Many see it as an opportunity to accumulate capital to pursue other activities, such as education in the hope to obtain more specialized jobs (e.g. as an electrician or a carpenter), or to make investments in other businesses. Another important motive is to be able to finance their siblings' or their children's education. As one youth leader explained:

"That [gold mining] is what the youth are doing now on a short time basis, forgetting their impacts on the environment... I just have to exploit all avenues to ensure that my own suffering will stop with me along, it does not continue through my daughter [because at least she can have decent education]"

Youths have further shared to prefer to work on an individual basis and with a fixed daily wage because distrust is still deeply rooted amongst them and they do not want to take any risks by, for instance, organizing into a credit cooperative. On top of this, many youths are reluctant to commit to paying taxes because they believe that the government will not give them anything in return. At the same time, many of them welcomed the prospect of formalizing as AGM miners. For instance, as a gang leader and several labourers from Baomahun shared, if they had a license, they could claim their rights, exercise more authority and use milling machines. In view of the levels of youth unemployment in Sierra Leone, and its relationship with social stability, the formalization of youth's livelihoods in the ASGM sector is not only of importance for economic development but also for the ongoing peacebuilding process.⁴⁷ However, as is further discussed in Section 3.16, they face many challenges to do so.

3.14. Children in ASGM

Concerned with issues of child labour, Sierra Leone is a Party to the 'UN Convention on the Rights of the Child'.⁴⁸ In Sierra Leone, children play an integral role in contributing to the survival of the household, both economically and in terms of ensuring food security. Indeed, 51.3% of children aged 5-14 years are working, 67% attend school and 43% combine work and school (Bureau of National Labour Affairs, 2016). However, they seem to have a limited role in the domestic artisanal mining sector. In the majority of mine sites visited, children, if present, were mainly selling foodstuffs to artisanal miners and accompanying their mothers while they were working. For instance, in Dalakuru, children go to school during the day but after school they join their mothers who are panning along the river and play with each other. In only a handful of mine sites visited were a few children seen to be engaged in ASGM activity.

In those sites where children were observed to be engaged in ASGM activity, they were mostly involved in helping their parents by performing tasks such as carrying water, washing ore and panning concentrate. For example, in Masumbiri, two children between the ages of 6-10 years were observed filling a pan with gravel together on the surface of a mine site. When asked why they were doing this, the children shared that they do this out of school hours to make some cash to be able to pay for their school's lunches, and to earn additional cash for helping their parents to pay their school fees.

As opposed to the situation in other countries in the region, no children were observed in hard rock sites or deep mining pits, and no children were observed to be involved in treating mercury. Still, children's presence and in some cases involvement in alluvial AM sites exposes them to several health threats. See the section below for more on this.

3.15. Environmental and health impacts

The most pressing environmental and health impacts stemming from ASGM activity in Sierra Leone concern the contamination of water sources, and the degradation of lands by mining pits which are routinely left behind after the mining activities end. Many respondents have shared that water resources, in particular streams and rivers have been contaminated. Moreover, in many places it has been observed that the water has changed colour and that the turbidity of the water has increased. According to local authorities, this issue has been observed for a long time since diamond mining first started in the 1920s, but it keeps increasing throughout the years.

⁴⁷ For more on this, see:

Maconachie, R., and Hilson, G. 2011a. "Artisanal Gold Mining: A New Frontier in Post-Conflict Sierra Leone?" *The Journal of Development Studies* 47 (4): 595-616.

Maconachie, R., 2017. "Navigating the Intergenerational Divide?: Youth, Artisanal Diamond Mining, and Social Transformation in Sierra Leone." *Extractive Industries and Society* 4 (December): 744-50.

⁴⁸ See Article 28 of the UN Convention on the Rights of the Child. www.un.org/documents/ga/res/44/a44r025.htm.

The lack of rehabilitation efforts is particularly pressing as it makes the land unavailable for farming activities, and the neglected mining pits serve as a breeding ground for mosquitos in rural areas of Sierra Leone. Those mosquitos spread malaria, especially among the people living, working or playing close to the open pits, streams and rivers. Those people especially concern female artisanal miners and the children who are accompanying them (and in a few cases, working with them), are the most vulnerable groups in the communities.

Even though the scale of environmental degradation may seem modest when compared to the degradation caused by industrial mining, given the widespread of ASGM activity, the accumulative impacts are significant. Using the spatial information received from NMA and satellite images, it is estimated that the land degradation is advancing at a minimum rate of 500 hectares per year. The causes and effects of the lack of rehabilitation have been reported in more detail in a Strategic Environmental Assessment of the ASM sector conducted jointly by EPA-SL and NMA.⁴⁹

Finally, the release of mercury vapours and releases to air, land and water by miners, though limited to two sites, causes significant health concerns for local communities in Baomahun and Komaru. It affects the people that are exposed to mercury vapours during the amalgamation process, with adverse impacts on children, especially under-fives, and foetuses that are carried by pregnant women. Moreover, it affects any aquatic life living in the rivers near these communities. The latter issue is particularly applicable to the dredges that are operated by foreign-owned SSGM companies in Sierra Leone's river systems, such as the Tayei River near Yele.

In terms of hazardous chemicals, a more common health concern is the release of acid vapours in residential areas.⁵⁰ Virtually all gold traders encountered in the field study use acid to remove impurities from the gold. With few exceptions, the traders displayed no awareness of its health impacts because they did not wear any respiratory protection or took other protective measures. In fact, one trader even mentioned that he thinks that acid does not affect them, because "no one has died yet". Another trader was more aware of it because the effects are visible: the use of acid had affected his finger which was bended in a strange way. These findings support the perception that people with limited exposure to education and awareness raising activities do not know of the health hazards resulting from hazardous chemicals until the effects become visible.

3.16. Access to health care, sanitation & clean water

The visited ASGM communities face significant health problems, resulting from the limited availability of basic health infrastructure, including proper sanitation and clean water, as well as protective equipment such as gloves, helmets and masks. Besides this, the housing conditions are typically bad in those areas as most houses have only a plastic roof covered with grass. Pregnant women, lactating mothers and under-five year old were consistently listed as vulnerable groups. The following health complaints were frequently mentioned by workers of health clinics, community leaders and other stakeholders:

- Malaria
- Diarrhoea and vomiting
- Intestinal worms among children
- Skin infections
- Sexually Transmitted Diseases (STDs)
- Acute Respiratory Infection (ARI), including acute pneumonia
- Gastric issues

49 EPA & NMA, 2016. Strategic Environmental Assessment of the Artisanal Mining Sector in Sierra Leone (SEA).

50 Depending on what is available, gold traders mainly used hydrochloric acid while goldsmiths mainly use nitric acid

According to the most recent data, there are approximately 1,400 health facilities in Sierra Leone including hospitals, health clinics and smaller health posts. When comparing the locations of these facilities to known AGM locations, it seems that most of the miners have a health care facility within their reach (the average straight-line distance from a known AGM location to a health facility is 3.2 km (0.4-7.3 km). This analysis is also in line with the findings of the field research, as most of the visited communities had their own health facility.

The health clinics in ASGM areas are mainly concerned with supporting pregnant women, providing assistance with birth, examining their babies, and immunizing children. They also perform first aid treatment and minor surgeries but refer patients in need of more complex operations to hospitals. The clinics visited lacked significant capacity. The following aspects were most commonly observed and mentioned by health workers to be lacking or to be in shortage:

- Professional and trained staff
- Standard delivery and examination beds
- Delivery kits
- Access to clean drinking water
- Appropriate space and furniture for patients waiting for assistance
- Basic equipment
- Electricity
- Accommodation for staff
- Vehicles (including ambulances)

3.17. Formalization and access to financial and technical assistance

Some progress has been made in formalizing Sierra Leone's ASGM sector, in particular in issuing licenses to several gold miners, and a smaller portion of the existing gold dealers and exporters. But when comparing the regulatory framework to the organization of ASGM production and trade in practice, it becomes clear that the AGM sector is informal at virtually all different nodes of the gold supply chain.

Challenges to formalization are largely related to disincentives for ASGM actors to formalize, which are especially common among traders and exporters. Such disincentives stem from the presence of more attractive taxation regimes in other countries, a long and burdensome process of obtaining licenses, high fees for EIAs (among small-scale miners), and a virtual lack of capacity building initiatives among ASGM actors. Many AM miners do want to formalize. But they are often blocked by the increasing presence of SSM companies that may take over the land they are working on, through formal or through informal channels. Indeed, it was reported by a Paramount Chief that the presence of exploration companies had increased informal AM activity because they cannot get licenses when the company owns the land.

Besides this, it is important to keep in mind the capacity challenges that regional NMA and EPA-SL offices and law enforcement personnel are faced with. Most pressingly, those challenges include a shortage of vehicles and motorbikes, human resources, scientific equipment, and technical expertise, in particular about socio-economic and geological aspects of the AM sector, among other things. In addition to this, it has also been pointed out by customary leaders that there are significant overlaps in mandate between the EPA-SL, NMA and National Protected Areas Authority (NPAA) with regards to the governance of the AM sector, which make a transformation of the sector more difficult.

The sector's informality and associated perceived risks cause financial institutions to perceive AM as a risky investment. During the field study, no single miner was identified who receives formal financing, and among MDAs and NGOs, there is currently no single initiative aimed at providing AM miners with access to finance. As documented in another study recently conducted in Sierra Leone, local banks with experience lending to small and medium enterprises (SMEs) voiced a strong prejudice against the ASM sector and considered it too risky.⁵¹ This lack of access to formal means of finance causes AM miners either to finance themselves, or, more likely, to depend on the investments made by informal 'customers' and 'supporters'. This financial dependence on these informal actors undermines the formalization process.

Similarly, so far, no interventions have taken place that aimed at providing ASGM miners in Sierra Leone with technical assistance to improve their mining practices. This enhances miners' dependence on informal buyers and exacerbates the gradual exhaustion of gold deposits, because ore is currently processed with relatively inefficient methods. However, the recent Artisanal Mining Policy 2018 sets out an ambitious framework to enhance ASM miners' capacity in various domains, including better mining practices, the use of more land and machines, occupational health and safety, access to finance and supply chain development. If this policy is enacted in a comprehensive manner, the identified gaps could be addressed, although this will require significant funds and sustained political commitment.

51 Hunter, M. & Smith, A., 2017. Follow the Money: Financial Flows linked to Artisanal and Small-Scale Gold Mining in Sierra Leone. Global Initiative against Transnational Organized Crime.

04 Sierra Leone's Vision for the ASGM sector

This Section articulates Sierra Leone's national vision for the sustainable transformation of its ASGM sector. First, relevant regional frameworks are briefly discussed. Second, the sector is divided into sub-sectors and these sub-sectors' positive and negative impacts on various sustainable development indicators are summarized. Subsequently, drawing on national and regional development priorities and stakeholders' inputs, the sector's various impacts are ranked in order of priority. Finally, based on the above, the desired future of Sierra Leone's ASGM sector is articulated in a national vision statement.

Altogether, this section constitutes Sierra Leone's Vision for the ASGM sector, and serves as a roadmap that gives direction to the goal and the objectives that are listed in Section 5 and the implementation strategies that are discussed in Section 6.

4.1. Domestication of regional frameworks

As a Member State of the African Union, Sierra Leone fully embraces the African Mining Vision (AMV), including the principles it articulates for the ASM sector⁵². Key excerpts from the AMV that are of particular relevance to ASGM include:

“Transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development.”

“A mining sector that harnesses the potential of artisanal and small-scale mining to stimulate local/national entrepreneurship, improve livelihoods and advance integrated rural social and economic development”

At the sub-regional level, as a member country of the Economic Community of West African States, (ECOWAS), Sierra Leone is committed to the objective stated in the 2011 ECOWAS Mineral Development Policy:

“to harness mineral resources capital to facilitate sustainable economic growth and integrated socio-economic development in the [West African] region”

The key principles and perspectives articulated in the above-mentioned regional policy frameworks are domesticated in Sierra Leone's Minerals Policy 2018 and complementary Artisanal Mining Policy 2018. These policies position the country's AM sector as a “primary driving force of local economic development and rural livelihood”, and guide the formalization of the sector as the pathway towards its sustainable transformation, addressing economic, social, health, safety, security and environmental issues.

4.2. ASGM sub-sectors in Sierra Leone

As detailed in Section 3, Sierra Leone's ASGM sector can be divided into three sub-sectors:

1 Alluvial artisanal gold mining (alluvial AGM – the most common sub-sector)

⁵² See www.africaminingvision.org. Accessed on 29/03/2019. The African Minerals Development Centre's “A country mining vision guidebook: Domesticating the African Mining Vision” provides guidance on how to incorporate the AMV at the national level. <http://hdl.handle.net/10855/22836>

2 Hard rock artisanal gold mining (hard rock AGM)

3 Small-scale gold mining (SSGM)

These three subsectors each have their own unique characteristics and positive and negative impacts on various development indicators. Therefore, where the available information allows it, they are referred to separately in the remainder of this section.

These three subsectors each have their own unique characteristics and positive and negative impacts on various development indicators. Therefore, where the available information allows it, they are referred to separately in the remainder of this section.

4.3. ASGM's positive and negative impacts in Sierra Leone

Section 3 has summarized the key findings of the ASGM overview, which includes a summary of the main socio-economic, health and environmental issues of the sector. Based on this section, as well as on the inputs that were collected during two stakeholder engagement workshops, the various positive and negative impacts the sector has on a range of sustainable development indicators are summarized below.⁵³

a. Positive impacts

Direct livelihoods that are (relatively) economically viable and readily available

At least 80,000 people derive their livelihoods from AGM (both alluvial and hard rock) in Sierra Leone. Importantly, when comparing the average earnings (Le28,320 or \$3.73/day) of AGM miners (i.e. diggers, washers, panners and pit bosses) to most other livelihoods pursued in rural areas, these livelihoods are relatively economically viable and provide the consistent and fast cash that many people need to meet their families' daily necessities. Moreover, since the sector doesn't require high levels of education or significant starting capital, it is readily available for many Sierra Leoneans living in rural areas.

While it is globally known that as mechanization increases, manual labour decreases, it was more difficult to make an estimate of the jobs that are created by the SSGM sector.⁵⁴ Observations from the ASGM overview confirmed that this subsector indeed provides much fewer jobs (collectively <500) and that those jobs are mainly occupied by foreigners (especially Chinese). The few Sierra Leoneans who were employed by SSGM companies, had short-term contracts, similar wages to artisanal miners, received little to no training and largely carried out non-technical tasks.

Indirect livelihoods and local economic growth

Using the average multiplying factor of six for ASGM in Sub-Saharan Africa⁵⁵, it can be roughly estimated that in Sierra Leone, approximately 400,000 people derive indirect livelihoods from the AGM subsector. This includes both dependents and people who are indirectly supporting the sector. In Sierra Leone, these dependents are mainly family members (especially children and siblings), whose school

⁵³ Please refer to The ASGM Overview of Sierra Leone report (see footnote 12) for further information on the methods used for collecting the information and the estimates presented in this section

⁵⁴ Hinton, J., 2017. 11th Forum of the ICGLR-OECD-United Nations Group of Experts on Responsible Mineral Supply Chains. 2-4 May 2017, OECD, Paris. Used with permission.

⁵⁵ See Stylo, M. S., De Haan, J. S. and Davis, K., forthcoming. Collecting, managing and translating data into National Action Plans for Artisanal and Small Scale Gold Mining. Manuscript submitted for publication with The Extractive Industries and Society.

fees, food, clothes and medicines are often financed from the subsector. This also includes the jobs that are indirectly created in AGM areas through the revenues that the sector distributes in local economies, sparking local economic growth.

In Sierra Leone, this mainly benefits farmers, small shop holders and small traders, restaurants, hairdressers, and bike riders (both through the demand the sector creates for their services and products, and through the direct investments that miners and small traders make in these areas).

For the SSGM sector, it is more difficult to make an estimate of the indirect jobs that are created but, based on observations from the ASGM overview it is not expected to be as significant because SSGM companies, which are all foreign owned, bring in much of their own materials, tools and labour, and are overall less integrated in the local economy.

Potential exchange earnings and government revenues (license fees, taxes and royalties)

In 2017, only 142 kg of gold with a value Le45,475,500,000 (\$6,063,400) was officially exported from Sierra Leone. However, given that an estimated 2,944 kg of gold is produced annually, Sierra Leone's AGM sector could, if formalized, provide at least Le937,500,000,000 (\$125,000,000) of foreign exchange earnings and could yield Le46,875,000,000 (\$6,250,000) of royalties each year.⁵⁶

In addition to royalties, AM license holders, gold dealers and gold exporters are required by national regulations to pay yearly license fees and taxes, although most traders are unlicensed and this system is not much enforced in practice. For purposes of illustration, an estimation of government revenue could be made for when all AGM miners would be formalized. If there would be one license holder per 50 AGM miners, this could theoretically bring the government Le2,192,000,000 (\$292,267) of mining license fees⁵⁷ and Le240,000,000 (\$32,000) of income tax. While there is no estimate on the number of gold traders and exporters, the formalization of these actors could yield significant additional license fees and taxes on a yearly basis.⁵⁸

For the six SSGM companies and the dredge that were identified, it is more difficult to make production estimations because data was collected for only one company. However, when extrapolating the production estimates for that company to the others, it could be roughly estimated that the SSGM sector produced 519kg of gold per year at the time of research. If formalized, this could result in Le163,485,000,000 (\$21,798,340) of foreign exchange earnings and Le8,174,250,000 (\$1,089,900) of royalties on an annual basis.⁵⁹

Local revenue generation and infrastructure development

A significant part of the revenue that is generated in AGM is retained in the local economy, either through investments made in other sectors or through the collection of customary taxes by landowners and chiefdom authorities. Through the creation of such local revenues, AGM activity indirectly contributes to infrastructure development. This also happens through the significant transport services (especially motorbikes transporting ore, tools, equipment and building materials to and from the mine sites) that the sector requires.

The AGM subsector also contributed more directly to infrastructure development, albeit to a limited extent. For example, many AGM miners and small traders use their revenues to improve housing con-

⁵⁶ According to the 2017 Finance Act, alluvial gold mining license holders should pay an annual tax of Le150,000 to the National Revenue Authority, and five% of yearly production as Royalty according to the 2009 Mines and Minerals Regulations.

⁵⁷ Including the mining license fee, application fee, demarcation fee, monitoring fee, rehabilitation fee, manager's certificate and financial supporter's certificate (see section 3.6 for breakdown of costs)

⁵⁸ Le1,050,000 (\$140) license fee and Le360,000 (\$48) of taxes per gold dealer; Le3,750,000 (\$5,000) license fee and Le600,000 (\$80) of taxes per gold exporter; and Le1,050,000 (\$140) license fee and Le360,000 (\$48) of taxes per gold exporters' agent.

⁵⁹ License fees and taxes are not included here because they depend on the amount of land that is used, which is not known about these companies

ditions and establishing local facilities such as restaurants. Furthermore, given that ASGM production takes place in remote areas, many rural areas have become more accessible as miners have made paths through mountains and forests to extract gold.

However, there are few ASGM actors that make direct investments in tangible infrastructure such as paved roads, schools and hospitals. This is also related to the fact that the majority of the sector is informal, and few miners are organized in big groups or registered entities. The potential scale of this positive impact thus much bigger than what is currently realized.

SSGM's contributions to local revenue generation are less known and are likely less significant as this subsector is less entrenched in the local economy; although its contributions to infrastructure development could be significant.

Empowering youth and women

Both alluvial and hard rock AGM provides viable livelihoods for youth (the vast majority of miners are youth), especially for those with precarious prospects for employment and low levels of capital and education. As discussed in section 3.13, the subsector provides these youth with the necessary fast cash to finance their everyday needs, to provide for their families, to finance their own or their children's education, and to make modest investments in other areas (e.g. small business, agriculture, housing). The empowerment potential was underscored by a young miner in a hard rock mine site in Komahun, who had lost his job as a technician during the Ebola crisis and had turned to AGM where he had managed to accumulate enough capital to construct a house for his family, and was currently saving money from AGM to pursue his studies in electrical engineering:

“It made some difference really because when I first came here things were very difficult when I compare it with now... there is future improvement, there are future plans”

Likewise, alluvial AGM provides viable livelihoods for many (possibly 40,000) women who are coping with hardship (they include mainly single mothers who have lost their husbands and have children to feed). As discussed in section 3.12, despite the gendered challenges that women face in the sector, it equally provides these women with a stable income that permits them to provide for their children and to make modest investments in other areas of their lives and their livelihoods (most notably in agriculture).

In view of gradually declining gold deposits, the potential for social and economic empowerment should not be overestimated, and it should be remembered that many youth and women currently pursue this livelihood with the hope of pursuing other activities in the future. Nevertheless, relative to other livelihood options that are currently available in rural areas, the AGM subsector currently serves as an important safety net and as an economic stepping stone that enables both youth and women to advance their own as well as their families' lives and future prospects in the face of hardship. Moreover, as has been convincingly documented elsewhere, the subsector's empowerment potential would likely become more significant if it would be formalized in a comprehensive manner.⁶⁰

For SSGM, the empowerment potential is less known and fewer woman have been observed to work in this subsector.

Financing rural education

AGM provides many people living in rural areas (where at present, as described in section 3.3, education is often not free in practice) with a means to finance school fees for themselves and especially for

⁶⁰ Maconachie, R., and Hilson, G. 2011a. “Artisanal Gold Mining: A New Frontier in Post-Conflict Sierra Leone?” *The Journal of Development Studies* 47 (4): 595–616.

their children. This is one of the most mentioned motives for miners to pursue a livelihood in the sector. At the same time, given the attractiveness of AGM among people with limited levels of education, it also contributes to driving children and young people away from education and into mining work. However, it should be noted that many children and also youths combine mining with education and use the former activity to finance the latter. For SSGM, the link has not been well established but may also exist.

Income stability, resilience and economic diversification

Many Sierra Leoneans are attracted to ASGM to cope with sudden changes of circumstances: losing employment; losing, or being abandoned by, their spouse (especially common among female miners); or after disappointing returns from other economic activities, such as agriculture. Likewise, many Sierra Leoneans pursue a livelihood in the sector to diversify their sources of income and to spread risks. For example, many Sierra Leoneans chose to mine alluvial gold in the dry season when their land requires less attention, and farm in the wet season when the alluvial gold mines are less accessible. This enables these 'mining farmers' or 'farming miners' to stabilize their income, and to use the revenues earned in one activity to invest in the other activity, thereby enhancing their resilience in coping with future shocks. Besides this agriculture, economic diversification also occurs as AGM miners invest their revenues in mineral trade and in small businesses. For SSGM, the link has not been well established but may also exist.

Cultural diversification and cohesiveness

AGM, which is in many cases mobile and migratory in nature, brings together Sierra Leoneans from varying ethnic backgrounds. These people work together under the same circumstances and face the same risks. This results in a collective occupational identity. In order to survive physically and economically, miners work together in the pits and need to collaborate intensively. In general, since AM does not require a large starting capital and its economic gain relies primarily on physical work and the luck of finding gold, social hierarchies that are based on rank and privilege are replaced by market relations. As such, AGM in Sierra Leone enhances cultural diversification and cohesiveness, and likely enhances principles of solidarity and equality.⁶¹

In contrast, small-scale gold mining, which is widely conducted by foreign-owned companies in Sierra Leone and which depends more on economic and political power relations, rather negatively affects cohesiveness and has indeed led to several conflicts.

Peace, security, decriminalization and social and political stability

Besides an economically viable income, AGM provides many otherwise unemployed youth with an activity to keep them busy, as well as a (relatively) meaningful prospect for the future, which has been globally identified as a key issue in the prevention of violent extremism among youth.⁶² This includes areas, such as Kono, that have been strongly affected by the civil war and where many ex-rebels mine gold on an artisanal basis. Based on data gathered for the ASGM overview, as well as in other studies that have been conducted in the Kono region⁶³, the activity keeps many such youth away from criminal activities. This point was emphasized by a regional officer from EPA-SL in Koidu:

“ASM is creating jobs so that we don't have criminals”

61 Bryceson, D. & Fisher, E. 2013. “Artisanal mining's democratizing directions and deviations”. In Bryceson, D.F., Fisher, E., Jønsson, J.B. & Mwaipopo, R. (ed.), *Mining and Social Transformation in Africa: Mineralizing and Democratizing Trends in Artisanal Production*. Abingdon & New York: Routledge (collection “Routledge Studies in Development and Society”), 181-209.

62 See: United Nations General Assembly, A/70/674. Plan of Action to Prevent Violent Extremism. Accessed on 3/5/2018 from: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/70/674

63 ASM's importance for best practices documented in: Maconachie, R., 2017. “Navigating the Intergenerational Divide?: Youth, Artisanal Diamond Mining, and Social Transformation in Sierra Leone.” *Extractive Industries and Society* 4 (December): 744–50.

However, respondents in such areas have also shared the view that a continued neglect and marginalization of the subsector, for example through the prioritization of more industrialized operations in land and license allocation, or the levying of informal taxes by customary authorities without provision of substantial support, may cause some of these miners to quit their activities and to “return to the bush and continue to do what we did during the civil war...”. As this quote underscores, and as has previously been cautioned in the literature, the continued creation of a ‘socially-excluded economic class’ and a ‘loss of a sense of hope in the future’ among these Sierra Leonean youths may (re)create the preconditions for war.⁶⁴

The AGM sector thus plays an important role in maintaining peace, security and social and political stability in sensitive areas in Sierra Leone (while small-scale gold mining companies rather increase social tensions, see the section below). This is reinforced by the cohesiveness and solidarity among AGM miners as described before. However, insufficient governance and support may cause grievances and pose a threat to peace, security and stability. This is especially important when considering the employment and educational challenges that Sierra Leonean youth are currently faced with, combined with the anticipated population growth in Sierra Leone.⁶⁵

Deurbanization

By providing livelihoods which are relatively economically viable and readily available, AGM activity reduces urbanization and the negative impacts that are often associated with it: increased levels of criminality, substance abuse, social tensions, and so on. As was mentioned earlier, many rural areas have become more accessible because of ASGM activity, which decentralizes markets for local producers and service providers (saving them time and costs to travel to (regional) capitals). However, in extreme cases, this can also have its own associated problems (see ‘social disorder in rushed gold mining’ under the negative impacts below). For SSGM, the link has not been established because it employs far fewer people.

b. Negative impacts

Land degradation in general

“Without question, one of the greatest environmental and social challenges arising from artisanal and small-scale mining [in Sierra Leone] is the total failure to achieve any form of land reclamation”⁶⁶

Sierra Leone’s land is degraded by all forms of ASGM activity as mining pits are routinely left behind after the mining activities end, without any form of land reclamation or rehabilitation. While the scale of land degradation increases with mechanization (especially the use of excavators), and is therefore much larger in large and small-scale operations than in artisanal operations, the cumulative impacts from AGM on land degradation are certainly significant. With the use of satellite images, it has been estimated that land degradation resulting from ASGM activity is advancing with a minimum annual speed of 500 hectares.

The rehabilitation and reclamation of mined-out areas by holders of AM and SSM licenses is clearly stated in the Mines and Minerals Act, 2009 in Section 91 (Rights and duties of holders of artisanal mining licenses), Subsection (g) and Section 101 (Rights and duties of holders of small-scale mining licenses), Subsection (h). However, this is not enforced in practice, and to date, no technical support has been given to this end.

⁶⁴ Quoted from (Maconachie, R. 2017: 744) and (Maconachie, R. & Hilson, G., 2011a: 599)

⁶⁵ 2015 Housing and Population Census – Final Results, https://www.statistics.sl/wp-content/uploads/2017/01/final-results_-2015_population_and_housing_census.pdf. Accessed on 29/3/2018.

⁶⁶ EPA & NMA, 2016: 59

Land degradation caused by ASGM activity has three direct negative impacts of concern: the spread of malaria, degradation of agricultural land, the risk of landslides, and, to a more limited extent, deforestation. Each of these issues is discussed below.

- **Increased spread of malaria**

Many alluvial gold mining pits that are left behind contain stagnant water. This provides a breeding ground for mosquitos. Those mosquitos spread malaria, especially among the people living, working or playing close to the open pits, streams and rivers. These people include a large number of female AGM miners and the children who are accompanying them (and in a few cases, working with them), who are typically the most vulnerable groups in rural communities.

- **Diminished agricultural production**

The lack of rehabilitation and reclamation efforts affect the land's suitability for agricultural use and thus agricultural production, which may affect food security. In some cases, farmers have taken it upon themselves to recover some of the land, incurring significant effort and costs. Besides the effects from land degradation, agricultural production is also affected because many young men choose to mine gold rather than to farm, given the consistent and fast cash it provides. Many people also chose to combine the two activities and use gold revenues to invest in agriculture, as discussed above.

- **Deforestation, biodiversity loss and soil erosion**

The preparation of ASGM mine sites requires the removal of plants and trees, which are typically not replanted after the mining ends and which are less likely to grow again due to the removal of layers of fertile soil. This contributes to deforestation and may, depending on the location, also cause loss of biodiversity. Moreover, the removal of trees, and with it, their roots, increases soil erosion and undermines slope stability, which could lead to landslides. While actual landslides caused by ASGM activity have not yet been reported in Sierra Leone, there is an increased risk in SSGM or in AGM if excavators are used because the mining pits are bigger. Soil erosion has also caused the shrinking of swamps through siltation. These issues are particularly pressing as significant ASGM activity has been reported to take place in Sierra Leone's national protected areas, such as the Gola Rainforest.

Contamination of water resources

Another major environmental impact from ASGM activity is the contamination of water resources, particularly streams and rivers. This is mainly caused by the runoff of mining waste from tailings which are poorly managed, if at all. For example, in Baomahun, mining waste and tailings including mercury, is washed down to the valley during excessive rains in the wet season. Even where no chemicals are used water quality is affected; the sediments that are released to the water increase turbidity, thus reducing the amount of light available to the river habitats. This is likely to adversely affect aquatic life and biological diversity in river ecosystems⁶⁷. Moreover, it also affects drinking water that nearby communities and farmers' cattle may rely on, which may further exacerbate the risk of cholera, an important health risk in many of Sierra Leone's rural communities.

The issue of water contamination is applicable to all forms of ASGM in Sierra Leone, but is particularly caused by dredges used in small-scale gold mining operations.

⁶⁷ Further research needs to be undertaken to provide empirical evidence for this assumed relation in Sierra Leone, but the link has been established elsewhere: Telmer, K. V., 2009. World emissions of mercury from small scale artisanal gold mining and the knowledge gaps about them. In N. M. Pirrone, *Mercury Fate and Transport in the Global Atmosphere: Measurements Models and Policy Implications*: 96-129. UNEP United Nations Environmental Program.

Disruption of river systems

In rivers where dredges are used, such as in the small-scale gold mining operations in the Tayei and Pampana rivers, the flows of river systems are disrupted by the excavation of soils and the dumping of mine tailings. The disruption of river systems is less observable and likely less significant in AGM that takes place in rivers (which are mainly panned by women).

Social disorder (in rushed gold mining settlements)

Sierra Leone's ASGM sector changes rapidly, and the discovery of new gold deposits sometimes leads to the rushed creation of temporary, ill-maintained settlements. People from different areas migrate to such settlements, which in some cases (Komahun is a case in point) leads to large masses of people working and living under precarious conditions (e.g. small houses made of metal plates or sticks that are poorly isolated and cramped together). In such situations, sexual diseases spread more rapidly and teenage pregnancies occur more frequently. Moreover, alcohol and drug abuse are more pronounced in such areas. However, these issues are much less pronounced in ASGM areas that are more established and stable in nature.

Occupational health and safety

Although most of the AGM miners operate in alluvial mines, they increasingly work in deeper pits, where they face the risk of pit collapse. This risk is more pronounced in SSM operations and in AM operations where excavators are used. Besides the risk of pit collapse, ASGM miners also face multiple risks of injury, though the risks in alluvial AGM (the majority of the sector) are significantly lower than in more mechanized and underground operations because alluvial AGM occurs close to the surface level with little mechanized equipment.

Some of the more 'minor' health complaints that ASGM miners frequently deal with include backpain and muscle aches resulting from their demanding physical work. Moreover, among alluvial AGM miners who spend extended amounts of time in the water, cold, fever, coughing, skin rashes and skin aches are frequent symptoms; and dysentery and pneumonia occur to a lesser extent.

Mercury and acid poisoning

Although limited to hard rock sites in only two communities (Komahun and Baomahun) and (likely) SSGM companies operating elsewhere, people in those areas are exposed to mercury intoxication as mercury amalgams are burned openly without the use of mercury-capturing devices. Depending on the scale and length of exposure, mercury intoxication likely affects the central nervous, digestive and immune systems, and kidneys and lungs of those who are exposed to it – notably gold miners, traders and community members (including women and children). Besides the health effects on human beings, the mercury which is emitted to the air increases global pollution levels. Moreover, the mercury which is released to land and water degrades the environment and bioaccumulates in aquatic life in nearby rivers, thereby likely affecting local fish consumers. This is particularly concerning since many Sierra Leoneans depends mainly on fish for protein in view of high meat prices.

Most gold traders and goldsmiths use acid (notably nitric or hydrochloric acids) to remove impurities from gold by open burning. This is often done in ASGM communities, typically with no precautions to protect themselves or community members from its harmful effects. Both acids are strong acids, oxidants and very corrosive. The nitric acid vapour is very irritating to the eyes, throat, lungs and corrosive to the teeth. If the vapour is inhaled in significant amounts, it will result in severe coughing, chest pain and shortness of breath. Contact with the skin will result in a severe corrosive burn. Similarly, acute

(short-term) inhalation of Hydrochloric acid may cause eye, nose, and respiratory tract irritation and inflammation and pulmonary edema in humans. Acute oral exposure may cause corrosion of the mucous membranes, esophagus, and stomach and dermal contact may produce severe burns, ulceration, and scarring in humans. Chronic (long-term) occupational exposure to hydrochloric acid has been reported to cause gastritis, chronic bronchitis, dermatitis, and photosensitization in workers. Prolonged exposure to low concentrations may also cause dental discoloration and erosion.

Child labour

As discussed in section 3.14, children have a limited role in Sierra Leone's ASGM sector. Those children that directly work in the sector, mainly perform tasks such as carrying water, washing ore and panning concentrate, and are not directly exposed to the threats faced in hard rock mining and mercury amalgamation. Still, children's presence and in some cases involvement in alluvial AGM sites exposes them to several health threats, including most notably headaches, coughs and fever. Children have not been observed to work in SSGM operations.

Bribery and exploitation

No armed groups or rebel groups have been reported to be involved in ASGM activity in Sierra Leone, and there have been no reports of forced or bonded labour. However, there are reports of MMOs taking bribes from unlicensed miners and traders to avoid official penalties, and reports of customs officers taking bribes from gold smugglers to turn a blind eye to such activities.⁶⁸ Similarly, there are reports of unofficial payments being made to customary authorities. In Komahun, there have been cases where artisanal miners were to pay additional charges to chiefdom authorities simply for continuing their mining activities on an area that was within the concession of an exploration license owned by a foreign company with a dubious legal set-up (see the ASGM Overview report, section 4.6.2, for further details).

While AGM miners are thus mainly *affected* by these practices, they are caused by other actors who make use of the sector's informal nature, including various authorities and illegal SSGM companies.

Money laundering and other criminal activities

Given the many illegal actors (especially gold buyers and investors) that are involved in the largely informal ASGM sector, and given the elevated rates at which gold is sold, gold is likely used to support money laundering, and possibly other criminal activities such as drug or arms trade or terrorist financing. The informality of the ASGM supply chain may therefore undermine peace, security and political stability. Illegal actors downstream of the supply chain (especially gold buyers and investors from Guinea and Liberia) and the informal networks they are involved in seem to be mainly responsible for these activities.

Land conflict

Competition over gold deposits creates land conflicts in Sierra Leone, and in other countries worldwide. Such conflicts arise especially when SSM or LSM companies are involved. These companies typically claim large areas of land after making deals with land owners and chiefdom authorities, without consulting the Sierra Leonean artisanal miners working on those deposits or other stakeholders. As was the case in Komahun, such conflicts can escalate to violent conflicts and can also lead to practices of extortion.

⁶⁸ These issues should be appreciated in a context of low salaries, precarious working conditions and general low levels of monitoring infrastructure and capacity of the respective officers taking bribes

School dropout

Due to the hardship faced by many young people living in Sierra Leone's rural areas, the prospect of earning a consistent income in AGM leads some young men to quit school. Many of them do not return to school once they have started gold mining. At the same time, revenues from AGM are often used to finance school fees and there are also children and youths who combine both activities. The relationship between ASGM and education thus goes in both ways in Sierra Leone and should be further investigated.

4.4. Prioritization of issues in Sierra Leone's ASGM sector

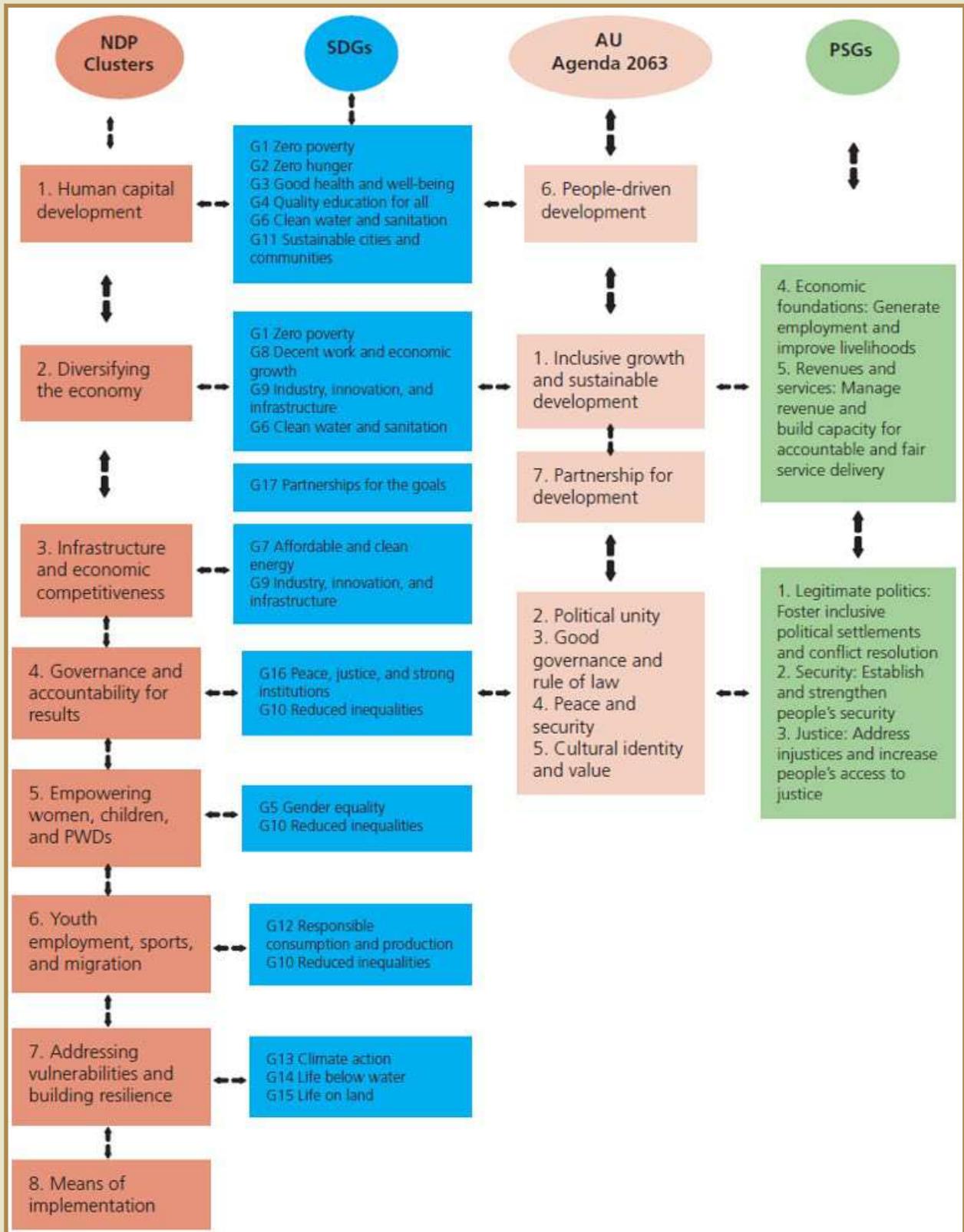
The table below lists a top ten of most important positive and negative impacts of Sierra Leone's entire ASGM sector on various sustainable development issues, ranked in order of valued importance (details on the relations between impacts and specific subsectors have been provided above). This ranking is based on the inputs derived from local and national stakeholders, as well as consideration of their linkages with the policy clusters enlisted in Sierra Leone's MTNDP and associated regional and global frameworks (see the MTNDP's eight policy clusters and their linkages with such frameworks in figure 5). For each impact, the numbers of the related MTNDP clusters are listed in the table below. This ranking is also a reflection of the scale of the respective positive and negative impacts (i.e. how prevalent they are in Sierra Leone), as investigated in the ASGM overview.

Table 1 *The 10 most important positive and negative impacts of Sierra Leone's ASGM sector*

Positive impacts	NDP clus.	Negative impacts	NDP clus.
1. Direct livelihoods (economically viable and readily available)	1, 2, 6	1. Deforestation, biodiversity loss and soil erosion	7
2. Indirect livelihoods and local economic growth	1, 2, 3	2. Contamination of water resources	2, 7
3. Financing rural education	1, 5	3. Mercury and acid poisoning	1, 7
4. Empowering women and youth	1, 5, 6	4. Occupational health and safety threats	1
5. Income stability, resilience and economic diversification	2	5. Child labour	5
6. Potential exchange earnings and government revenues	2	6. Increased spread of malaria	1
7. Local revenue generation and infrastructure development	1, 3, 6	7. School dropout	1, 5
8. Peace, security, decriminalization and social and political stability	4	8. Social disorder	1, 6
9. Cultural diversification and cohesiveness	4, 5	9. Diminished agricultural production	1, 2
10. Deurbanization	3, 6	10. Bribery and exploitation	4

FIGURE 6

Policy clusters of Sierra Leone's MTNDP and their alignment with regional and global development agendas



4.5. Vision statement: the desired future of Sierra Leone's ASGM sector

Sierra Leone's ASGM sector is recognized as a legitimate economic mining activity which constitutes the primary driving force of local economic development in many of the country's poor and rural areas. It contributes, side-by-side with other economic activities such as agriculture, to the alleviation of poverty for men and women and to the empowerment of disadvantaged groups, such as youth and single mothers, by providing economically viable livelihoods. Besides the significant number of direct livelihoods that the sector (and especially the AGM subsector) creates for such individuals and their families, it also creates indirect livelihoods for many others by providing a market for farmers, shop holders and service providers in rural areas. Moreover, the sector enhances human capital development by permitting people in rural areas to finance their children's school fees. Finally, the sector supports political stability by keeping youths away from criminal activities and providing them with a relatively meaningful prospect for the future.

However, at present, the sector is largely informal and artisanal miners and small traders have little to no access to technical and administrative assistance, finance and the global market. As a consequence, ASGM does not yet realize its full development potential, especially in terms of its modest contributions to local infrastructure development and the generation of government revenue. Furthermore, it is currently associated with a wide range of social, environmental, and health issues that need to be addressed urgently. In particular, it is important to address the sector's irresponsible use of hazardous chemicals including mercury and nitric and hydrochloric acid. Moreover, it is crucial to address wider environmental impacts such as the degradation of land and the pollution of water sources caused by ASGM activity, which also have adverse effects on nearby communities. Likewise, various other occupational health and safety issues need to be addressed, along with certain social issues such as gender inequality, drug and alcohol abuse and the (limited) involvement of children in the sector.

In the future, Sierra Leone wants to have a professionalized ASGM sector that sparks growth in other economic sectors and which provides miners, traders, local communities, chiefdoms and the government with a consistent source of revenue, with reduced impacts on the social order, human health, and the environment. By transforming the ASGM sector in a sustainable manner, Sierra Leone will exploit a larger part of its potential in contributing to the achievement of the sustainable development priorities set out in Sierra Leone's MTNDP, Vision 2035, UN Agenda 2030, and AU Agenda 2063.

05 National goal and national objectives

To realize Sierra Leone’s National Vision for the ASGM sector, the NAP’s goal is:

To formalize, sensitize and assist miners, traders, their communities and other relevant stakeholders in an inclusive and comprehensive manner, in order to mitigate the sector’s negative social, environmental and health impacts and to unlock the sector’s full development potential.

To realize this goal, various short and long-term objectives are formulated for the key issues that have been identified in the previous two sections in the table below, organized by implementation strategy. Details on the specific activities under each implementation strategy are provided in section 6.1, and details on the responsible stakeholders involved are provided in section 6.2.

Table 2 National objectives for Sierra Leone’s ASGM sector

Identified issues	No.	National objectives
<i>1. Better mining practices, use of hazardous chemicals and other environmental issues</i>		
<ul style="list-style-type: none"> Mercury amalgamation by AGM miners in Komahun and Baomahun and by small-scale gold mining companies elsewhere Burning of mercury-gold amalgams in residential areas The use of acid for gold purification in residential areas Lack of mine closure and land rehabilitation, leading to deforestation, biodiversity loss, increased spread of malaria, decreased land suitable for agriculture, and soil erosion Poor tailings management, leading to the contamination of water resources and in certain cases, sites that are contaminated with mercury Disruption of river systems through the illegal use of dredges by SSGM (Mines and Minerals Act 2009, Article 135 (1)) ASGM activity may occur in protected areas, resulting in biodiversity loss and potentially harming wildlife Mining sites in Masumbiri, Maranda, Laminaya and Kampala have previously been mined by SSM and LSM companies who have 	1.1	To eliminate the use of the identified worst practices of burning mercury amalgams and gold purification with nitric or hydrochloric acid in residential areas through awareness raising and sensitization initiatives among AGM miners and communities in Baomahun, Komahun and among SSGM companies where mercury use may be identified, by December 2020
	1.2	To reduce mercury use in AGM with 30% and in SSGM with 50% by December 2022, through the provision of experimental trainings on better mining practices that require fewer or no use of mercury in all 15 identified major ASGM areas and SSGM companies by December 2021
	1.3	To reduce mercury use in AGM with 50% by December 2024 through the provision of a second round of experimental trainings on better mining practices that require fewer or no use of mercury in all 15 identified major AGM areas by December 2023
	1.4	To eliminate mercury use in SSGM through the adoption of mercury-free mining practices by all SSGM companies operating in Sierra Leone by 2024
	1.5	To eliminate mercury use in AGM through the adoption of mercury-free mining practices in Baomahun, Komahun and other areas where mercury use may be introduced by 2029
	1.6	To eliminate the practice of gold purification with nitric or hydrochloric acid in residential areas through awareness raising and sensitization initiatives among all ASGM miners, traders and communities by December 2022
	1.7	To design guidelines for land rehabilitation, mine closure and tailings management that are easy to understand, available in local languages and specific to the AM sector, and to disseminate these guidelines among each of Sierra Leone’s 25 identified AGM areas and respective chiefdom authorities by December 2022
	1.8	To design guidelines for land rehabilitation, mine closure and tailings management that are easy to understand, available in local languages and specific to the SSM sector, and to disseminate these guidelines among each SSM company operating in Sierra Leone by December 2022

Identified issues	No.	National objectives
<i>1. Better mining practices, use of hazardous chemicals and other environmental issues</i>		
<ul style="list-style-type: none"> Mercury amalgamation by AGM miners in Komahun and Baomahun and by small-scale gold mining companies elsewhere Burning of mercury-gold amalgams in residential areas The use of acid for gold purification in residential areas Lack of mine closure and land rehabilitation, leading to deforestation, biodiversity loss, increased spread of malaria, decreased land suitable for agriculture, and soil erosion Poor tailings management, leading to the contamination of water resources and in certain cases, sites that are contaminated with mercury Disruption of river systems through the illegal use of dredges by SSGM (Mines and Minerals Act 2009, Article 135 (1)) ASGM activity may occur in protected areas, resulting in biodiversity loss and potentially harming wildlife Mining sites in Masumbiri, Maranda, Laminaya and Kampala have previously been mined by SSM and LSM companies who have 	1.9	To train SSGM companies and AGM miners, community leaders and chiefdom authorities on land rehabilitation, mine closure and tailings management in each of Sierra Leone's 15 major AGM areas by December 2022
	1.10	To organize, film and broadcast, with the participation of AGM miners and SSGM companies, a demonstration session of mercury-free gold production in an AGM site that previously used mercury, by December 2022
	1.11	To take samples at sites previously mined in Masumbiri, Maranda, Laminaya and Kampala, to assess the presence and extent of mercury contamination, by December 2024
	1.12	To design a strategy for rehabilitating identified mercury-contaminated sites by December 2021 and pilot it in one ASGM community by December 2022
	1.13	To train all environmental desk persons that have been established across all of Sierra Leone's MDA on issues of ASGM, mercury, and related environmental and health issues by December 2021
	1.14	To develop, publish and enact a new regulation on the sound management of mercury in its entire lifecycle, including a ban of mercury use in SSM from January 2021 onward, by December 2021
<i>2. ASGM formalization, socio-economic development and market-based mechanisms</i>		
<i>2.1 Formalization component 1: geoprospecting and allocating land</i>		
<ul style="list-style-type: none"> Both artisanal and small-scale gold mining sector is informal at virtually all different nodes of Sierra Leone's gold supply chain This deeply-rooted informality causes a large part of the negative social, health, and environmental impacts from the sector (including the management of mercury), and inhibits the realization of the sector's full development potential An important barrier to formalization is limited availability of suitable land and prioritization of more mechanized forms of mining 	2.1.1	To realize a nationwide airborne geophysical survey and conduct geoprospecting in the field by December 2022
	2.1.2	To establish a geo-database and complete 15 geological maps at 1:100,000 scale and make this information publicly available by December 2022
	2.1.3	To enhance geological knowledge with additional sources of geodata that are specifically relevance to AM, such as from LSM companies, universities, or AM communities by December 2022
	2.1.4	To conduct land use mapping in at least 7 districts and 14 chiefdoms where ASGM activity occurs by December 2021
	2.1.5	To designate the authority to establish AM zones in the amendment of the 2009 Mines and Minerals Act by December 2020
	2.1.6	To mediate land use around at least 3 potential AM zones and any other land disputes that may occur between AM, SSM and LSM operators and other land users by December 2021, and to facilitate at least 3 land sharing/partnership agreements between ASGM and LSM by December 2022

2. ASGM formalization, socio-economic development and market-based mechanisms

2.1 Formalization component 1: geoprospecting and allocating land

<ul style="list-style-type: none"> • Competition over gold-bearing ore deposits, coupled with competing normative frameworks, leads to land conflict between artisanal miners and more industrialized companies 	2.1.7	To identify, demarcate and establish at least 7 AM zones suitable for AGM production by December 2020
	2.1.8	To identify and establish at least 20 AM zones suitable for AGM production by December 2023
	2.1.9	To manage ASGM activity taking place in National Protected Areas (NPAs) by transferring 50% of AM miners operating in such areas to an established AM zone or by including them in alternative livelihoods programmes, and by evicting 100% of SSM companies operating in such as (in full respect of human rights) by December 2022
	2.1.10	To train at least 50 of NMA's regional officers to provide artisanal miners with training on "SMART mining" approaches and to carry out surveys and exploration work to improve geoprospecting by December 2021
	2.1.11	To build at least 2 partnerships and links with academic and technical institutions and to include them in 5 workshops or trainings by December 2022
	2.1.12	To investigate the presence of SSGM companies and the whereabouts of their operations as they occur anywhere in the country by December 2020

2.2 Formalization component 2: facilitating miners' organization

<ul style="list-style-type: none"> • There is no single registered entity of gold miners in Sierra Leone. • Nevertheless, artisanal miners are organized in different informal forms such as 'mining gangs', and they operate according to an organized division of tasks and related informal arrangements • Organization into formal entities can provide both miners and the government with important benefits as it gives miners a voice, creates economies of scale, and facilitates access to finance, markets and the provision of extension services. All of this can enhance their adoption of better mining practices and address wider issues of socio-economic development • Very little is known about the organization of SSM companies, but it is clear that workers' rights among those companies need to be improved and formalized with labour contracts 	2.2.1	To investigate AGM miners' and small traders' current forms of organization and social arrangements in all the countries' 15 main AGM areas as part of the 'Baseline Study on Artisanal Mining' by December 2019
	2.2.2	To organize at least 8 workshops with at least 30% of female and at least 30% of youth participation to provide information and to facilitate discussions about various modes of organization by December 2020
	2.2.3	To organize at least 8 workshops with at least 30% of female and at least 30% of youth participation to supervise elections and facilitate the establishment of at least 5 AGM entities with at least 25% female and at least 25% youth membership and provide ongoing assistance in the registration of such entities by December 2021
	2.2.4	To train each of the established entities on cooperative governance, business management, and gender equality by December 2021
	2.2.5	To organize a workshop with the established entities and facilitate the establishment of a national federation or union through the conduct of democratic elections with at least 30% of female and at least 30% of youth participation by December 2022
	2.2.6	To investigate SSGM companies' current forms of organization and working conditions as they occur anywhere in the country by December 2020
	2.2.7	To prepare a template of basic contract terms to facilitate workers' rights and diffuse these among all small-scale gold mining companies operating in Sierra Leone by December 2022
	2.2.8	Facilitate the establishment of at least 10 additional AGM entities with at least 25% female and at least 25% youth membership and provide ongoing assistance in the registration of such entities by December 2024

2.3 Formalization component 3: licensing and regulating ASGM

<ul style="list-style-type: none"> • Key barriers to formalization include a significant discrepancy between the organizational structures suggested in the regulatory framework, and the organizational and trade structures found in practice • Key barriers to formalization include the presence of more attractive taxation regimes in other countries, a long and burdensome process of obtaining licenses, high fees for Environmental Impact Assessments (among small-scale miners) • Female miners face disproportionate challenges to formalize and may be inversely affected by standardizes approaches, hence gender-sensitive measure need to be included in the formalization strategy and their important role in the sector needs to be more formally recognized 	2.3.1	To train at least 15 staff members of MMR, 15 staff members of the NMA and 15 staff members of EPA-SL in policy making, ASM formalization and gender issues by December 2022
	2.3.2	To redefine 'artisanal mining' in the amendment of the 2009 Mines and Minerals Act to allow for a larger scale of operation in terms of depth and use of equipment, by December 2020
	2.3.3	To redesign AM licenses in the amendment of the 2009 Mines and Minerals Act to reconcile legal gaps and become more practical in use, and to allow transferability to other (legal) persons by December 2020
	2.3.4	To harmonize surface rent and community development fees in the artisanal licensing process by December 2020
	2.3.5	To realize an increase of 20% in awarding AM licenses (taking 2018 as the baseline) by December 2021 and of 40% by December 2024
	2.3.6	To pursue negotiations with the Mano River Union (MRU) on harmonizing regional fees, tax, and royalty rates by December 2021, and to realize this harmonization by December 2022
	2.3.7	To train at least 100 of NRA's staff on ASM taxation, to strengthen taxation systems, strengthen and provide applicants for AM or SSM licenses with Taxpayer Identification Numbers as part of the licensing process by December 2022
	2.3.8	To include enhanced mine safety and worker health standards for ASGM in the amendment of the 2009 Mines and Minerals Act and to require license holders to appoint a "health and safety officer" by December 2022
	2.3.9	To legally ban the 'worst practices' that have been identified in Sierra Leone's ASGM mines (see section 6.1a) in the amendment of the 2009 Mines and Minerals Act by December 2020
	2.3.10	To include in the amendment of the 2009 Mines and Minerals Act a provision for restricting ASGM activity in NPAs by December 2020
	2.3.11	To include gender-sensitive provisions in the amendment of the 2009 Mines and Minerals Act, fully in line with Sierra Leone's obligations under CEDAW, by December 2020
	2.3.12	To prepare a simple guidebook on applicable regulations, guidelines, penalties, basic mining rules, and general information about the AM sector, and diffuse at least 50 copies in each of the country's 25 identified AGM communities and among all SSGM companies operating in Sierra Leone by December 2020
	2.3.13	To redesign SSM licenses in the amendment of the 2009 Mines and Minerals Act to reconcile legal gaps and become more practical in use, and include in Section 95 (2) on eligibility stronger requirements of employing Sierra Leoneans by December 2020
	2.3.14	To Redesign EIAs in the 2008 Environment Protection Agency Act and the 2009 Mines and Minerals Act by decreasing license fees while including more social and health considerations in the EIA's requirements by December 2020
	2.3.15	To ban the use of mercury in SSM operations in the amendment of the 2009 Mines and Minerals Act by December 2021

2.4 Formalization component 4: organizing the ASGM supply chain

<ul style="list-style-type: none"> • The informality of Sierra Leone's AGM sector is most severe at the mid-stream and downstream of the supply chain 	2.4.1	To investigate the domestic and regional AGM supply chain as part of the 'green gold pilot' of the EITAP 2 project by December 2019
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2.4 Formalization component 4: organizing the ASGM supply chain

<ul style="list-style-type: none"> The informality of Sierra Leone's ASGM sector is most severe at the mid-stream and downstream of the supply chain The informality of this supply chain enhances the risks of gold being used for criminal activities such as money laundering, and may pose further security risks There is a need to provide gold traders with incentives, including attractive alternatives to smuggling the gold to neighbouring countries maintaining more attractive fiscal regimes Pre-financing arrangements and investments from informal gold buyers or other types of 'supporters', compounded by a lack of access to formal finance, undermines the formalization process 	2.4.2	To organize at least 3 workshops to engage dealers, exporters, dealers' and exports' agents, goldsmiths and other relevant stakeholders for mapping gold trade routes and new ways of structuring gold trade, with at least 20% of female and at least 20% of youth participation by December 2020
	2.4.3	To support dealers, exporters, dealers' and exports' agents and goldsmiths to organize into dealers' associations or exporting companies and facilitate the registration of at least 3 such associations/companies by December 2023
	2.4.4	To identify and train at least 20 staff in mercury-free gold processing and refining and gold valuation and employ them in a state-gold buying programme by December 2022
	2.4.5	To establish two accredited regional mineral buying stations in close proximity to some of the identified AM zones which buy mercury-free gold or gold concentrate from the established ASGM entities and SSGM companies; process the concentrate with mercury-free methods; value the gold; and sell it to the Central Bank of Sierra Leone by December 2022
	2.4.6	To establish a system for tracing domestic gold trade from the mine to the point of export and the various channels in between in full compliance with the OECD Due Diligence Guidance standard, which is fully functional and operating by July 2023
	2.4.7	To pilot a certification system that operates along with the traceability system, and possibly an associated community development fund using the premium that may be paid for certified 'responsibly-produced gold' by December 2023
	2.4.8	To investigate the domestic and regional gold supply chain for SSGM companies by December 2020
	2.4.9	To establish a system for tracing domestic gold trade from the mine to the point of export and the various channels in between in full compliance with the OECD Due Diligence Guidance standard, which is fully functional and operating by July 2023

2.5 Formalization component 5: facilitating miners' access to finance

<ul style="list-style-type: none"> Miners, and especially female miners, lack access to formal forms of finance, and typically depend on the investments from informal buyers and other 'supporters' Pre-financing arrangements and investments from informal gold buyers or other types of 'supporters', compounded by a lack of access to formal finance, sometimes results in exploitative situations, and undermines the formalization process and the transition to mercury-free technology The requirements of financial institutions are not well aligned with the realities of Sierra Leone's ASGM sector 	2.5.1	To conduct a financial needs assessment among at least 10 ASGM miners in each of the country's 15 most productive ASGM areas, with at least 30% participation of women and at least 30% participation youth, by December 2020
	2.5.2	To organize at least 1 workshop to educate identified financial institutions about the ASGM sector, to sensitize them about the importance of facilitating artisanal miners with access to finance and to obtain their feedback for moving this forward by July 2021
	2.5.3	To train at least 25 ASGM miners in each of the country's identified AM zones, with at least 30% participation of women and at least 30% participation youth, on financial literacy and available financial products by July 2021
	2.5.4	To provide the established ASGM entities, with at least 30% participation of women and at least 30% participation youth, with ongoing assistance on opening bank accounts, developing savings and loans schemes, and access micro-credit by December 2021
	2.5.5	To ensure that at least 5 ASGM entities, with at least 30% participation of women and at least 30% participation youth, have opened bank accounts and have either developed savings and loans schemes or accessed micro-credit by December 2022

2.5 Formalization component 5: facilitating miners' access to finance		
(see previous page)	2.5.6	To ensure that at least 5 additional AGM entities, with at least 30% participation of women and at least 30% participation of youth, have opened bank accounts and have either developed savings and loans schemes or accessed micro-credit by December 2025
	2.5.7	To reserve a dedicated budget of at least \$5,000,000 to assist AGM miners and small traders by December 2024
	2.5.8	To include AM in Sierra Leone's National Strategy for Financial Inclusions for 2017-2020 or for a subsequent period, by December 2020
2.6 Formalization component 6: facilitating miners' access to assistance		
<ul style="list-style-type: none"> • Key barriers to formalization include and a virtual lack of capacity building initiatives among ASGM actors. In short, there is a lack of incentives to formalize, especially among gold traders • Providing AGM miners and small traders with assistance is an important step in the formalization process as it enables these actors to comply with the regulatory framework. • The actual provisions of specific forms of assistance to artisanal and small-scale miners are described under the sections 1, 2.1, 2.2, 2.4 and 2.5 of this table 	2.6.1	To conduct a needs assessment among AGM miners and small gold traders as part of the Baseline Study on Artisanal Mining by December 2019
	2.6.2	To institutionalize expertise and strengthen relevant NGOs and university departments working with AGM miners by including them in at least 5 trainings (on issues relevant to ASGM such as better mining practices, land rehabilitation, formalization, etc.) and 5 policy discussions by December 2024
	2.6.3	To develop an educational programme on AM to educate students and professionals on technical, financial, legal, environmental, health and commercial issues relevant to the sector, and include it in the regular curriculum of at least three relevant disciplines (e.g. geology, environmental science, development, public policy) by December 2024
2.7 Formalization component 7: facilitating miners' access to markets		
<ul style="list-style-type: none"> • Currently, miners (and especially female miners) have limited access to the global market and depend on a long chain of middlemen which typically results in unequal benefit sharing arrangements • Given common global attitudes and stereotypes regarding 'blood diamonds' or 'conflict minerals', there is a need for a more positive rebranding of Sierra Leone's artisanally-produced gold 	2.7.1	To train at least 20 regional NMA officers on gold valuation and value addition by December 2022
	2.7.2	To train at least 15 AGM miners and 10 small gold traders in each of the country's identified AM zones, with at least 30% participation of women and at least 30% participation youth, on gold trade, gold valuation and value addition by December 2022
	2.7.3	To develop and implement a Green Gold marketing strategy and branding campaign for Sierra Leone's mineral sector, present this in at least two fair trade conferences and engage at least 10 different international gold buyers for sourcing such gold by December 2022
	2.7.4	To explore viable business relations between AGM miners and LSM companies operating in the same areas in Sierra Leone by facilitating at least 3 workshops with open discussions between them by December 2022
2.8 Formalization component 8: monitoring and enforcing ASGM regulations		
<ul style="list-style-type: none"> • Other barriers to formalization relate to the limited capacity of local NMA and EPA offices, low wages among compliance officers and porous borders, and related to this, incentives for bribery and corruption 	2.8.1	To task compliance officers under the NMA inspectorate tasked with inspection and technical assistance provision, review the suitability of compliance officers and engage new staff by December 2020
	2.8.2	To establish multi-stakeholder "local oversight committees" that integrate NMA compliance officers, Chiefdom Mining Committees and community members involved in monitoring AM activity in each chiefdom where AM takes place, by December 2020
	2.8.3	To designate unique responsibilities to each oversight committee to monitor AGM operations in certain AM zones and SSGM and AGM operations handling heavy machinery and gold traders operating in predetermined geographical areas by December 2021

2.8 Formalization component 8: monitoring and enforcing ASGM regulations

<ul style="list-style-type: none"> • There are reports of bribery amongst customs and compliance officers concerning informal gold production and trade throughout the country, and in Komahun, there have been reports of extortion of AGM miners by customary authorities • In official terms, regional Engineers, Mine Wardens and MMOs are tasked in each mining region with the monitoring and inspection of AM operations. However, due to the widespread nature of alluvial mining and gaps in sector governance, voluntary governance structures have emerged at township, section and chiefdom levels as Chiefdom Mining Committees that in effect perform monitoring and dispute resolution functions have been established 	2.8.4	To train the staff of all established local oversight committees and provide the requisite monitoring infrastructure including at least motorbikes, communication technology, sampling equipment and drones by December 2021
	2.8.5	To decentralize financial resources to provincial and district-level NMA offices and local oversight committees adequate enough to carry out their mandates and to increase monitoring officers' wages as a disincentive to bribery and corruption by December 2021
	2.8.6	To establish a monitoring system using drones to enable remote sensing for areas that are difficult to access in each AGM chiefdom where informed consent from community and chiefdom authorities has been obtained by December 2021
	2.8.7	To lead ongoing discussions with the MRU for strengthening border controls, and enhance coordination between the various regional institutions mandated with regulating cross-border trade in at least 3 meetings by December 2021
	2.8.8	To train customs officers on curtailing gold smuggling and to increase their wages to disincentivize bribery and corruption by December 2021
	2.8.9	To penalize at least 30% of gold traders and customs officers for 'turning a blind eye' to gold smuggling and engaging in gold smuggling respectively, to establish 1 new mechanism (i.e. whistle blowing policies) to incentivize disclosure of illegal activity, and to ensure that instances of bribery and corruption have decreased with at least 25% by December 2024
	2.8.10	To enforce compliance with either 'soft' coercive measures (such as warnings and fines along with technical guidance) in the case of non-compliance when compliance can reasonably be expected, or with tougher measures (e.g. revocation of licenses) in the case of continued non-compliance when compliance can reasonably be expected among 40% of AGM miners operating in AM zones and among 70% of SSGM companies by December 2024
	2.8.11	To ensure that at least 40% of established AGM entities operating in AM zones are in full compliance with the amended 2009 Mines and Minerals Act by December 2024
	2.8.12	To ensure that at least 70% of SSGM companies are in full compliance with the amended 2009 Mines and Minerals Act by December 2024
	2.8.13	To ensure that in the case of continued non-compliance among SSGM companies which results in large-scale environmental damage, law enforcement agents are trained on human rights and ASGM issues and deployed in relevant areas to enforce compliance among the worst offenders with the use of force (i.e. eviction of such companies) by December 2024

3. Managing mercury trade

<ul style="list-style-type: none"> • Mercury most often reaches miners through informal gold buyers in pre-financing arrangements, and therefore, formalization of the ASGM sector is the most effective way of addressing mercury supply and trade (see above) 	3.1	To investigate mercury supply and trade as part of the gold supply chain analysis of the 'green gold pilot' of the EITAP 2 by December 2019
	3.2	To include provisions in the new regulation on the sound management of mercury to explicitly restrict (ban) mercury trade with the exception of special circumstances enlisted in Article 3, provisions 6 and 8 of the Minamata Convention from 2024 onward, by December 2021

3. Managing mercury trade		
<ul style="list-style-type: none"> Mercury may also be diverted to ASGM from other sectors in which it is used, such as in laboratories There is still a need to better understand the dynamics of informal mercury trade There is need for a regional approach to managing mercury trade 	3.3	To ensure that no mercury from laboratories, and importers of skin lightening creams and other mercury-added products reaches ASGM operations by engaging such stakeholders in at least two meetings or workshops December 2024
	3.4	To train all established local oversight committees and allocate a mandate of on monitoring mercury trade as part of monitoring gold trade by December 2021
	3.5	To train at least 100 customs officers and other NRA staff on monitoring and enforcing illegal mercury trade as part of monitoring and enforcing illegal gold trade, by December 2022
	3.6	To initiate discussions with the MRU for strengthening border controls regarding mercury trade, and enhance coordination between the various regional institutions mandated with regulating cross-border trade in at least 3 meetings by December 2021
4. Stakeholder engagement and awareness raising		
<ul style="list-style-type: none"> Continuous engagement of stakeholders is essential for the effective implementation and review of progress made under the NAP Limited awareness and understanding of mercury's harmful effects among ASGM miners, traders and communities, local health clinics and the population at large 	4.1	To conduct biannual meetings with the NICCM to discuss the progress of NAP implementation and prepare and disseminate meeting reports among its members by December 2020, 2021, 2022, 2023 and 2024
	4.2	To establish a Stakeholder Advisory Group (SAG) composed of the key stakeholders at the community, chiefdom and district levels will be established with the mandate to engage ASGM actors, communities and civil society by December 2020
	4.3	To conduct quarterly meetings with the SAG, each time taking place in another ASGM community, and prepare and disseminate four meeting reports among its members on an annual basis by December 2020, 2021, 2022, 2023 and 2024
	4.4	To conduct at least 25 awareness raising workshops in each of Sierra Leone's identified AGM communities under leadership from women in the SAG by December 2020
	4.5	To organize at least 4 radio shows and 4 television shows about ASGM formalization, mercury use and other issues of the ASGM sector on an annual basis by December 2020, 2021, 2022, 2023 and 2024
5. Public health		
<ul style="list-style-type: none"> Lack of basic safety equipment Poor occupational health, including frequent complaints of back pain and muscle aches resulting from physical demands, coughing resulting from open exposure to dust, cold, fever and skin rashes resulting from working for extended periods in the water, etc. Low capacity of local health clinics, including limited specialized and remunerated staff members, lack of basic equipment and infrastructure, etc. 	5.1	To conduct a field study for collecting primary data about the effects of mercury exposure of other ASGM-related health impacts, and about the level of preparedness among health care providers for tackling such issues by December 2021
	5.2	To develop a curriculum of health issues in AM as part of the curricula developed under the formalization strategy (see above) and include it in the regular curriculum of at least 3 relevant disciplines (including public health) and trainings among local health workers by December 2024
	5.3	Undertake an annual training on ASGM-related health issues and vulnerabilities of women and children among at least 30 staff members and volunteers of each health clinics in close proximity to the 15 main AGM areas by December 2021, 2022, 2023 and 2024
	5.4	To integrate MoHS and MLSS in the NICCM and Community Health Officers in the SAG and ensure their meaningful participation in periodic meetings by December 2020

5. Public health		
<ul style="list-style-type: none"> • Poor access to clean sanitation and drinking water • Lack integration of ASGM-related health issues in community health education programmes • While revenues earned from ASGM activity are widely used to finance school fees, youth and children’s engagement in the sector also increases school dropout • The discovery of new gold deposits sometimes leads to the rushed creation of temporary, ill-maintained settlements where social issues such as drug and alcohol abuse, prostitution and teenage pregnancy tend to be more pronounced 	5.5	To conduct a detailed assessment of existing public health education and promotion programmes in rural areas, and to include ASGM-related health hazards, including but beyond mercury, in such programmes in those areas where ASGM occurs by December 2022
	5.6	To develop Standard Operating Procedures (SOPs) and processes to support engagement and response to ASGM-related health issues and include simple mercury prevention, diagnosis and treatment protocols as part of heavy metal programs by December 2022
	5.7	To provide basic safety equipment, including gloves, mouth caps and first aid kits for all AGM miners, helmets for AGM miners in pits and shafts, and mouth caps for local small gold traders in all 25 major ASGM areas by December 2022
	5.8	To provide basic occupational health and safety trainings to ASGM miners in all 25 major ASGM areas by December 2022
	5.9	To install basic sanitary facilities, including public latrines and sanitary wash facilities in all 25 major ASGM areas by December 2022
6. Protecting vulnerable groups		
<ul style="list-style-type: none"> • Women face significant gendered-challenges in the ASGM sector, while the sector also holds invaluable potential for women’s empowerment in rural Sierra Leone • On several ASGM sites, children are present to accompany their mothers, and in a few sites, they are engaged in lighter tasks to support their parents, exposing them to health hazards • The main root causes of children’s presence and participation in AGM is extreme poverty and a lack of access to free education and daycare 	6.1	To provide vocational training to at least 300 women who wish to pursue alternative livelihoods, covering at least 3 different AGM communities, by December 2022
	6.2	To integrate AGM and women’s role in the sector in various gender action plans and policies under CEDAW by December 2022
	6.3	To investigate children’s presence and participation in AGM in all the countries’ 15 main AGM areas as part of the ‘Baseline Study on Artisanal Mining’, by December 2019
	6.4	To ensure that 50% of under-age children in AGM communities have free access to day care and school programmes as an alternative to AGM by December 2024
	6.5	To ensure that at least 50% of families of children whom have been removed from AGM sites but don’t have effective access to free day care or education, have received compensation in the form of social protection programmes and/or subsidiary support, by December 2024
	6.6	To ensure that at least 50% of children working in AGM who do not have effective access to free day care, education or compensation, have received school kits so that they can continue learning besides their work by December 2021

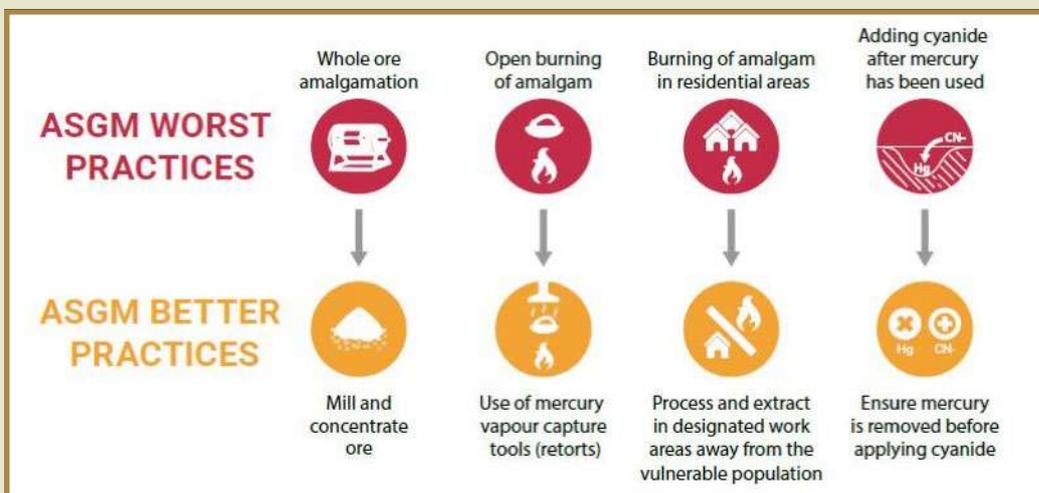
6.1 Strategies

This section describes a set of implementation strategies for realizing the national vision for ASGM and the objectives listed in the previous section. Given that the use of mercury and other negative impacts of the ASGM sector are for a large part consequences of the sector's deeply-rooted informality and (related) limited access to assistance, the formalization strategy and the strategies for eliminating worst practices and introducing better mining practices form the cornerstones of Sierra Leone's NAP. But taking a holistic perspective, several other strategies are needed. Specifically, strategies for managing mercury trade, stakeholder engagement, public health, protecting vulnerable groups & empowering women, and awareness raising, are equally discussed under this section.

A. Actions to eliminate worst practices

This implementation strategy targets the worst practices that have been observed in Sierra Leone's ASGM sector. The 15 communities and respective mining sites visited (with references to the ASGM Overview report) are summarised in terms of geology and mining practices in annex 2. First, taking a global perspective, the figure below shows the worst practices to be eliminated in ASGM as outlined in Annex C of the Minamata Convention, to be replaced by better practices.

FIGURE 7 From worst practices to better practices in ASGM



In Sierra Leone, mercury use was reported in only three out of the 15 localities visited during the time of research: Baomahun (AGM), Komahun (AGM) and M&S Ventures (SSGM). Altogether, two worst practices have been observed in terms of mercury use:

- Open burning of amalgams
- Burning of amalgam in residential areas

The use of whole ore amalgamation and cyanide leaching in sediment, ore or tailings to which mercury has been added, were not observed nor reported during the field study.

Open burning of amalgams

This is considered as a poor practice during the processing and refining of gold. Hand mixing of the concentrate with mercury creates a liquid pool containing all the available gold (amalgam), which is carefully separated/drained from the remaining concentrate. The amalgam formed from the concentrate by the addition of mercury is burned in open air, thereby releasing mercury as a highly toxic vapour, which is colourless and odourless. To date, no mercury capturing devices such as retorts or fume hoods have been used in Sierra Leone to trap the mercury released from the burning of amalgams and thereby minimise the risk of human exposure to mercury vapours.

However, the use of retorts and other mercury-capturing devices such as fume hoods is deemed inappropriate in Sierra Leone's ASGM sector since they could easily be mishandled and multiply health and environmental risks. Indeed, several precautions need to be taken when using retorts (including storage) and the handling of contaminated vessels can also become hazardous to women and children within the community. Moreover, they would still incur significant costs without addressing miners' dependence on mercury or improving gold recovery. As an alternative, tall chimneys could arguably be built to reduce the risk of human inhalation of mercury vapour if large quantities of mercury are used. However, they would eventually still release the vapour into the atmosphere several feet above ground, thereby contaminating the global environment, and equally do not enhance gold liberation. Instead, to address this worst practice, efforts will focus on improving gold recovery and decreasing miners' dependence on mercury (see section 6.1c).

Burning of amalgams and gold purification with acid in residential areas

In Baomahun and Komahun, amalgams are mostly burnt at AGM sites up on the hills, although it has also been indicated that mercury amalgams have been burnt in the community in Komahun. In Komahun, many of the miners are convinced that the only way to get the remaining gold from the tailings is by using mercury. It is important to note that, although women are involved in washing ore tailings, the burning of the amalgams is principally done by the men. Nevertheless, since the amalgams are burned in the community, they still are still exposed to mercury vapours.

Similarly, the use of acid for gold purification in residential areas is considered a worst practice. Concentrated acids such as nitric and hydrochloric acids are strongly corrosive to body tissue, especially eyes and skin, and are toxic when inhaled. To prevent such health impacts, personal protective equipment must be worn during their handling such as wearing chemical-resistant gloves and aprons, chemical splash goggles. There is also the risk of spillage that could affect surface or ground water sources and do indirect harm to human beings.

To address this worst practice, (in addition to strategies suggested in Section 6.1c), buffer zones where amalgam burning and acid purification may take place should be introduced and enforced, in residential areas. Such zones should be at least 500 meter away from ground and surface water sources to avoid spillage and contamination of soil and pollution of the water source through surface runoff. Likewise, they should be at least 500 meters away from residential areas, schools, markets and any other areas where children and women regularly come.

In addition to this, specific precautions need to be taken with respect to the safe handling and storage of mercury, including the following:

- ✓ Mercury should be stored safely at all times when not used: in a secure location that is inaccessible to children; and in unbreakable air-tight containers, durable glass or plastic vessels that are covered

with a thin layer of water (e.g. 1 centimetre) to prevent mercury evaporation.

- ✓ Mercury should NOT be stored in a domestic residence.
- ✓ Stored mercury should be properly labelled as ‘mercury’ and as ‘toxic’
- ✓ No person should discharge mercury-contaminated tailings into a water body or in places susceptible to flooding.

Likewise, specific precautions need to be taken with respect to the safe handling and storage of acid, including the following:

- ✓ All acids need to be labelled and stored in a dedicated wooden cabinet with a lock fixed on it
- ✓ All acids need to be stored away from incompatible materials such as organic compounds, metals, alcohols or moisture
- ✓ Plastic or rubber safety bottle containers are to be used when transporting acids with the lids firmly fixed
- ✓ Proper ventilation must be ensured whenever acids are used
- ✓ Spill kits such as sand need be used to control spillage
- ✓ Disposal of acids must be done in accordance with environmental regulations

Although mercury use is currently limited to three areas in Sierra Leone, there is a risk that it will further spread as miners tend to migrate and may take the amalgamation practice with them, and as miners in other areas may start using mercury in view of declining near-surface deposits. Therefore, in all ASGM areas, a sensitization programme will be implemented among ASGM miners and surrounding affected communities. Such a programme will highlight the dangers of mercury amalgam and acid burning in residential areas, and involve discussions about designated areas (the discussed buffer zones) where mercury amalgamation and the burning thereof can take place. More information on this is provided in section 6.1h.

B. Sierra Leone’s ASGM formalization strategy

Formalization has been recognized as a necessary step for the effective addressing of mercury use in the ASGM sector, since it can facilitate miners’ and traders’ organization, education, access to assistance, and the regulation of gold and mercury trade.^{69,70} In Sierra Leone, mercury reaches ASGM areas through informal gold buyers, and for this reason alone, the formalization of the sector is indeed a precondition for effectively addressing mercury use in the ASGM sector. Besides this, it creates an enabling environment for each of the implementation strategies outlined in this document. Indeed, the importance of ASGM formalization goes far beyond the repercussions of mercury use. As reflected in the Artisanal Mining Policy 2018, AM formalization is of paramount importance for addressing the “economic, social, health, safety, and environmental protection issues arising from the artisanal mining sector”, and for ensuring that Sierra Leonians fully benefit from the sector’s potential. The MTNDP reflects GoSL’s commitment to this issue, which lists formalization of the AM sector as the second priority for policy action in the mining sector.

While the strategy presented here is specific to the ASGM sector, it can also be used for Sierra Leone’s

69 Swiss Agency for Development and Cooperation, 2011. SDC experiences with ASM Formalization and Responsible Environmental Practices in Latin America and Asia (Mongolia). <http://asmhub.mn/en/files/view/493>

70 UNITAR & UN Environment, 2018. Handbook for Developing National ASGM Formalization Strategies within National Action Plans. UNITAR & UN Environment, Geneva. <https://www.unitar.org/cwm/mercury-0>

wider ASM sector, although various steps may need to be added and nuances made to account for the mineral-specific nature of diamonds and coltan. Where relevant, reference is made to AM or ASM.

The MMMR and NMA are the key institutions mandated with regulating and supporting Sierra Leone's mining sector, and will lead the country's efforts in formalizing the ASGM sector. Besides these institutions, many other MDAs and other stakeholders from civil society and the private sector have a role to play in the formalization process. Therefore, the present formalization strategy has been developed based on the stakeholders' inputs acquired through the NAP's stakeholder engagement workshops. Table 6 in Section 6.1e contains a list of key stakeholders and their (potential) roles in the formalization process.

The formalization strategy described here operationalizes many of the guidelines presented in the Artisanal Mining Policy 2018, and has been designed in line with the human rights-based approach, process and concepts described in the Formalization Handbook. It explains the rationale and principles around the comprehensive list of formalization objectives that has been presented in section 5. Given the heterogeneity of Sierra Leone's ASGM sector, the strategy includes a segmented approach with unique but mutually reinforcing approaches for the three subsector that were identified in section 4:

- alluvial AGM
- hard rock hard rock AGM
- SSGM

Together, these segmented approaches will form the basis of one overall ASGM formalization strategy, which is organized around the following structure:

1. Selection of segmented approaches towards ASGM formalization (discussed here)
2. Selection of steps (discussed here)
3. Work plan (discussed in section 6.2 along with the NAP work plan)
4. Outreach plan (discussed in section 6.1h along with the NAP's outreach plan)
5. Allocation of financial resources (discussed in section 6.2 as part of the NAP's work plan)
6. Monitoring and evaluation (M&E) process (discussed in section 7 as part of the NAP's M&E process)

1. Selection of segmented approaches towards ASGM formalization

In line with the tools presented in the Formalization Handbook, two unique approaches have been selected for the three subsectors of ASGM. This has been based on a thorough analysis of three key considerations to determine the feasibility and desirability of each approach:

- The existing regulatory, enforcement and technical assistance capacity of NMA, NRA, EPA and other institutions
- The nature of the respective ASGM subsectors (including aspects such as miners' and traders' mobility, willingness to formalize, and specific barriers to formalization).
- National priorities (including notably the development priorities listed Sierra Leone's medium term National Development Plan, and the National Vision for ASGM presented in Section 4 of the present NAP document)

1.1. Alluvial AGM: formalize part of the subsector in AM zones

Alluvial AGM constitutes by far the largest ASGM subsector in Sierra Leone, both in terms of employment and production capacity. A unique characteristic of the subsector is that it is very mobile (miners move rapidly between different areas to mine gold) and that the subsector is geographically spread over a large part of the country's surface, as further detailed in section 3.4 (see notably Figure 1). This poses serious challenges in monitoring the respective operations as well as for enforcing the law and providing assistance, and the requisite capacity for these tasks is not deemed sufficient in all of the areas where such operations occur. At the same time, in comparison to hard rock AGM and SSGM, the environmental and health costs are less alarming (though still concerning). It was therefore decided that it is not feasible to formalize the entire subsector.

Nevertheless, it has been judged that under ongoing capacity building initiatives, sufficient regulatory, monitoring, enforcement and technical assistance capacity can be developed among relevant agencies in those areas where alluvial AGM is most active. Therefore, it has been decided to establish AM zones in identified alluvial AGM areas where the workforce and production is relatively large, and/or where environmental impacts are most concerning (see table 3 below). In other alluvial AGM, a 'promote good practices' approach will be adopted. Under this approach, GoSL encourages alluvial gold miners and traders to use good practices through education, demonstration, and assistance, to ensure protection of human health, the environment, and human rights⁷¹. While those areas will still be monitored, the law will only be enforced where some of the worst practices are used.

1.2 Hard rock AGM: formalize the entire subsector in AM zones

Hard rock AGM is a lot smaller and only limited to a handful of areas in Sierra Leone. This subsector is also less mobile and more permanent because it takes a longer time to exhaust the gold in hard rock mines, which is generally richer in purity. Moreover, miners in this subsector are more organized than in alluvial AGM, because there are more steps in the mining and comminution process which requires a more specific division of work and hence more coordination. For these reasons, it has been decided to establish AM zones for all those places where hard rock AGM occurs, with the aim to formalize all actors of this smaller subsector.

The table below lists the tentative areas where AM zones may suitably be established for both alluvial and hard rock AGM, while other areas may later be added based on the results of a geophysical survey that is currently undertaken, as well as changes that may occur in ASGM activity. Zones for artisanal and small-scale diamond and coltan mining may also be added as part of a wider ASM formalization strategy.

⁷¹ This is reflected by the fact that alluvial AGM miners who operate in areas that are not targeted to become AM zones are included in relevant assistance activities described under this strategy and under other strategies described in section 6.1

Table 3

Tentative list of AM zones

Localities	Est. workforce*	Est. annual Au production (g)*	Type of AGM	Notes
Laminaya	508	11.69	Alluvial	Significant gold production
Kampala	265	7.71	Alluvial	Significant gold production
Dalakuru	143	20.74	Alluvial	Significant gold production
Yele	63	2.53	Alluvial	Modest gold production but many women panning gold in the river
Makong	104	5.41	Mixed	Modest production but likely to stay for some time
Masumbiri	122	14.58	Mixed	Dayu Mining (LSM company) is mining gold concentrate in agreement with China KingHo who owns an exploitation license -> need for an agreement to allocate land for artisanal gold miners
Maranda	20	3.36	Hard rock	Modest production but likely to stay for some time
Komahun	3909	330.90	Hard rock	Wongor Mining Company is currently applying for a mining license and is likely to take over a large part of the area -> need for an agreement to allocate land for AGM miners
Baomahun	69	9.13	Hard rock	Algolm Gold (LSM company) is currently doing preparatory work under an exploration license and is expected to start mining in 2020 -> need for agreement to allocate land for AGM miners

*The workforce and production estimates are based on field research carried out in January-February 2018, and the situation has likely changed after the ban on artisanal mining in Komahun in late 2018

The AM zones will be demarcated and established in close collaboration with community and chiefdom leaders and the miners and traders themselves. As highlighted in the above table, there are also several SSM and LSM companies exploring or mining gold in some of the identified areas. Therefore, the establishment of AM zones will require negotiations with those companies in the search of win-win solutions and the optimal allocation of land for the respective scales of operations.

1.3 SSGM: formalize the entire subsector (without zones)

In view of the much larger social and environmental impacts stemming from SSGM companies, as well as the concerns that have been widely expressed over the companies' – which are all foreign owned – tendency to use their economic power to take over land from Sierra Leonian AGM miners, GoSL has decided that it is necessary to fully formalize this subsector. Although monitoring and enforcement capacity will need to be significantly strengthened to realize this goal, it is deemed feasible since the SSGM companies are currently still small in number.

2. Selection of steps for the identified approaches

Based on the above, the following two general approaches are taken towards formalizing ASGM in Sierra Leone:

- Formalizing AGM (both alluvial and hard rock) in AM zones and promoting good practices among AGM miners in other areas
- Formalizing all SSGM companies and enforcing the law among non-compliers

For each of these approaches, several steps are now selected.

Formalizing AGM in AM zones

The approach of formalizing in AM zones follows the six key components of the formalization process described in the Formalization Handbook. Under these six components, several steps have been selected for AGM. This includes both the 'key steps' presented in the Formalization Handbook, as well as additional steps that are specifically relevant for Sierra Leone's AGM sector. Some of these steps concern initiatives that are currently planned to be undertaken in Sierra Leone.

The selected steps are illustrated in figure 7 on the next page.

Formalizing the entire SSGM mining sector

The approach of formalizing the entire SSGM sector follows the same components and builds on the steps undertaken for formalizing AGM, which includes several steps that are of relevance for the entire ASGM sector. In addition, several specific steps are included for SSGM.

The selected steps are illustrated in figure 8 on the subsequent page (building on the steps for AGM).

In the text below, the steps under each of the key components are briefly discussed. Under each component of the formalization process, the envisioned steps for formalizing AGM in AM zones and promoting good practices among AGM operators outside of those zones are first discussed (under component Xa). Subsequently, building on these steps, which include some steps that are also applicable to SSGM, additional steps for the same component will be described that are exclusively about formalizing the entire SSGM sector (under component Xb). In section 5, the objectives for the formalization strategy are listed. This includes objectives for each of the steps illustrated and discussed below. These objectives also lists some of the key issues, challenges and considerations for each component, which have informed, along with section 3.17 about the status of ASGM formalization in Sierra Leone, the rationale for the formalization strategy. This text below describes how these issues will be addressed.

Component 1a: Geoprospect and allocate land for AGM

This component constitutes the cornerstone for formalization. In order to allocate land which is suitable for AGM, one need to know where the more shallow gold deposits are and whether the land could be made available. At present, there is still limited geological information available, especially concerning information of relevance of artisanal miners. However, the ongoing EITAP (Extractive Industries Technical Assistance Project) 2 project with the World Bank, and in particular component B 'Enhance geological knowledge' will solve a large part of this problem soon.⁷² This initiative includes the execution of a nationwide airborne geophysical survey, geological and geochemical mapping in the field, and integration of geodata, resulting in a geo-database and geological maps that include AM deposits and areas. Whereas the geophysical survey is general in scope, it will be ensured that the geological and geochemical mapping in the field pay specific attention to identifying shallow ore deposits that are suitable for AM operators.

⁷² <http://documents.worldbank.org/curated/en/272761511578835426/pdf/SIERRA-LEONE-PAD-11032017.pdf>

This will be complemented with seeking additional sources of geodata of specific relevance to AM operations, such as from LSM companies and universities that have previously done prospecting in Sierra Leone, as well as from AGM miners themselves to share local knowledge. All this information will be made publicly available, which will allow miners and other stakeholders to propose new AM zones.

The second step addresses land use mapping. While there is already a good understanding of the presence of SSM and LSM mining companies, other types of land use and potential land disputes in the identified areas will be mapped in coordination with the Ministry of Lands, Housing and the Environment (MLHS), chiefdom and community authorities, landowners, miners and other local stakeholders. Therefore, land use will be mapped in at least 7 districts and 14 chiefdoms where AGM occurs, and possibly more in light of new information about ASGM activity⁷³. Specific attention will be paid to the presence of areas that are most vulnerable to ASGM's impacts, such as water bodies, forests, animal habitats, etc. Based on the land use mapping, suitable locations for AM zones will be identified in coordination with stakeholders.

Subsequently, the government will use its executive power to designate the authority to establish AM zones and will stipulate in the amendment of the 2009 Mines and Minerals Act the legal provisions for such zones. Then, in coordination with the stakeholders mentioned above and with the support of officers from the NMA, the identified AM zones will be demarcated and reserved for the exclusive use of AM activity. Importantly, this will include discussions with chiefdom authorities and landowners to ensure that formal and traditional systems of land use are aligned with each other, to prevent potential confusion and conflict. This will also include discussions with female miners to ensure that women gain better access to land suitable for AGM.

⁷³ The respective districts and chiefdoms are mapped and presented in table format in table 3, page 53 of the ASGM overview in (see footnote 12)

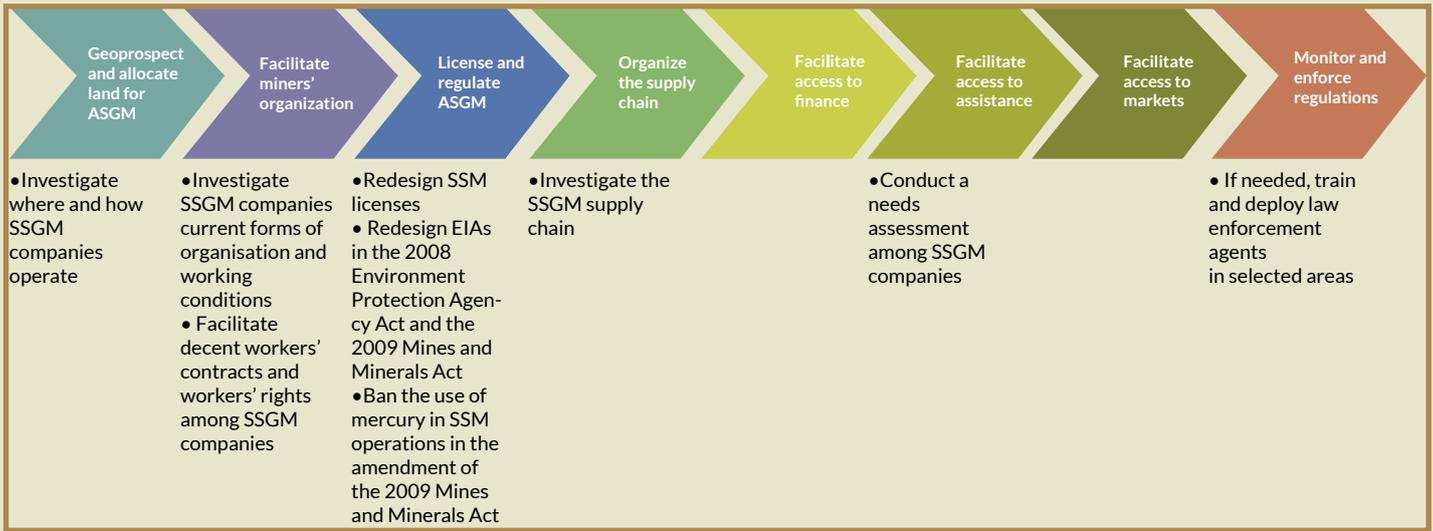
FIGURE 8

Components and corresponding steps for formalizing AGM in AM zones



FIGURE 9

From worst practices to better practices in ASGM



Moreover, there will be negotiations with the identified SSM and LSM companies (see table 3), which need to result in formal agreements about sharing gold-rich ore deposits. GoSL will establish an engagement mechanism between ASGM and LSM operators and mediate between such parties in the search of workable solutions. In such mediations, suitable plots of land will be identified for either type of operation and designated to the respective party. Moreover, different opportunities for collaboration will be explored. For example, LSM companies could potentially invite artisanal miners to process their tailings and provide support in mine closure planning, which can extend the lifespan of a mineral deposit due to artisanal miners' lower operating cost. Likewise, they could potentially buy AGM miners' gold at competitive prices, and provide trainings on enhanced mining practices.

For those AGM miners operating outside of the identified AM zones, the NPAA, EPA and NMA will monitor, together with local community and chiefdom authorities, if they operate in NPAs. If this is the case, the respective miners will be supported to be transferred to an AM zone, or they will be included in an alternative livelihoods programme (see section 6.1g). Similarly, based on the findings from the land use mapping, any other land disputes between AGM miners and other land owners will be mediated and resolved, including with compensation packages.

Finally, as part of the promote good practices approach, GoSL will build NMA's capacity to provide AGM miners with training on "SMART mining" approaches that includes improved exploration methods to better assess mineral deposits so as not to waste time mining earth and to generate at least rudimentary mapping. Moreover, NMA's staff members will be trained on geoprospecting and gender issues, including women's important role in Sierra Leone's AGM sector and the specific challenges they are faced with.

Component 1b: Geoprospect and allocate land for SSGM

In contrast to AGM, land will not be reserved for SSGM in advance, but may be allocated on a case-by-case basis upon careful consideration of the current land use and the company's legal status and social, economic, environmental and health impacts. Given that many SSGM companies present in Sierra Leone currently operate on a rather secretive basis and in a largely grey area, such decisions cannot be made until they are further investigated. Therefore, as a part of the land-use mapping exercise, the presence of SSM companies mining gold will be thoroughly investigated. Following the recommendations from the ASGM Overview, such an investigation will look at where the companies operate; what machinery and mining practices (including mercury) they use; what ownership and management structure is in place; under what circumstances they have accessed the land and under which legal conditions they operate; what (potential) environmental damage may be caused by the operation; and what mitigation measures they are undertaking (as should be spelled out in their environmental management plans).

In the case of land disputes (which can also be disputes between SSM and LSM companies), the same process as the one described for AM will be followed. In a situation where SSM companies are found to operate in NPA's, the law will be enforced and the companies will be evicted (see also component 6).

Component 2a: Facilitate AGM miners' and small gold traders' organization

As described in section 3.6, although AGM miners are mostly organized in small informal groups and have quite an elaborate structure of work division and benefit sharing, there is no single registered entity of gold miners in Sierra Leone. Whatever new and formal structures may be introduced, they need to build on the organizational structure that is currently in place. Therefore, as a first step, more information about AGM miners' organization and related social arrangements will be collected during the EITAP 2 project, most notably under component C1b 'Baseline Study on Artisanal Mining'.

The next step will be to engage miners, small traders and their communities in workshops where they are educated about the formalization process, and informed about the various legal forms of organization (including cooperatives, partnerships, joint ventures and body corporates) and their associated rights, duties, requirements and benefits (to stimulate miners' willingness to formalize). In such workshops, participants will be stimulated to further discuss which forms of organization would be most suitable in their respective areas, based on the structures that are currently in place.

In subsequent workshops, the NMA and local community and chiefdom authorities will supervise democratic elections for appointing leadership and management roles among the selected entities. Specific attention shall be paid to ensuring that youth and women have equal opportunities to be appointed to such positions, and women will receive special assistance in forming their own entities. Such workshops will be organized in each of the identified areas where AM zones are established, and could potentially be extended to non-AM zones to facilitate the organization of miners as part of the 'promote good practices' strategy (without necessarily pursuing their full formalization on the short term). After the meetings have taken place, the NMA and respective local authorities will provide ongoing assistance to facilitate the official registration of mining entities and the acquisition of surface rights and mining licenses (see the component below for more on such legal issues). In addition, the established mining entities will be trained on cooperative governance, business management, and gender equality (equally covered in the handbook just mentioned). Among cooperatives, such trainings will include education of 'cooperative principles' such as democratic and inclusive governance, economic participation of members, provision of training and information, etc.

Finally, once several ASGM entities have been established, a national federation or union will be established as an umbrella organization of those entities. This federation or union will be established with the conduct of democratic elections where all members of ASGM entities will be invited participate. Its mandate will be to address ASGM miners' and small traders' emerging needs and to represent their interest to GoSL and other key stakeholders in the sectors.

Component 2b: Facilitate SSGM companies' organization

Since the organization of SSGM companies requires less facilitation and assistance, the interventions under this component will mainly serve to ensure that the companies provide solid working conditions for their employees. First, as part of the investigations into SSGM companies mentioned under component 1, the companies' current forms of organization will be investigated. This will include an investigation of the number of Sierra Leoneans engaged, the management structure, the division of work among workers, and working conditions and the use of labour contracts. The latter item will include things such as remuneration, contract duration, workers' rights, training and education, prospects of professional and personal growth, social benefits, occupational health and safety, access to clean water, food and sanitation, etc..

Based on such investigations, GoSL will prepare a template of basic contract terms that include minimum living wage requirements, overtime, and other appropriate entitlements in line with the scale of work. These contracts will then be diffused among SSGM companies who will be required to prepare contracts for their employees which correspond to the standards set forth in this template. Where applicable, such templates can then also be amended and eventually distributed for use among mining entities that are established for AGM miners (once they have reached a minimum level of capacity).

Component 3a: License and regulate AGM

This component concerns a cross-cutting issue and its various steps may be undertaken in different parts of the implementation of the present formalization strategy. First, the policy development and formalization capacity of NMA and MMR will be strengthened through training of its key staff members working on ASM issues. This will also include a training on gender issues in the ASGM sector as mentioned under the first component.

Subsequently, as part of the ongoing amendment of the 2009 Mines and Minerals Act, AM will be re-defined to allow for a larger scale of operation in view of gradually declining near-surface diamond and gold deposits. The new definition will allow for a greater depth, a greater surface area, use of more advanced machinery, and a larger number of miners per mining license.

This new definition will be reflected in the design of AM licenses, which will, as recognized in the Artisanal Mining Policy 2018, be modified to reconcile legal gaps and become more practical in use. Specifically, the role of Mines Managers, which are currently described in Section 91(1d), will be discarded because they are not appointed in practice. Instead, the responsibility of the license holder and the role of ‘gang leaders’ in supervising mining and exploration activities will be recognized. Moreover, the role of ‘supporters’ in financing gold production (and in some cases buying gold) will be recognized, and they will, along with local small traders, be stimulated to participate in the AGM entities that have been described under the component of organization above. License holders will be required to disclose their relation with such supporters and to report the investments their mines receive from them, in line with Sierra Leone’s commitment to adhere to EITI standards. In addition, the mining licenses will be made transferable to other (legal) persons and upgradable to small-scale licenses to give miners more flexibility in their operations, to ensure that suitable ore deposits are used, and to incentivize the use of better mining practices.

The various rates paid in the licensing process will further be harmonized. In particular, since the fees that are paid to Chiefdom Mining Committees and other local authorities (e.g. surface rent and community development fees) vary from chiefdom to chiefdom, allowing for discretion and causing limited accountability among such authorities, the payment of license fees will be instituted through clear guidelines and procedures to be evenly applied throughout the country. Moreover, the role of various subcommittees at the chiefdom and district levels will be recognized and incorporated in the Act, and their capacities will be strengthened.

Likewise, negotiations about harmonizing tax and royalty rates with Guinea and Liberia (who maintain significantly lower rates, incentivizing gold smuggling) will be pursued with the MRU, in an attempt to discourage smuggling and increase government revenues from the sector. Moreover, the taxation system implemented by NRA will be strengthened, NRA’s staff members will be trained on taxing ASGM miners and traders, and applicants for AM as well as SSM licenses will be issued with Taxpayer Identification Numbers (TINs) as a condition for obtaining such licenses.

As part of the amendment of the 2009 Mines and Minerals Act, enhanced mine safety and worker health standards and regulations will be prepared. Moreover, license holders will be required to appoint a “health and safety officer” with whom NMA can liaise. For further measures on occupational health

and safety, see section 6.1f (public health strategy). Similarly, measures for environmental protection will be included. First, the use of the 'worst practices' identified in the Minamata Convention on Mercury, as well as the purification of gold with nitric or hydrochloric acid in residential areas (as described in section 6.1a), will be banned. Moreover, ASGM activity in NPAs will be forbidden. Besides this, practical and regulatory guidelines on land rehabilitation and mine closure will be designed specifically for AGM and specifically for SSGM in consultation with such operators, and disseminated among them.

As a Party to the Convention on the Elimination of All forms of Discrimination Against Women (CEDAW), Sierra Leone is committed to eliminate all forms of discrimination against women, improve the de facto position of women, and address cultural and structural barriers to equality. Although the 2009 Mines and Minerals Act does not explicitly discriminate against women, it will be amended to acknowledge the important role of women in AGM and include specific provisions to ensure women's inclusion in the formalization process and to improve gender equality in the sector. See section 6.1g for more on gender equality and women's empowerment (as well as on protecting children) in ASGM.

Finally, AGM miners, SSGM companies, traders, community leaders, local councils and civil society groups will be educated about the regulatory framework. To this end, an easy to read guidebook on applicable regulations will be prepared, translated into local languages and distributed to all stakeholders. Similarly, guidelines on AM and SSM, including basic mining rules, penalties, facts and information will be made available to these stakeholders. Moreover, radio and television programmes will be used to further educate stakeholders about the regulations, and local stakeholders will periodically be included in workshops to contribute to the ongoing development of the regulatory framework.

Component 3b: License and regulate SSGM

Under this component, additional steps will be undertaken that relate exclusively to SSGM companies. Similar to the AM license, the SSM license will be redesigned to reconcile legal gaps, as may be identified through the investigation of SSGM companies' management and business structures. Moreover, the eligibility for the SSM licenses (Section 95 (2)) will be amended to include the requirement that a body corporate that is registered in Sierra Leone should not only have 25 percent of its shares owned by Sierra Leoneans, but also that Sierra Leoneans represent at least 25 per cent of its employees.

Subsequently, similar as with AGM, enhanced mine safety and worker health standards and regulations will be prepared and enforced for SSGM. Moreover, as part of the amendment of the 2009 Act, measures for environmental protection will be revised. First, the fees for the EIA will be decreased to enable and incentivize more miners to apply for SSM licenses and encourage formalization. At the same time, the contents of the EIA will be revised to also include more social and health considerations, to become an ESHIA (Environmental Social and Health Impact Assessment). Moreover, the environmental licenses will only be awarded by EPA if the EIA (or ESHIA) contains a detailed environmental management plan, including concrete steps for land rehabilitation of mined out areas. In addition, while mercury use will still be temporarily allowed in AM, given the operators' low financial and technical capacity, mercury use will be banned in SSM from as the operators can be reasonably expected to adopt more advanced mining practices.

Component 4a: Organize the supply chain for artisanal gold

GoSL recognizes that it needs to provide gold traders with more attractive alternative to smuggling the gold to neighbouring countries that maintain more attractive fiscal regimes. As has already been described under the previous component, GoSL will collaborate with the MRU to harmonize this regime, and other initiatives looking to provide incentives will be described under this component. Before taking further steps, GoSL will first further investigate the complex domestic and regional supply chain, which was investigated as part of the ASGM overview and is illustrated and described in section 3.8,

and elsewhere.⁷⁴ This will be done as part of the ‘green gold pilot’ of the EITAP 2 project⁷⁵. Specific emphasis will be put on further exploring gold trade routes, the various stakeholders involved in Sierra Leone, Guinea and Liberia, the distribution of financial flows, the organization of traders, and associated informal trade arrangements.

Subsequently, given that many local businessmen trade gold as a secondary business, in addition to other commodities, the possibility of awarding “entrepreneur export licenses” will be considered. Such a license could allow individuals whose primary business is the import and selling of goods (clothing, motorbikes, etc.) to register as gold exporters at a preferential rate, and can help formalize a structure that is already in place informally. Moreover, workshops will be organized where these actors and relevant local stakeholders will be engaged to discuss current trade routes and new ways of structuring gold trade. Furthermore, they will be informed about the advantages and possibilities of organization. In such workshops, women involved in gold mining will be encouraged and supported to become gold dealers too, and will be provided with the necessary information about gold trade. After this, the dealers, exporters, dealers’ and exporters’ agents and goldsmiths who work together will be supported to organize themselves into a dealers’ association or exporting company. This will be done in a similar way as described under component 2. Moreover, they will receive support in registration and acquisition of dealers’ licenses.

Parallel to the above, a State Gold-Buying Programme (SGBP), which competes with other market players, will be piloted. First, technical staff members of NMA will be selected and trained on mercury-free gold processing and refining and gold valuation, and the requisite facilities will be installed. Secondly, two accredited regional gold-buying stations will be established in close proximity to some of the identified AM zones, especially those who are most advanced in the formalization process and where regulatory capacity is strongest. These stations will be established in coordination with the engaged gold traders described above, some of whom may be included as staff members of the gold-buying station. Members or leaders from local communities and Chiefdom Mining Committees will be engaged for monitoring the stations’ activities to ensure local ownership and accountability. If effective, the SGBP may be scaled-up with the establishment of gold-buying stations in other areas in the future.

In terms of functioning, the established AGM entities can directly sell their gold or gold concentrate to the gold-buying stations. There, they will receive a guaranteed percentage of the world market price and where no taxes or royalties will be levied. The stations will initially buy the gold on the condition that no mercury has been used. Later on, when the mining entities are further strengthened, further requirements may be included, as indicated by voluntary standards such as CRAFT⁷⁶ or FAIRMINED⁷⁷. The stations will have staff with the necessary knowhow and equipment to weigh and value gold, as well as facilities for processing gold concentrate without the use of mercury. As such, they enable miners who currently depend on mercury for gold liberation to sell their produce for a fair price. Once the gold concentrate has been processed, they will sell it to the Central Bank of Sierra Leone. The Central Bank will use this to build up national gold reserves and sell it for hard currency on the international market when the international gold price high.

The figure below illustrates the proposed new structure of Sierra Leone’s gold supply chain. It integrates all the various actors that are currently involved in the supply chain (see figure 3 in section 3.8), and illustrates the planned new structures of AGM entities, SGBPs and dealers’ associations with rectangular boxes around those actors that would be included in them. Note that below the AGM entities, a category of ‘other miners’ is included, which refers to all other mine workers who do not join AGM

74 Hunter, M. & Smith, A., 2017. Follow the Money: Financial Flows linked to Artisanal and Small-Scale Gold Mining in Sierra Leone. Global Initiative against Transnational Organized Crime.

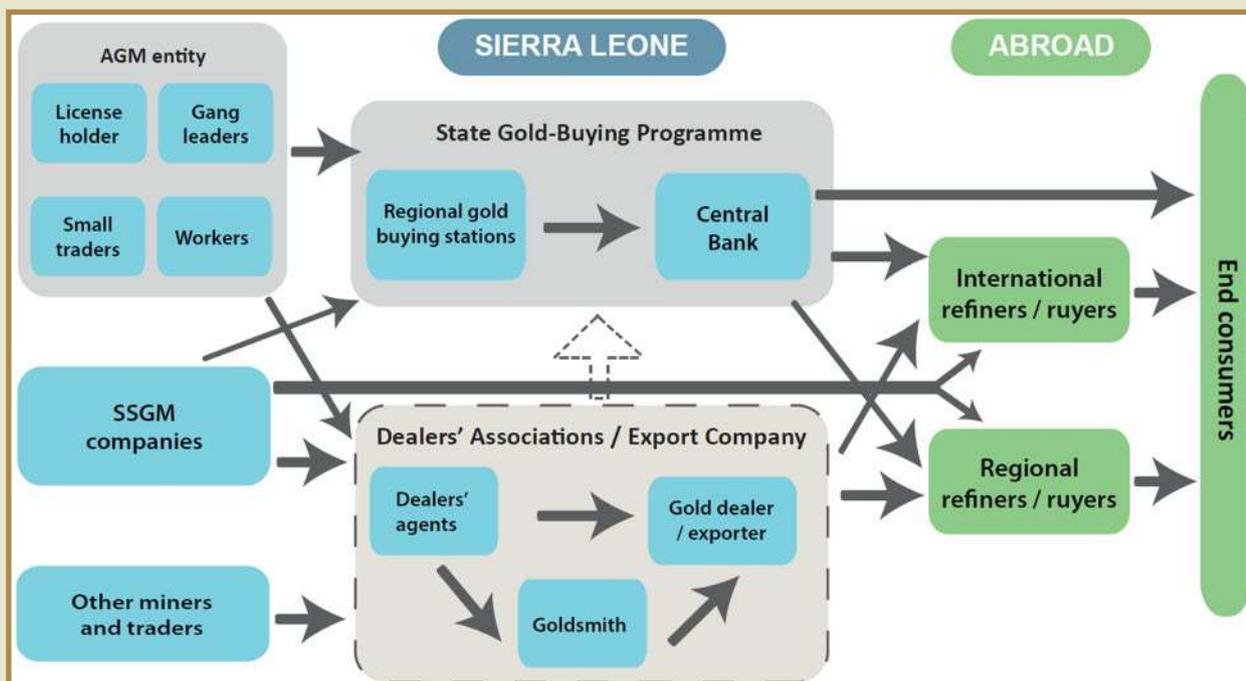
75 In short, the green gold pilot seeks to establish a mercury-free ASGM supply chain and facilitate its access to the market through the creation of cooperatives, among other things

76 <http://www.responsiblemines.org/en/our-work/standards-and-certification/craft/>. Accessed on 22/08/2018

77 <http://www.fairmined.org/>. Accessed on 22/08/2018

entities and who will still be allowed to continue their activities. Also note that the dotted lines around the various gold dealers indicate hypothetical associations/companies as their establishment is less of a priority than the other structures presented with continuous lines. Similarly, the dotted arrow above this dotted structure indicates that their sales to the gold-buying station is only allowed on the condition that their gold or gold concentrate has been produced without the use of mercury.

FIGURE 10 *The envisioned new structure of Sierra Leone's gold supply chain*



Finally, GoSL will establish systems for tracing domestic gold trade from the mine to the point of export and the various channels in between, in full compliance with the OECD Due Diligence Guidance standard. NMA will first establish such a system as part of the SGBP. The traceability system contemplated is two-fold: physical and digital. At a first stage, physical traceability will be ensured by using appropriate transport and logistical means that ensure segregation and security, as well as tagging and tracing bags of gold that are transported between the established mining entities and regional gold-buying stations. As a part of physical traceability, benefit sharing will also be traced with the use of receipt books that were previously developed by NMA. The station's agents will supervise and support the AGM entities in this matter. In the meantime, digital traceability will be explored by NMA, which may (in a second stage) take the form of a blockchain-enabled traceability solution that is currently being tested by global gold supply chain actors.

Traceability will be complemented with certification, wherein traced gold that has been produced without mercury (and later on, possibly with other requirements) will be labelled as 'responsibly-produced gold' and AGM entities which consistently adhere to this standard will be certified. This will follow a process similar to the KPCS that is currently in place for diamonds, but will include several modifications to avoid some of the scheme's deficits (see below). The process will ensure that AGM entities that are certified receive a fair price as well as an additional premium. Such a premium could subsequently be democratically invested in the community, similar to the DACDF. However, when designing such initiatives for AGM, GoSL will ensure that some pitfalls associated with these initiatives are avoided. For

example, it will be ensured that local community members, including typically-excluded groups such as women and youth, will participate in the establishment of such initiatives. Likewise, it will be ensured that community members, chieftom authorities and civil society organizations will monitor and evaluate their implementation. This will help to ensure that the scheme is properly implemented and that benefits of the development fund are effectively allocated to development initiatives that truly serve the local community's development needs.

Component 4b: Organize the supply chain for small-scale gold

Regarding SSGM companies, GoSL will equally first further investigate the supply chain for this subsector, which remains largely unknown to date (most research has focused on AGM). This will be done as part of the research described under components 1b and 2b. Specific emphasis will be put on further exploring gold trade routes domestically and internationally, the various stakeholders involved, the distribution of financial flows, and associated informal trade arrangements between the companies and other traders.

Subsequently, SSGM companies, which are allowed to export directly, will be encouraged to also sell their gold through the SGBP, on the condition that no mercury has been used. For such companies, GoSL will establish systems for tracing domestic gold trade from the mine to the point of export and the various channels in between, in full compliance with the OECD Due Diligence Guidance standard. Incentives could include certification, consistent demand, and a premium price, as described above. The study into the SSGM supply chain will further inform GoSL's strategy for intervening (or not) in this component of the formalization process.

Component 5: Facilitate artisanal miners' access to finance

Another key component in addressing some of the root causes of the sector's informality (poverty, lack of incentives, and the dependence on informal investments) and in facilitating the transition to better mining practices, is facilitating miners' access to finance. As a first step, a financial needs assessment will be conducted among artisanal gold miners and small traders, with a specific focus on women and youth. Such an assessment will investigate their preferences for financial products, their levels of financial literacy, as well as their ability to adhere to requirements set by financial institutions, who will be involved in the assessment.

Secondly, those institutions involved in financial inclusion (the Ministry of Finance (MoF), the Central Bank, commercial banks, rural development banks, etc.) will be engaged in a workshop and sensitized about the importance of facilitating artisanal miners with access to finance. A common barrier is the negative perceptions that such institutions tend to have about the ASM sector. Therefore, such institutions will be educated about the specifics of AGM. For example, it will be pointing out that the sector is not as risky as artisanal diamond mining because the returns from gold are more stable and the recipients of finance are therefore much more likely to pay back loans. The geodata collected under component 1 will also be used here to demonstrate the viability of the AGM sector. Another issue is that the financial products provided by financial institutions and related requirements do not meet miners' needs and capacity. For example, miners typically need relatively small loans that they pay back on the long term, and they typically have no collateral to make available. Using the findings from the financial needs assessment, miners' and the institutions' needs can be better aligned with each other with the aim to identify workable solutions. The establishment of licensed AGM entities and their opening of bank accounts (see below) can further serve to satisfy some of the financial institutions' needs. Based on this experience, interested financial institutions will be identified and engaged during subsequent steps.

Thirdly, AGM miners and small traders in the identified AM zones will be trained on financial literacy, the financial products that are available among the identified financial institutions, and the process for accessing them. Such trainings will be delivered by compliance officers from regional NMA offices and relevant local NGOs, who can continue to provide ongoing guidance as part of their everyday activities after the trainings have ended. Such trainings will specifically target women, who face disproportionate barriers in accessing finance and have particularly low levels of financial literacy. Moreover, the leaders of AGM entities will be targeted with a Train-The-Trainers (TTT) approach, who can subsequently, together with the women, replicate such trainings in their own communities. After this, the established AGM entities will receive ongoing assistance in opening bank accounts at preferential rates, developing savings and loans schemes, and accessing micro-credit. This will specifically target women, who will be encouraged under component 2 to establish AGM cooperatives that maintain such schemes.

Finally, the MoF and the Central Bank will be engaged on an ongoing basis to ensure that a dedicated budget is allocated for assisting artisanal miners and small traders. For example, the National Social Security Insurance Trust (NASSIT) could invest some portion of pension funds as a part of government policy to support AGM miners and small traders. Moreover, AGM will be included in Sierra Leone's National Strategy for Financial Inclusions for 2017-2020, or the subsequent period⁷⁸. Since some of the mentioned strategy's main objectives are to facilitate access to finance for Sierra Leoneans living in rural areas, and in particular for women and youth, it is imperative that the AGM sector is included in this strategy. Budgetary allocations from GoSL are further discussed in section 6.2.

Component 6a: Facilitate artisanal miners' access to assistance

Providing AGM miners and small traders with access to assistance is an important step in the formalization process as it enables them to comply with the regulatory framework. GoSL will ensure that the assistance provided is tailored to artisanal gold miners' and small gold traders' needs by drawing on needs assessments. Such needs have already been reported in the ASGM Overview and other research papers, and they will be more thoroughly investigated as part of the Baseline Study on Artisanal Mining in the ongoing EITAP 2 project funded by the World Bank.

Based on the assessed needs, various forms of assistance will be provided, as different parts of the formalization strategy and the NAP. As has been described in sections 6.1a and 6.1c, technical assistance will be provided through the use of training on better mining practices and land rehabilitation, transfer of technology, and distribution of training manuals on these topics. Moreover, as described in component 1 of this strategy, geodata will be shared with artisanal miners and they will be trained on "SMART mining" approaches after regional NMA staff have been trained on this topic. Besides this, more basic services will be provided to artisanal gold miners and their communities. As will be described in section 6.1f on the public health strategy, GoSL will provide training on occupational health and safety and provide miners and traders with related equipment. Furthermore, as described under component 2, administrative and organizational assistance will be provided. Moreover, as has been described under component 3 of this strategy, miners and traders will be educated about the regulatory framework and handbooks will be distributed about this. Finally, as described under section 6.1g, vocational training will be provided to certain women wishing to pursue other livelihoods. Much of the assistance provided will target the leaders of AGM entities and AGM communities (including women and youth) with a TTT approach, so that they can replicate the trainings on an ongoing basis in their own communities. In this way, the knowledge will become institutionalized in the established AGM entities and communities.

Expertise about ASGM will further be institutionalized in universities and NGOs working with ASGM miners and traders so that they can provide adequate assistance on the long term. To this end, identified relevant institutions will be included in relevant trainings, policy discussion workshops

⁷⁸ <https://www.bsl.gov.sl/SL%20FI%20Strategy%202017%20-%202020.pdf>. Accessed on 30/04/2019.

and meetings on AGM⁷⁹. Moreover, multidisciplinary research into various issues of ASGM will be encouraged among universities to continue developing expertise about the sector.

Subsequently, in collaboration with the Ministry of Education, Science and Technology (MEST) and the mentioned NGOs and universities, a specific curriculum or educational programme on artisanal mining will be developed to deliver training and education on technical, financial, legal, environmental, health and commercial issues relevant to the sector (including the harmful effects of mercury). Such a programme will subsequently be included in the regular curriculum of relevant disciplines, such as geology, mining engineering, sociology, development, environment, public health and public policy. Together with NMA's and EPA's ASM departments, such departments will then be supported to become specialized centers of expertise that carry out interdisciplinary research about the AM sector and deliver regular training on these issues.

Component 6b: Facilitate small-scale miners' access to assistance

Although SSGM companies' needs for assistance are less pressing than those of AGM miners, it is still important to provide them with technical assistance which specifically aims to enable and encourage them to mitigate their environmental and health impacts. This will start with an assessment of their current mining practices and related impacts (discussed under component 1b), which will include a rapid assessment of their training needs for improving their mining practices. Subsequently, as part of the interventions described under the strategy of improving mining practices (sessions 6.1a and 6.1c), those SSGM companies which use mercury, dredge in rivers or cause other significant environmental or health impacts, will receive a training on mercury-free gold production and land rehabilitation.

Component 7: Facilitate artisanal miners' access to markets

Component 4 of this strategy already discussed the organization of the wider supply chain. To decrease miners' dependence on gold buyers and related unequal benefit sharing arrangements, it is important to take further steps to enhance miners' (and especially female miners') access to the global market. For this purpose, GoSL will first provide trainings to staff members of the regional gold buying stations and/or regional NMA offices on gold trade, valuation and value addition. Subsequently, the trained staff will train artisanal gold miners, small traders' and especially female miners on these topics. A strong emphasis will be put on value addition, which is a priority for GoSL as a part of wider efforts to diversify the economy. This part will focus on smelting, weighing and valuating gold and jewelry-making, in collaboration with the country's goldsmiths and small businesses that can support this initiative.

While strengthening the supply side, GoSL will also work on the demand side by liaising with international gold buyers and promoting Sierra Leone's AGM sector. To this end, GoSL will develop a branding and marketing strategy for its mineral sector, where artisanally-produced gold will be branded as a high-quality, poverty-reducing product that has been produced responsibly. The branding strategy will be presented at fair trade conferences where international gold buyers will be engaged for sourcing such gold from Sierra Leone. This will be done simultaneously with the certification and piloting of voluntary standards discussed under component 4.

Finally, in those areas where both AGM miners and LSM companies operate, GoSL will organize workshops or meetings to mediate between both parties to explore viable business relations. For example, LSM companies may be interested in buying gold from AGM miners, thereby facilitating the miners' ac-

⁷⁹ Such institutions will include relevant NGOs working directly with artisanal gold miners, such as Knowledge for Community Empowerment Organization (KOCEPO) and African Youth on Mining and Environment (AYME); relevant university departments such as Fourah Bay College' Geology Department, Njala University's School of Environmental Sciences, and Institute of Environmental Management and Quality Control; Chiefdom Mining Committees; National Coalition on Extractives (NACE); Women In Mining; International Growth Centre (IGC) and other relevant institutions that may be identified

cess to a stable market, and they may collaborate in other arrangements mentioned under component 1 of the formalization strategy.

Component 8a: Monitor and enforce ASGM regulations among AGM miners

As a final component of the formalization process, GoSL will improve monitoring and enforcement of compliance with regulations applicable to ASGM (for both AGM and SSGM, which are both discussed here). As a first step under this component, GoSL will reconcile its relevant structures. Specifically, NMA's compliance officers will be tasked, besides their inspection role, with a technical role in "knowledge transfer" through capacity building for artisanal gold miners (including the "SMART mining" methods mentioned under component 1). Moreover, current staff occupying these positions will be reviewed on their performance and track record of involvement in corrupt practices, and more young and technical staff will be recruited.

In addition, multi-stakeholder "local oversight committees" will be established and formalized in each chiefdom. Such committees will include the mentioned compliance officers from NMA and EPA, local Chiefdom Mining Committees, community members, and where relevant, local NGOs and universities that are currently monitoring AM activity. The involvement of community members (including youth and women) and civil society can enhance the legitimacy, accountability and transparency of the monitoring process. Moreover, they can put peer pressure on miners and traders to comply, and put pressure on compliance officers to refrain from engaging in corrupt practices. It will be ensured that members of these committees are impartial to the ASGM sector to avoid conflicts of interest. The committees will then monitor compliance with applicable ASGM regulations, with a specific emphasis on the identified 'worst practices', the occurrence of child labour and the possible hazards they are exposed to, and ASGM activity in environmentally sensitive areas. The monitoring of mercury supply and trade within their respective area will also be included in this mandate (see section 6.1d for more on managing mercury supply and trade). All this will be done in coordination with other relevant MDAs such as NRA, MLSS and NPAA.

Subsequently, specific responsibilities will be allocated for each local oversight committee. In areas where AM zones are established, the most nearby committee will be uniquely mandated to monitor AM activity in those zones. Likewise, each oversight committee will have the primary responsibility to monitor SSM activity and AM operations using excavators or other heavy machinery (outside of AM zones) in a predetermined geographical area. Besides this, the committees will have the secondary responsibility to trace the gold traders and dealers sourcing gold from those operations and monitor their accurate recording and reporting of mineral purchases, in close coordination with local oversight committees in the areas where the minerals are transported to. Financial Intelligence Units (FIUs) will support monitoring activities by assembling, analyzing, and disseminating information with regards to gold smuggling and its potential contribution to money laundering, terrorist financing, and potential other criminal activities.

To enable such committees to carry out this ambitious mandate, their monitoring capacity will be strengthened through trainings, and the requisite monitoring infrastructure will be made available. Such infrastructure will include motorbikes, communication technology, sampling equipment for soil and water quality, and also drones.⁸⁰ In addition, the necessary financial resources will be decentralized to provincial and district-level NMA and EPA offices, which will subsequently share these among the local oversight committees. Among other things, these financial resources will be used to increase the wages of compliance officers, which can serve as a disincentive for bribery and corruption. After this, monitoring efforts will be intensified, especially among SSM companies, and drones will

⁸⁰ The required infrastructure and capacity building will be further informed by a more thorough capacity assessment that will be undertaken in the Baseline Study as part of the EITAP 2 project. World Bank Group. <http://projects.worldbank.org/P160719?lang=en>

be used as a tool to enable remote sensing, which can be useful in monitoring areas that are difficult to access. To ensure cultural acceptance, they will only be adopted after informing and obtaining the consent from community and chiefdom authorities. Moreover, GoSL will consider introducing an EITI monitoring mechanism.

In addition, GoSL will pursue ongoing discussions with MRU and regional counterparts about strengthening border controls to reduce mineral smuggling. Inter-agency coordination and collaboration between the NMA, NRA and their counterparts in Guinea and Liberia will be strengthened to reduce mineral smuggling. Similar to compliance officers, the wages of customs officers will be increased and they will be trained on curtailing gold smuggling (see section 6.1d for more on managing mercury trade) to disincentivize bribery and corruption. At the same time, penalties will be enforced among traders in case of mineral smuggling and among customs officers for “turning a blind eye” to this. The Sierra Leone Anti-corruption Commission (ACC-SL) will intensify monitoring of customs officers and report the progress made in annual reports. Moreover, NMA will design and establish a whistleblower policy to incentivize disclosure of illegal activity.

Once a minimum level of capacity is built among both ASGM actors and the described monitoring and enforcement personnel, compliance officers will be instructed to start enforcing compliance with ‘soft’ coercive measures among miners in AM zones, SSM companies and mineral traders, when compliance can be reasonably expected. As part of the ‘promote good practices’ approach, AGM miners outside of AM zones will not be sanctioned in case of incompliance, unless some of the described ‘worst practices’ are used or if big machinery such as excavators are used. Such soft measures will first include warnings, and then soft penalties in terms of fines. In the case of continued incompliance when compliance can be reasonably expected, ‘harder’ penalties in terms of the temporary withdrawal of ongoing assistance or revocation of licenses will be enforced until the offenders are in compliance. Between these stages, AM miners will be provided with ongoing advice and technical assistance from compliance officers. Moreover, as part of component 3, they will be educated on the regulatory framework, which will include information about the various penalties they may face so that they know what can expect before such measures are applied.

Component 8b: Monitor and enforce ASGM regulations among SSGM miners

As mentioned above, local oversight committees will collectively be tasked with monitoring SSGM companies throughout the country. Specific emphasis will be put on verifying compliance with those provisions of the 2009 Act that are currently often violated, as a part of regular monitoring activities. For example, the requirements to employ and train Sierra Leoneans (Article 99 (2c)) and to rehabilitate and reclaim mined our land (Article 102 (2h)) will be thoroughly verified. Moreover, in the case where dredges are used in rivers, it will be verified whether the owner holds a dredge permit and adheres to the provisions stipulated for dredging in rivers (Article 126 (1)).

Compliance with newly proposed provisions for SSGM companies, such as the ban of mercury use in SSM (see component 3b) will equally be verified and incompliance will be sanctioned with the relevant soft and subsequently harder measures.

In the case of continued incompliance, and as a last resort, law enforcement agents would be deployed in certain areas to enforce compliance among the worst offenders with the use of force (e.g. evicting the operators). This will exclusively be applied to SSM companies, when they continue to cause large-scale environmental damage (for example, the irresponsible use of dredges in river systems, or extensive open burning of mercury) despite the application of the measures described above. Before law enforcement agents would be deployed, they would be trained on relevant human rights issues, including women’s rights, and on various aspects of the ASGM sector, including both the sector’s negative impacts and its importance for local livelihoods and development.

3. Allocation of responsibilities and financial resources

Since GoSL has committed to AM formalization in the MTNDP, it will ensure that relevant agencies receive adequate financial resources that are destined exclusively for implementing this strategy. NMA, MMMR and EPA will hold the overall responsibility for implementing the ASGM formalization strategy, while other stakeholders have important roles to play in various components of the formalization strategy. The allocation of specific responsibilities, along with the envisioned timeline, estimated budget and expected results are indicated for each step of the formalization strategy in section 6.2, the work plan for the NAP implementation.

Regarding the allocation of financial resources for the implementation of the formalization strategy, the work plan in section 6.2 equally identifies (potential) funding sources. This work plan frequently lists the annual budgets of NMA, MMMR, EPA or other MDAs as identified funding sources, which reflects the respective MDA's commitment to ASGM formalization. Where possible, and in close collaboration with Parliament, the MoF and the Central Bank, GoSL will make allocations from the national budget to ensure that these MDAs have the requisite resources for implementing the formalization strategy. Moreover, private banks, LSM companies and relevant financial institutions will be engaged for supporting the formalization process financially. In addition, bilateral and multilateral donors will be engaged for levying external resources to support the formalization process. These national, private and international resources will be needed to kickstart the ASGM formalization process in the short term, specifically in the next five years. On the long term, a financial model is envisioned in which ASGM formalization becomes self-sustaining, as license fees, taxes, and royalties collected from formalized ASGM actors across the supply chain will be collected and used as resources to finance ongoing activities of the formalization process. When such resources prove to be insufficient, revenues collected from LSM companies may be used as additional financial support.

Finally, the stakeholder engagement and outreach plans for informing stakeholders about the formalization process are described along with such plans for NAP implementation in sections 6.1e and 6.1h respectively. Similarly, the process envisioned for monitoring and evaluating progress made in formalization and for updating the formalization strategy in collaboration with stakeholders, is described in section 7, the monitoring and evaluation process for the NAP implementation.

C. Strategy for introducing better mining practices and managing mercury use

This implementation strategy concerns the introduction of better mining practices for three purposes: **i)** enhancing gold production; **ii)** decreasing miners' dependence on mercury; and **iii)** mitigating wider environmental and health impacts. It first discusses considerations in the introduction of better mining practices and subsequently proposes a standard work flow for improving mining practices. Finally, it discusses the envisioned interventions for realizing better mining practices and addressing related environmental issues, including with regulatory measures concerning mercury use in ASGM.

1. Considerations in introducing better mining practices in Sierra Leone's ASGM sector

At present, the use of mercury is limited. Nevertheless, since mercury may be introduced elsewhere, it is necessary to take preventative measures. Therefore, the steps described under this strategy are applicable both to areas where mercury is used, as well as to areas where mercury is not (yet) used. The primary focus is on AGM, where most support is needed in improving mining practices. Although SSGM is not discussed, because this subsector already uses more advanced methods, interested SSGM companies may still be included in trainings aimed at AGM miners to enhance their capacity and improve their environmental performance.

In designing these interventions, the following parameters have been considered (and should be considered in the implementation) to ensure suitability to the Sierra Leonian context:

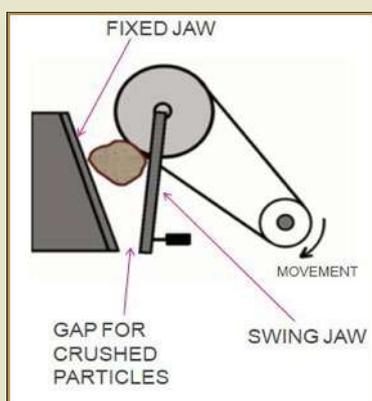
- Costs and energy requirements
- Ease of use
- Relative amount of time used
- Effects on gold recovery
- Scalability
- Environmental and health impacts
- Suitability to the local ore geology (informed by the geoprospecting described under section 6.1b)
- Local availability of tools and capacity for developing and introducing new tools

2. A proposed standardized workflow for improved comminution methods

In the text below, several steps for improving mining practices are recommended for each stage in the comminution process in AGM, including both short term and long term improvements.⁸¹ The short-term interventions aim to reduce mercury use through improvement of *current methods and technology* (e.g. sluices, use of sieves and magnets), whilst the long term interventions aim to (eventually) eliminate mercury use through the introduction of *new technology* (e.g. jaw crushers, ball mills). They are based on gradual, low-cost interventions that are expected to improve gold production at minimal cost, with the aim to increase the likelihood of scaling up and increasing the acceptance by miners, as they build on their current practices and augment rather than diminish the miners' earnings. After all, methods and technologies which are too advanced will likely be too expensive for Sierra Leone's rural communities and risk serving as a deterrent for their use, while failing to match the communities' current levels of financial capacity, education and technological competence.

Together, the steps below presents a standardized workflow for the comminution process. While each of the steps are applicable to hard rock AGM, step 1 may be less applicable to alluvial AGM as there is generally less need for mechanized crushing of soft weathered rocks. But ultimately, given the geological heterogeneity of Sierra Leone's ASGM sector, the applicability of each proposed interventions under each step should be determined on a case by case basis for each mining site.

FIGURE 11 *Annotated diagram of a jaw crusher*



i) Crushing

A straightforward step in the improvement of the crushing process is to introduce mechanized crushers. Hammer mills (which function according to the principles of jaw crushers) are currently already used in some of Sierra Leone's hard rock AGM areas, while in most areas, manual crushing is performed. While some hammer mills can be introduced in the short term, scaling up their use is clearly a long term process. An annotated diagram outlining the components of a jaw crusher is shown in figure 10.

⁸¹ The mining (extraction) process is not discussed because there are fewer problems that arise there, and this process should not necessarily become more mechanized in AM in view of the limited legally allowed depth of operation.

In short, as the ore-bearing material passes through the gap between the fixed jaw and the swing jaw, it is broken down into smaller fragments which then pass through a gap or exit point as shown. It has the ability to crush down huge quantities of materials during the processing stage leading towards improved recovery. The Guinean-made hammer mills, which have been identified in several of Sierra Leone's hard rock AGM sites, work according to the same principle of a jaw crusher. The discharge of the hammer mills is usually done through a 0.5 to 2 mm manganese steel screen.

The following table gives an indication of the costs of locally fabricated hammer mills in Sierra Leone:

Table 4 *Costs of hammer mills*

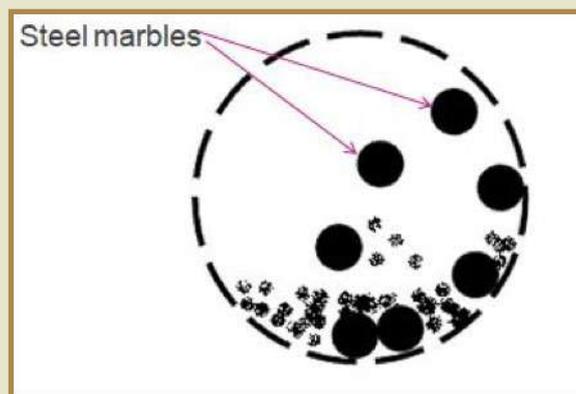
Description	Capacity	Fuel	Cost (Le)	Comments
Hammer mill*	500kg/hr	2.25 litre/hr	39,000,000	Engine powered

*hammers to be replaced every four (4) days at a cost of SLL280,000

ii) Grinding

Grinding is undertaken on crushed ore to achieve an adequately fine particle size necessary to liberate the most gold possible. To improve the grinding process, ball mills could potentially be used to grind the gold ore bearing material obtained from the jaw crusher, and this can either be wet or dry. As shown in Figure 11, which shows an annotated diagram for ball mills, rotation takes place around a horizontal axis, partially filled with the ore-bearing material together with a grinding medium. Key properties of the grinding media are size, density, hardness, and composition. This process produces evenly-sized particles, fine enough to liberate the gold from the host rock. This process is highly effective in improving the recovery of gold when dealing with hard rock deposits.

FIGURE 12 *Annotated diagram for ball mills*



The grain size obtained in many AGM operations is up to 2mm. However, 0.5mm can be targeted for effective liberation of gold from ore.⁸² Ball mills can help miners in reaching this size. Since the most effective gold liberation size depends on the ore type, in each ASGM site, liberation tests will be performed to determine the ideal grinding time necessary to grind particles to the size of gold particles. This will be done by periodically sampling the ore with pans to ascertain the gold concentration at various stages of the grinding process, and take place before new crushing or milling machines are intro-

82 Manual for Training Artisanal and Small-Scale Gold Miners/Veiga, M.M. et al./Vienna, Austria: GEF/UNDP/UNIDO, 2006, 144p.

duced. Based on the results, sieves will be introduced. During the crushing and grinding process, the finely ground material will be passed through a sieve or screen for classification. This will help to ensure that only particles of a given size as determined by the screen parameters will be present in the concentrate which is subsequently panned, enhancing the effectiveness of gravimetric concentration. Those particles that are too large for the screens will be reground.

However, the costs and energy demands that are associated with the ball mills that are typically used in industrial mining operations, go far beyond Sierra Leone AGM miners' financial capacity and processing needs. Nevertheless, there is a less advanced variant that may be appropriate for Sierra Leone's context that is currently used in several Sub-Saharan African countries: the 'Tanzanian ball mill'. These are smaller ball mills operate according to the same principle as the ball mill described above, and use a small engine as illustrated in figure 12.

FIGURE 13 A 'Tanzanian ball mill' operated in Mikei Migori, Kenya



The downside of such ball mills is that their single production capacity is naturally lower. However, miners' production capacity needs are generally lower, and miners can increase their milling capacity in a step-by-step approach by acquiring one mill after another and connecting them with a belt drive.

In addition, several machines that are currently produced in Sierra Leone for other purposes, could potentially be amended and used for AGM. Specifically, FINIC produces so-called 'palm kernel mills' for extracting oil from palm fruits, which are available for both manual and automated use. Such mills operate according to similar logics of jaw crushers, albeit with a lower crushing capacity (at present).

The following table gives an indication of the costs of locally fabricated milling machines in Sierra Leone:

Table 5 Costs of milling machines

Description	Capacity	Fuel	Cost (Le)	Comments
Tanzanian ball mill	100kg/hour	1.1 liter/hour	26,250,000	Engine powered (engine and water tank included in costs)
Palm kernel mill (manual)	N/A	N/A	4,000,000	Can be converted to crush gold ore
Palm kernel mill (trailer)	N/A		8,000,000	Can be transported from one site to another

iii) Sluice boxes

In most cases, as observed during the field study, most of the gold occurs as “free gold” or “nuggets” and when present in alluvial settings, do not require further liberation. These gold ore-bearing materials are collected and washed by use of a sluice box. As materials are flushed through the inclined sluice box, they generate momentum with distance, thereby reducing the capacity of the carpets to trap the gold particles. By modifying the angle of the sluice box and adjusting the velocity of the water (consistent flow, not too fast, not too slow) flowing through, it is possible to increase the amount of gold captured during sluicing.

FIGURE 14 *Zig zag sluice box*



A zig zag sluice box could be fabricated, which breaks the water flow (by coming into contact with the bend) and slows down the velocity of the water flowing through at an accepted incline (angle). This can serve to capture gold in different parts of the sluice, which typically occurs only in the beginning but now also after the bend.

iv) Using screens, magnets and pans

After the use of sluice boxes, the finely ground material could be passed through a sieve or screen, to ensure that only particles of a given size as determined by the screen parameters will be present in the concentrate. It is important that the holes in the screens have a maximum width of 2mm to avoid the panning of concentrate which is too coarse. The subsequent step is to pan the fine concentrate to separate the gold. In cases where the concentrate contains magnetic minerals (e.g. magnetite or magnetic hematite), magnets could be used to remove such minerals. Non-magnetic minerals, including gold, will remain in the concentrate.

Whereas panning is already widely used, the use of screens and magnets has been observed in some of Sierra Leone’s AGM areas, but could be scaled up to other AGM sites in the country.

v) Direct Smelting

As a final step in the comminution process, direct smelting could be considered to produce gold without the use of mercury. In this process, a small amount (50-100g) of high grade concentrate is heated with a torch and a flux is introduced to promote fluidity (i.e. decrease the melting point) and remove impurities in the form of a slag. The flux can consist of lime, borax or dolomite. When borax is used, it is referred to as a “Borax Flux” and the main constituents are sodium carbonate or sodium tetra borate (also called soda ash) and potassium nitrate (also called nitre). The use of direct smelting requires a clay crucible, a blow torch, a suitable flux, a cuppel and a hammer.

However, it is important to understand that direct smelting, and the use of borax, is not amenable to all ore types. For example, borax is unsuitable for ores with high sulphides concentrations, unless the sulphides are first removed by applying heat. Moreover, borax is not a direct replacement for mercury because it is not applied at the same stage of processing. Indeed, mercury is typically applied to large masses of concentrate, while direct smelting is applied to small masses of high-grade concentrate (50 to 100 grams). This requires effective comminution (grinding) to liberate gold particles from host rock as discussed in the prior steps above.

More information about this technique can be found in “A Practical Guide. Reducing mercury use in Artisanal and Small-scale Gold mining”.⁸³

3. Interventions for realizing better mining practices and addressing environmental issues

The following interventions are envisioned for realizing better mining practices and addressing related environmental issues:

- **Train AGM miners on better mining practices, including on land rehabilitation**

To introduce and test suitable elements of the above workflow, a first round of training will be carried out in each of Sierra Leone’s 15 main AGM areas. This first round will focus on educating miners on the basic principles of the comminution process and introducing short-term improvements (i.e. improvements of current mining methods) that can be quickly adopted to reduce mercury. It will also include training on land rehabilitation and reclamation. During this training, various practices will be tested and discussed with AGM miners and community members, to see which practices work best and are most preferred by them.

Moreover, the need for and suitability of more advanced technologies (long-term improvements) will be considered and discussed to inform a second round of trainings.

- **Train SSGM companies on better mining practices, including on land rehabilitation**

First, SSGM companies will be engaged by GoSL to develop a better relationship and to motivate them to support the causes of the NAP. This will happen by engaging them in various workshops that are organized, such as those described under section 6.1b. Then, to enable and incentivize SSGM companies to adopt better mining practices, one round of training will aim to train the key personnel of all SSGM companies operating in Sierra Leone on better mining practices. In this training, more emphasis will be put on advanced, mercury-free technologies since the companies already make use of many of them, and more emphasis will be put on encouraging SSGM companies to make use of the tools they already have to their disposition to stop the use of mercury, and rehabilitate and reclaim land.

The training will equally adopt a participatory approach that tailors the programme to each SSGM companies’ specific methods, situation and needs.

- **Train AGM miners a second time on better mining practices, including on land rehabilitation**

Building on the discussions and findings from the first round of training among AGM miners, a second round of training will be undertaken in the same AGM communities where the progress made after the first training will first be evaluated together with miners. This training will focus on long-term improvements, and eventually, mercury elimination with the introduction of new technology that has been

83 UN Environment, Global Mercury Partnership, Artisanal Gold Council, UNIDO, University of Victoria and International Union of Geosciences Commission on geosciences for Environmental Management, 2012. A Practical Guide. Reducing mercury use in Artisanal and Small-scale Gold mining. https://www.unido.org/sites/default/files/files/2017-11/ASGM_English%20%281%29.pdf

deemed suitable during the first round of trainings. The introduction of new technology will be prioritized in areas where mercury is currently used, including Baomahun and Komahun, but may be introduced elsewhere. The new technology will be provided and tested with local miners and small amendments will be made as necessary. To further ensure that the effective adoption after the training ends, the miners' use of new technology will be continuously monitored and ongoing advice will be given and as a part of regulator monitoring by local oversight committees as described under the formalization strategy (see section 6.1e, component 8).

- **Organize a demonstration session to showcase the use of mercury-free technology**

Once one of the targeted communities has effectively adopted the mercury-free technology, a demonstration session will be held to showcase and explain the use of this technology. This will be presented to nearby AGM miners, SSGM companies, environmental inspectors, compliance officers and other relevant stakeholders. Moreover, a professional video will be made and national television stations and media will be engaged to play the video to reach other ASGM miners and the wider public.

- **Assess mercury contamination and design a strategy for rehabilitating (contaminated) sites**

To assess the presence and extent of mercury contamination, soil and water samples will be taken in Masumbiri, Maranda, Laminaya and Kampala. In these places, gold has previously been mined by SSM and LSM companies, possibly with the use of mercury. Based on the results, a strategy for rehabilitating the identified contaminated mine sites will be developed and piloted⁸⁴. This will be part of a wider strategy for rehabilitating mined out areas, which is an issue of major concern in Sierra Leone. Such a strategy could include a partnership between the government, private sector and chiefdom authorities. For example, it may be possible to engage established mining entities (see the formalization strategy, component 2), SSGM companies and Chiefdom Mining Committees in efforts of land rehabilitation. Such efforts could be financed by taxes and royalties that are levied by the government from ASGM or from the mining sector.

- **Train environmental desk persons across MDAs on issues of ASGM and mercury**

The environmental desk persons that have been appointed across Sierra Leone's MDAs will be trained on ASGM, mercury, and other environmental and health issues related to the ASGM sector.

- **Adopt regulations concerning the sound management of mercury**

As a final measure, new regulations concerning the sound management of mercury during its entire lifecycle (including issues such as supply, trade, use, storage, transport and the safe disposal of mercury) will be developed. Based on Section 44 of the draft Chemicals and Toxic Substance Regulations, which empowers EPA's Executive Chairman to develop new chemical regulations, such a new regulation will be developed and enacted by EPA. As part of these regulations, several provisions will be adopted to restrict its use in ASGM. This will specifically include a ban of mercury use in SSM from January 2021 onward, since this subsector can be reasonably expected to be able to replace mercury use with other methods. For AGM, no such ban will be included, but the use of mercury will still be restricted through the adoption of stringent regulations concerning the import and export of mercury, which is further discussed under the strategy of managing mercury supply and trade (see section 6.1d).

⁸⁴ The identified sites will naturally include those areas where mercury use has already been confirmed in the ASGM overview and where contamination can be easily assumed

D. Strategy for managing trade and preventing diversion of mercury and mercury compounds

As has been discussed in section 3.8, mercury often enters Sierra Leone's ASGM sites through informal traders from Guinea and Liberia who buy gold from ASGM miners. Besides this, mercury may also be diverted to ASGM from domestic sectors and products where mercury is used, such as dental amalgams, mercury reagents, laboratory mercury bulb thermometers, or skin-lightening creams.

A key starting point is the formalization of at least part of the ASGM sector, as has been discussed in section 6.b. Moreover, in view of Sierra Leone's porous borders, it is important to address the demand side of mercury. This is done by facilitating miners' adoption of better mining practices, as has been discussed in the previous section. In addition to these measures, several other steps are taken to address mercury supply and trade in a holistic manner, as described below.

- **Investigate mercury supply and trade**

The supply and trade of mercury in Sierra Leone's ASGM sector will first be further investigated. Such an investigation will target the sources of illegal mercury imports, including the existing or likely mercury entry points into the country, and the distribution networks within the country. To obtain better information and/or engage the sector directly without supporting illegal activities, a temporary amnesty approach will be taken during the time of research. This will be done as part of the field study of the 'green gold pilot' (EITAP 2) project that seeks to investigate gold supply and trade. Besides mercury supply to ASGM areas, specific emphasis will be put on mercury supply to SSGM companies, as this poses the largest knowledge gap that needs to be tackled.

- **Establish and strengthen a monitoring mechanism**

As has been mentioned under the formalization strategy, local oversight committees, which are mandated with monitoring gold production and trade in predetermined geographical areas, will also be mandated with monitoring mercury supply and trade around the ASGM sector. To enable such committees to carry out this task effectively, they will be trained on the characteristics and health impacts of mercury, relevant provisions of the Minamata Convention (especially Article 3 on mercury supply and trade), and on identified trade routes and profiles of mercury traders (building on the knowledge acquired under the above step). Moreover, procedures for documenting, tracking and verifying mercury trade will be established by developing manifest requirements for mercury transport (shipping papers that can be required to accompany the domestic transfer of mercury).

- **Legally ban the import and export of mercury (except for special uses) and revise relevant regulations**

At present, there is no law banning the imports and exports of mercury. However, the import is not allowed under the 2008 EPA-SL Act, which inhibits the introduction or importation of toxic or hazardous wastes into Sierra Leone for storage or disposal. To redress this situation, relevant regulations will be developed to ban the import and export of mercury from January 2024 onward, unless special circumstances prevail. Such special circumstances include the provision of informed consent, and other conditions described in Article 3 (provisions 6 and 8 for mercury export and import respectively) of the Minamata Convention. To this end, as described under section 6.1c, a new regulation concerning the sound management of mercury during its entire lifecycle (including issues such as supply, trade, use, storage, transport and the safe disposal of mercury) will be developed.

- **Strengthen the mercury trade licensing process and requirements**

To import mercury into the country, which, following from the previous step, would only be allowed

under special circumstances, importers need to obtain a mercury trading license. MTI is mandated with issuing trading license after the approval of the EPA-SL, which, according to the 2008 EPA-SL Act, is responsible for monitoring, controlling and regulating the manufacture, sale, transportation, handling or disposal of toxic and hazardous substances. While no mercury trading licenses have so far been issued, MTI and EPA-SL will, in collaboration with NRA and local oversight committees, ensure that legal importers of mercury follow the described process of obtaining the mercury trading license. When issuing such licenses, EPA-SL, NRA and MTI will ensure that at all times, the prior informed consent requirements, the source/use restrictions, and the reporting obligations of Article 3 of the Minamata Convention are adhered to.

- **Engage laboratories and other mercury users to prevent the diversion of mercury to ASGM**

As part of the implementation of the MIA, EPA-SL will organize several meetings with laboratories and importers and producers of any products where mercury is used (such as skin-lightening creams, thermometers, batteries and fluorescent lamps) with the purpose to obtain their support in ensuring that the mercury that is used in their products and processes are not diverted to ASGM. To this end, mechanisms for tracing the life cycle of their products will be established.

- **Train customs officers on monitoring and enforcing illegal mercury trade**

As the activity on training NRA's customs officers on detecting and inhibiting illegal gold trade (see the formalization strategy), they will be trained on monitoring and enforcing illegal mercury trade. Similar to the local oversight committees, they will be trained on the characteristics and health impacts of mercury, relevant provisions of the Minamata Convention (especially Article 3 on mercury supply and trade), and on identified trade routes and profiles of mercury traders.

- **Pursue ongoing discussions with the MRU for strengthening border controls regarding mercury trade**

As part of ongoing discussions with the MRU for strengthening border controls regarding gold trade (see the formalization strategy), the same issues will be discussed for curtailing the illegal trade of mercury. Regional agreements potential mechanisms for controlling mercury trade will be actively sought.

Moreover, the various regional institutions mandated with regulating the cross-border trade of hazardous substances will be better coordinated and new mechanisms for managing mercury trade will be discussed and potentially established.

E. Strategy for involving stakeholders in the implementation and continuing development of the NAP

As has been described in section 2, both local and national stakeholders have played an important role in the NAP development. They have been engaged at different stages through workshops, field visits, and electronic correspondence, and through the established NICCM which hosts the key MDAs. Their role, and especially the roles of ASGM communities including youth and women, will be even more important in the NAP implementation to ensure its effectiveness on the long term.

As a first step, all stakeholders at the national, regional, and local levels that are directly or indirectly involved in Sierra Leone's NAP have been mapped in the table below. This table includes the stakeholders' mandates (including both official and defacto mandates) and potential roles in the NAP implementation and ASGM formalization process.

Table 6

Relevant stakeholders in Sierra Leone's ASGM sector

Relevant stakeholders	Mandates + possible roles in NAP implementation and formalization
MMMR	Developing mining policies, laws and regulations, supervising their implementation, and collecting and publishing a database on ASGM activity
NMA (including regional offices)	Managing the administration and regulation of mineral rights and minerals trading in Sierra Leone, including the granting of mineral rights and mining concessions; monitoring compliance of ASGM operations; providing technical, administrative and organizational assistance to gold miners; conducting geological survey and data collection activities
EPA-SL (including regional offices)	Evaluating EIA's and issuing environmental licenses with Terms and Conditions; developing environmental policies, laws and regulations; monitoring compliance with environmental regulations and implementation of mining companies' implementation of environmental management plans; promoting alternatives to mercury; and providing guidelines and assistance in land rehabilitation
Chiefdom Mining Committees	Granting access to land and surface rights, arbitrating mining issues within the chiefdom and its communities
MLH	Mapping and allocating land and resolving land disputes
MoF	Providing funding for the formalization process; designing and strengthening taxation regimes adjusted for gold mining; developing tax regulations
MoHS	Developing policies, laws and regulations related to occupational health and safety in ASGM operations and surrounding communities, developing a national health strategy for the sector, and training local health care officers and medical service providers; coordinating local and international NGOs on health and sanitation issues
MLSS	Developing policies, laws and regulations concerning labour standards, occupational health and safety, and issues of child labour, facilitating organization into cooperatives and other entities, and facilitating social insurance schemes
MLGRD	Ensuring ASGM's integration in the MTNDP and associated development planning at the national and regional level; facilitating transitions to alternative livelihoods for ASGM actors operating in protected areas or on LSM concessions; complementing EPA-SL's work of EPA through Environmental and Safety officers in local councils; assisting with the development and implementation of the formalization strategy at the local level; and implementing the decentralization of mandates and financial and human resources through capacity building of local governments services
MTI	Regulating gold and mercury trade, facilitating access to markets; designing and strengthening taxation regimes adjusted for gold mining; developing trade policies, laws and regulations
Sierra Leone Standards Bureau (SLSB)	Setting standards for ASGM and mercury; facilitating miners' and small traders' access to markets
MAF	Facilitating and promoting synergies between ASGM and agriculture, and mitigating ASGM's impact on farmland and forests
MEST	Promoting formal and informal education in ASGM communities, supporting the development of an official curriculum on ASGM
Ministry of Justice (MoJ)	Ensuring that national principles of justice as outlined in the Constitution are enshrined in ASGM policy, and that mechanisms for access to fair prosecution and legal protection are in place for the sector; facilitating the ratification of policies, laws and regulations related to ASGM
MSWGCA	Developing policies, laws and regulations concerning the protection and development of women and children, with a specific focus on the mining sector
Ministry of Youth (MoY)	Developing youth policies, laws and regulations; supervising youth activities in the ASGM sector
Ministry of Internal Affairs (MIA)	Drafting enforcement protocols and regulations for NAP implementation

Relevant stakeholders	Mandates + possible roles in NAP implementation and formalization
Ministry of Fisheries and Marine Resources	Developing fisheries and marine policies, laws and regulations on mercury marine pollution; facilitating and promoting synergies between ASGM and the marine sector and mitigating ASGM's impact on rivers and streams in the mining communities
Ministry of Water Resources	Developing water policies, laws and regulations; coordinating water and sanitation issues; facilitating access to potable water in ASGM communities
NRA	Collecting taxes and royalties, monitoring cross-border gold and mercury trade
Police and security officers	Enforcing compliance with the regulatory framework in the case of continued non-compliance
FIUs	Supporting monitoring and enforcement by assembling, analyzing, and disseminating information with regards to gold smuggling and its potential contribution to money laundering, terrorist financing, and potential other criminal activities
NPAA	Developing policies, laws and regulations on national protected areas and parks; protecting and managing protected areas located in ASGM communities; facilitating and promoting synergies between ASGM and protected areas, and preventing ASGM's impact on protected areas
Land owners	Granting ASGM actors access to land
Miners	Providing input from the point of view of miners regarding current practices, needs, and political, economic, legal, and social barriers to change, and advising on the feasibility of better mining practices and proposed policies and regulations
Gold traders, dealers, goldsmiths, exporters, and supporters	Providing insights into barriers to curbing illicit trade and investments made in ASGM operations, and into traders and exporters' incentives to formalize
Mercury traders	Providing insights into mercury trade and feasibility of phasing it out
Community leaders	Assisting in the development and implementation of the NAP and formalization strategy within ASGM communities, and in monitoring and evaluating compliance with laws and regulations
SSM and LSM companies	Negotiating land use with ASGM actors; providing them with technical and administrative assistance; engaging in business relations
Corporate and rural development banks	Providing ASGM actors with access to finance
Central Bank	Engaging in a potential SGBP and providing access to finance
Other private sector partners	Providing financial assistance to ASGM actors, and promoting the responsible and sustainable sourcing of gold among businesses and consumers
Local NGOs and relevant development agencies	Raising awareness of the risks associated with mercury use, providing technical and administrative assistance to ASGM actors, funding capacity-building projects, monitoring the progress made in formalization and NAP implementation, and monitoring ASGM's compliance with regulations
Academic and other technical institutions	Conducting studies about better mining practices, socio-economic issues, and environmental and health impacts of the ASGM sector; providing ASGM actors and government services with trainings on interdisciplinary aspects of ASGM production and trade, and incorporating ASGM into university curricula
Media and communication groups	Communicating socio-economic, environmental and health issues associated with the sector to the general public, including mercury use, advocating for miners' and traders' rights
Environmental and human health organizations	Ensuring that biodiversity, nature conservation, and human health issues are enshrined in ASGM policies, and raising environmental and health concerns associated with the sector
Human Rights Commission Sierra Leone and human rights groups	Developing human right laws and regulations; ensuring that human rights are enshrined in ASGM policy and that common abuses in the sector, such as exploitation of labour and gender-based violence, are investigated and effectively addressed

Relevant stakeholders	Mandates + possible roles in NAP implementation and formalization
National Youth Commission	Ensuring that youth's interests are reflected in ASGM policies, and that their key concerns, such as employment and education, are addressed
Representatives of women	Ensuring that women's interests are reflected in ASGM policies, that they foster gender equality and social and economic empowerment of women, and that vulnerable women are protected from mercury and other hazards

As a second step, various mechanisms for continued stakeholder engagement during the NAP implementation have been identified. Two separate mechanisms are considered for engaging the following two broad categories of stakeholders:

Government Ministries, Departments and Agencies (MDAs)

First, regarding MDAs, the NICCM will be continued to be used during NAP implementation, through the organization of biannual meetings where the progress of NAP implementation will be discussed. Such meetings will further serve as opportunities for stakeholders for identifying challenges, providing recommendations, ensuring that their respective priorities of the NAP are well addressed in its implementation. After each meeting, meeting reports will be prepared and disseminated among the NICCM members by focal points appointed by EPA-SL and NMA who maintain the communication with the NICCM.

ASGM miners, traders, local communities, chiefdom authorities and relevant CSOs

With the aim to institutionalize the engagement of ASGM actors and communities, a Stakeholder Advisory Group (SAG), composed of the key stakeholders at the community, chiefdom and district levels will be established with the mandate to engage ASGM actors and communities. The committee shall include the appointed focal points for the EPA and NMA and of relevant CSOs (including those NGOs and academic institutions) that are working closely with ASGM communities and have a good understanding of the sector. For example, the SAG shall include Knowledge for Community Empowerment Organization (KOCEPO), the African Youth on Mining and Environment (AYME), Fourah Bay College and Njala University given their experience in Sierra Leone's ASM sector. The committee shall host a maximum of a dozen of such permanent members to remain flexible and relatively informal in nature as the committee's primary purpose is to facilitate the consultation, education and engagement of ASGM miners, traders and communities.

The committee shall meet on a quarterly basis, each time in another ASGM community to ensure that all communities across the country are equally engaged. Besides the community directly near ASGM sites, downstream communities that may be affected by ASGM activity (especially close to Baomahun and Komahun where mercury use was identified) will equally be included. These meetings will be hosted by the target communities and will be supported by relevant chiefdom authorities at the local level. It will be ensured that youths are adequately represented by including the targeted community's youth leaders, and it will be ensured that the SAG's fixed members and meeting participants are gender-balanced. Moreover, interpretation into local languages will at all times be facilitated, and as necessary, participants travelling from far will receive a modest reimbursement of travel. Food and drinks will be provided as a further incentive for participation.

The SAG and its periodic meetings shall carry six major responsibilities and objectives:

- to **educate** participants and diffuse technical knowledge and best practices (see section 6.1h)
- to **monitor** the NAP implementation and formalization process and to ensure that they address the target group's needs and wider stakeholders' interests

- to **evaluate** the NAP's effectiveness in achieving its long term objectives/outcomes
- to **advise** on potential challenges, preferred formats for training materials, and so on
- to **assign responsibilities** and **facilitate** with the training and sensitization of other communities and local logistics
- to **build partnerships** between local stakeholders and the government and leverage political will for supporting the cause of the project

Based on these reflections, the SAG will propose measures for improving the NAP implementation in the upcoming period, and document this in meeting reports that will be prepared and disseminated among the meeting's participants after each meeting.

F. A public health strategy on the exposure of ASGM miners and their communities to mercury

A public health strategy is of paramount importance for the implementation of the NAP as mining communities and nearby communities are vulnerable to the exposure of mercury and other health effects. This strategy is in line with the Sierra Leone National Health Promotion Strategy (2017–2021) with the goal of establishing an enabling environment for enhanced health promotion capacity. It further clarifies roles and responsibilities and builds on previous policies and national and international best practices.

Following WHO's guidelines on addressing health aspects as part of the NAP⁸⁵, the main objective of the strategy is to reduce the negative health impacts of mercury exposure and other ASGM-related health impacts on ASGM communities and nearby communities. The other health impacts stemming from ASGM activity in Sierra Leone have been summarized in section 3.15. This objective includes two desired outcomes:

- i) reduced health threats from ASGM activity as miners and traders adopt safer mining practices
- ii) effective addressing of ASGM-specific issues with existing health programmes and initiatives

The first desired outcome, the adoption of better mining practices, can be achieved by creating an enabling environment. Such an enabling environment is created through the implementation of the formalization strategy (section 6.1b, which includes the creation of AGM entities and facilitating their access to finance and assistance) and the strategies for introducing better mining practices (sections 6.1a and 6.1c). Besides this, it includes the strategy for providing information to ASGM communities and nearby communities on ASGM-specific health issues (strategy 6.1h), which will also be done among relevant health facilities. As such, the components that contribute to achieving the first desired outcome have already been discussed elsewhere in the NAP.

The second desired outcome, about addressing ASGM-specific issues with existing health programmes, requires additional components which are discussed under this strategy. This includes the following components:

- i) Collection of health data in the ASGM sector
- ii) Training of health staff on health risks associated with ASGM activity
- iii) Strengthening of the health system and coordinating inter-sectoral action regarding health issues of the ASGM sector

⁸⁵ Minamata Convention on Mercury; WHO document submitted for the Second Meeting of the Conference of Parties (COP 2) to the Convention held in Geneva, November, 2018. http://www.mercuryconvention.org/Portals/11/documents/meetings/COP2/english/2_INF17_WHO.pdf. Accessed on 15/04/2010.

iv) Providing ASGM communities with healthcare services

1. Gathering of health data strategy

First, more data about health aspects of the ASGM sector needs to be collected. Whereas the ASGM overview has already collected data about the main health issues common in ASGM communities, the main health impacts stemming from ASGM community, and the capacity of local health clinics, it is necessary to further enrich this database. Specifically, the following issues will be further investigated:

A. Scoping of existing public health programmes and health service delivery with respect to ASGM related health issues, as well as with respect to wider issues in rural parts of Sierra Leone where ASGM and mercury issues may be included

B. Health and environmental hazard identification associated with ASGM miners and their communities on:

- Living conditions including access to health facilities, availability of health facilities in mining communities, and prevalence of infectious diseases
- Social hazards which should include drugs and alcohol abuses, violence, prevalence of sexually transmitted infections and HIV/AIDS
- Environmental hazards on Fish contamination, Water pollution, Noise levels, Dust levels, Heavy metals, impact of mined out pits, and Air pollution

C. Assessment on diagnosis and treatment strength base on available health professionals, available laboratory and technical capacity, available epidemiology research capacity and available capacity for human bio-monitoring of mercury exposure

D. Assessment on the level of understanding for the use, effects and management of mercury among policy makers in the Ministry of Health and Sanitation

E. Assessment of inter-sectorial cooperation level for effective implementation of the strategy

The following methodology for data collection is proposed:

- Literature review on the identified environmental, social and health issues to be investigated
- Communities identified for the use of mercury can be revisited (Baomahun and Kumahun). In addition, a few communities where mercury may likely be introduced in the future (especially where hard rock mining and reprocessing of tails take place) will be revisited.
- Use of group discussions, semi structured interview surveys among all health providers at the local level close to ASGM areas

2. Training for health-care workers

The continued growth of ASGM in Sierra Leone means that its associated environmental hazards and health impacts will continue to be important problems, especially for children and women of child-bearing age. It was evident in the National Overview study that health-care providers need further education and training on diagnosing, surveillance of ASGM miners and on how to develop a dialogue with miners in order to understand their conditions better and to treat them effectively. In Sierra Leone,

primary care providers such as nurses and Community Health Officers (CHOs) are generally the first point of contact for workers and surrounding mining communities exposed to health hazards associated with ASGM. However, they generally lack knowledge about, and sensitivity to, environmental and occupational illnesses associated with ASGM, including the adverse health effects of mercury and acid. Therefore, it is crucial to enhance their knowledge on such issues, as well as their sensitivity to this special workforce. This will enable primary care providers to make the appropriate diagnosis and to treat acute illnesses and injuries among ASGM miners and the surrounding communities. The following actions will be taken to achieve the training of health workers:

- **Develop a health curricula on ASGM with local technical institutions**, specifically, Njala University, Fourah Bay College, Faculty of Nursing, College of Medicine and Allied Sciences, and relevant NGOs working on ASM. The current health curriculum does not include any module on the effects of mercury and no such knowledge is transferred to the community health workers. Therefore, a restructuring of the curriculum is required for addressing this issue. This will be a part of the curricula mentioned in the formalization strategy (section 6.1). The following issues will be included in this curricula:

- a. The nature of ASGM and its importance for rural livelihoods
- b. The main health impacts associated with ASGM, including occupational safety issues, and how to diagnose them
- c. The main health impacts associated with mercury and acid use, and how to diagnose them
- d. Basic advice that can be given to miners to avoid or mitigate such impacts (see sections 6.1a and 6.1c)
- e. The specific vulnerability of children and women of child-bearing age to mercury poisoning and to health hazards specific to alluvial gold mining (where they operate)
- f. Other ASM-associated health effects (specifically for artisanal diamond and coltan mining)
- g. Other issues listed in the awareness raising strategy (section 6.1h)

- **Conduct a training of all the health clinics in close proximity to Sierra Leone's main ASGM areas**, so that around each of the country's 25 identified ASGM areas (more areas could emerge), at least two health clinics are trained. For this, a training manual developed by Artisanal Gold Council may be used: "Health Issues in Artisanal and Small-scale Gold Mining; Training for Health Professionals". Health workers will be trained on the topics mentioned under the health curricula above. The Environmental and Safety Officers (ESOs) can also be included in such trainings as they are attached to local councils. They can effectively complement the work of EPA-SL in the various ASGM communities.

3. Strengthening of the health system and coordinating inter-sectoral action regarding health issues of the ASGM sector

The wider health system needs to be strengthened and mercury and other ASGM-specific health issues need to be streamlined throughout the system. To realize this, the following actions will be undertaken:

- **Establish a mechanism to facilitate health sector engagement and collaboration** with other sector ministries and other relevant stakeholder groups around ASGM. This will be done by including MLSS and MoHS in the NICCM and ensuring their active engagement in its biannual meetings (see section 6.1e). Moreover, it will be ensured that CHOs and other health workers from the nearest health clinics participate in the SAG's quarterly meetings.

- **Include mercury and other ASGM-specific health issues, including occupational safety, in the programming in the MLSS and MoHs (including in annual national action plans)**

- **Include mercury and other ASGM-specific health issues in the health programming of international organizations** operating in rural parts of Sierra Leone where ASGM may occur, such as the Red Cross, Médecins Sans Frontières, Oxfarm, CARE International, Free Healthcare Initiative (FHCI), Christian Aid Sierra Leone, Action Aid International, Action Contre la Faim (ACF), Catholic Relief Services (CRS), Christian Health Association of Sierra Leone, HOPE Sierra Leone, International Medical Corps (IMC), Medical Emergency Relief International, Marie Stopes International, Medical Research Centre, World Vision International, and the WASH Consortium which comprises of 10 NGOs.

- **Include simple mercury prevention, diagnosis and treatment protocols as part of heavy metal programs.**

- **Develop Standard Operating procedures (SOPs) and processes** to support engagement and response to ASGM-related health issues as needed on the clinical management of cases of mercury and acid intoxication, or for the public health management of ASGM related accidents, etc. These SOPs will include directives on how to administer first aid treatment on mercury and acid intoxication and other related ASGM-related health issues. They will also serve as guidelines for health care volunteers in remote ASGM communities which do not have quick access to health clinics or posts due to inadequate road networks.

4. Providing ASGM communities with healthcare services

As a final component of the public health strategy, several actions will be taken to provide all 25 identified ASGM communities with healthcare services as a part of ongoing assistance delivery:

- **Conduct basic occupational health and safety trainings.** This training will components of identifying and dealing with ASGM-related health hazards, the proper use of safety equipment (see below), and more general health and sanitary considerations of importance in rural areas of Sierra Leone (e.g. Malaria, STDs, cholera, etc.).

- **Provide basic safety equipment to mitigate health risks.** This includes the provision of gloves, mouth caps and first aid kits for all AGM miners, helmets for AGM miners in pits and shafts, and mouth caps for local small gold to AGM miners.

- **Install basic sanitary facilities, including public latrines and sanitary wash facilities.**

G. Strategy to prevent the exposure of vulnerable populations to mercury use, advance gender equality and address child labour in ASGM

Children, pregnant women and women of child-bearing age are most vulnerable to mercury poisoning, as well as to other hazards people are faced with in the ASGM sector. Given the multitude of issues surrounding women and children's role in Sierra Leone's AGM sector, and the policy priorities articulated in the MTNDP for women and children, the NAP takes a holistic approach to addressing issues of gender equality, women's empowerment and child development. Indeed, these issues have been mainstreamed throughout each of the NAP's strategies, especially the formalization strategy. To reflect this holistic approach, this strategy first discusses measures for addressing gender equality, women's empowerment and child labour in AGM, which will largely contribute to protecting women and children from mercury poisoning. This will subsequently be complemented with additional measures that specifically focus on preventing the exposure of such and other vulnerable populations to mercury used in ASGM.

1. Advancing gender equality and women's empowerment

As has been discussed in Section 3.12, women, who make up almost half of the AGM workforce, play an important role in Sierra Leone's AGM sector but they face a multitude of gendered-challenges. These challenges include, among other things, barriers to accessing mining groups, land, tools, finance, markets and fair prices. Still, many women deliberately chose to pursue a livelihood in AGM, because it is economically viable, directly available, and it helps them to provide for themselves and their families. Therefore, it is important to both protect and empower women in AGM, as well as to address wider issues of gender equality. So far, the NAP has listed the following *women-specific* measures for addressing gender equality and women's empowerment:

- Reserve suitable land for female AGM miners (formalization strategy, component 1)
- Facilitating women's leadership roles in mining entities and enabling them to establish their own entities (formalization strategy, component 2)
- Training established mining entities on gender equality and participatory governance (formalization strategy, component 2)
- Recognizing women's role and importance in AGM and mainstreaming gender issues in the 2009 Mines and Minerals Act in line with CEDAW obligations (formalization strategy, component 3)
- Training women on gold valuation, gold trade and value addition and including them in discussions for restructuring the supply chain (formalization strategy, components 4 and 7)
- Improving women's financial literacy and knowledge about available financial products, and facilitating their access to finance, including through micro-credit cooperatives and establishing savings and loans groups (formalization strategy, component 5)

Besides this, all interventions targeting miners and traders are intended to include women and gender issues are mainstreamed in other interventions, as reflected in the minimum percentages of female participation included in the objectives listed in section 5.

To complement the above, several additional steps will be taken to promote gender equality and women's empowerment in Sierra Leone's AGM sector:

• **Challenge prevailing stereotypes, attitudes and social norms with sensitization activities**

Prevailing stereotypes, attitudes and social norms (e.g. the assumption that mining is exclusively a man's job, or that women's presence on hard rock mining sites would anguish evil spirits and decrease the 'fertility' of mineral deposits) have been identified as some of the root causes of gender inequality and women's marginalization in Sierra Leone's AGM sector. Following observations from the Committee on the Elimination of Discrimination against Women, which has highlighted the need to change public opinion, stereotypes, attitudes and social norms regarding gender⁸⁶, GoSL plans to address these issues as part of awareness raising activities in ASGM communities and nearby communities.

Section 6.1h discusses the various media and initiatives that are used for awareness raising. Among these, the SAG meeting, the trainings on better mining practices, and radio and television programmes serve as suitable opportunities to challenge prevailing attitudes regarding gender. During such initiatives, people will be sensitized about women's historical role in ASGM, their important contributions to the sector, and the importance of women's implication in the sector for their families' wellbeing and for local development.

86 CEDAW/C/SLE/Q/6. <https://undocs.org/en/CEDAW/C/SLE/Q/6>. Accessed on 17/04/2019.

- ***Facilitate access to basic skills development and vocational training***

Various strategies have already described the provision of assistance to miners, which aim to develop skills that are of direct relevance for AGM. This includes trainings on better mining practices (section 6.1c), and various other trainings delivered under the formalization strategy (section 6.1b). Such interventions will ensure that women are included, to mitigate the risk that the formalization process or the gradual mechanization of the AGM sector excludes or disadvantages women. They can help women to improve their position in the sector and to assume new roles as group leaders or mineral traders. However, as pointed out in Section 3.12, there are also many women who want to (eventually) leave AGM to pursue other livelihoods, such as petty trading, business establishment or agriculture.

To enable such women to make this transition, GoSL will provide vocational training to selected groups of women, targeting areas where women are working under particularly harsh and exploitative conditions and areas where the formalization of those women seems most challenging. Such trainings should be participatory in nature, so that beneficiary women themselves are stimulated to articulate the livelihoods they want to pursue and which skills they would need to learn to be able to pursue such livelihoods.

- ***Integrate AGM in various gender action plans and policies under CEDAW***

As a Party to CEDAW, and under the leadership of MSWGCA, Sierra Leone has already developed several action plans and policy documents to domesticate the Convention and advance gender equality and women's empowerment in Sierra Leone:

- a National Strategic Roll-out Plan for Implementation of the three Gender Acts:
 - o the Domestic Violence Act 2007
 - o the Devolution of Estates Act
 - o the Registration of Customary Marriage and Divorce Act 2007
- a National Gender Strategic Plan (2010 – 2013) which promotes the advancement of women within various sectors
- a National Action Plan (SiLNAP) for the full implementation of UNSCR 1325 and elements of UNSCR 1820 on Women, Peace and Security
- a National Action Plan on Gender Based Violence (GBV)
- a National Gender Mainstreaming Policy (2000)
- a National Policy on the Advancement of Women (2000)

Besides this, a Gender Equality and Women's Empowerment Policy is currently being finalized by MSWGCA to further domesticate CEDAW. Moreover, the National Gender Strategic Plan is currently being developed for the period 2019-2023.

Following observations from the Committee on the Elimination of Discrimination against Women, which has highlighted the need to assist women in the informal sector by providing assistance and integrating them in the formal labour force⁸⁷, women's important role in AGM will be more strongly recognized in such action plans and policies so that female AGM miners will be more structurally assisted as part of the implementation of such frameworks.

87 CEDAW/C/SLE/Q/6. <https://undocs.org/en/CEDAW/C/SLE/Q/6>. Accessed on 17/04/2019.

- ***Build gender competence in NMA and MMMR***

Besides addressing capacity challenges at MSWGCA, which has been highlighted in Sierra Leone's Sixth Country CEDAW Periodic Report⁸⁸, gender competence needs to be built in those institutions that are most closely involved in the AGM sector: the NMA and MMMR. This will be done as a part of capacity building initiatives that have been described under the formalization strategy, including: **i)** training MMMR's and NMA's central offices in policy making and ASM formalization; **ii)** training regional NMA offices on "SMART mining" (component 1); and **iii)** training local oversight committees on monitoring (component 6).

Specifically, the highlighted categories of NMA and MMMR staff will be trained on women's historical role in AGM, their important contributions to the sector, gendered-challenges women are faced with, and the importance of women's implication in the sector for their families' wellbeing and for local development.

2. Managing children's presence and participation in ASGM

As discussed in section 3.14, children have a limited role in Sierra Leone's ASGM sector. Most children simply accompany their mothers working in AGM. Those children that directly work in the sector, mainly perform tasks such as carrying water, washing ore and panning concentrate, and are not directly exposed to the threats faced in hard rock mining and mercury amalgamation. Still, children's presence and in some cases involvement in alluvial AGM sites exposes them to several health threats, including most notably headaches, coughs and fever. As a Party to the 'UN Convention on the Rights of the Child', Sierra Leone is committed to managing children's participation in the AGM sector. This is reflected in the 2009 Mines and Minerals Act, which prohibits the employment of children in mining. Still, as a consequence of limited access to care services, persistent poverty and limited access to education in rural areas, children are found in AGM areas to either accompany their mothers, or working to earn their school fees and to contribute to their household.

The following measures are envisioned to manage child labour and protect children from mercury and other hazards of the ASGM sector:

- ***Investigate children's presence and participation in in AGM***

A key starting point for addressing children's participation in AGM is enhancing understanding of why and under which circumstances they are involved in the sector. While the ASGM Overview and several other studies have already investigated this, the AM Baseline study of the World Bank-funded EITAP 2 project will further contribute to this goal, and GoSL is committed to continue building on this knowledge body. In further investigations, specific attention will be paid to:

- (i)** the scale of child labour in the ASGM sector, activities children are involved in, and the respective health threats they are exposed to;
- (ii)** children's and their parents' motives for engaging in the sector, its significance for household income and local development, and its position in the wider social, cultural, and economic context of (child) labour and development; and
- (iii)** children's access to education and safer modes of employment, and available alternative sources of income for the household.

88 UN Committee on the Elimination of Discrimination Against Women (CEDAW), Consideration of reports submitted by States parties under article 18 of the Convention : 6th periodic reports of States parties due in 2009 / Sierra Leone, 1 November 2012, CEDAW/C/SLE/6, available at: <https://www.refworld.org/docid/52dd1f6a4.html>. Accessed on 23/04/2019.

- **Monitor the occurrence of child labour**

As has already been discussed under the formalization strategy (component 8), local oversight committees will be mandated with monitoring the occurrence of child labour in AGM areas as a regular part of monitoring. This monitoring will include not only the identification of children on AGM sites, but also an examination of the tasks (if any) they are involved in and the potential hazards they are exposed to. Monitoring officers will speak with the children and their parents to understand why they are present at the mine site, and provide advice regarding transitioning children to nearby schools or day care programmes (see below), and report their findings to the respective regional NMA office.

- **Facilitate access to free education and day care in ASGM areas**

Since one of the root causes of children's participation in AGM is the limited availability of free education, GoSL will, in line with the MTNDP's mantra of 'education for development', strengthen its recent efforts towards ensuring children's access to free primary and secondary education in rural areas. This will include especially those areas where AGM occurs. The envisioned steps are further listed as the 'key policy actions' on page 45 and pages 49-50 of the MTNDP. Likewise, since another root cause of children's presence in AGM sites is the limited access to day care, GoSL will establish local day care facilities near each of Sierra Leone's 25 identified AGM areas so that female miners can drop off their children at such facilities before going to work.

- **Facilitate access to social protection programmes and subsidiary support**

In cases where children working in AGM are removed, GoSL will compensate the respective families for this loss of income with subsidiary support. Likewise, social protection programmes will be explored and families will be provided with access to such programme to ensure that the economic repercussions from children's removal from AGM sites are mitigated.

- **Provide "school kits" in areas where child labour persists**

In areas where child labour persists, and access to free education, day care, social protection and subsidiary support remains a challenge, children will be provided with "school kits". Such school kits include books, pens, exercises and other tools which can enable children, with the support of their parents and community leaders, to continue learning while working in AGM mines.

3. Additional measures for protecting vulnerable groups from mercury poisoning

With the above measures, the advancement of gender equality and women's empowerment and the management of children's presence and participation in AGM will also protect these groups from AGM's health impacts, including mercury poisoning. In addition to this, several other measures will be taken to protect children, women of child-bearing age and communities from mercury poisoning in ASGM:

- **Establish buffer zones from mercury amalgamation**

As has been discussed in section 6.1a, buffer zones for mercury amalgamation and gold purification will be established at a minimum distance of 500 meters away from nearby communities and from areas where children and women of child-bearing age are likely to be found. By including a safe distance from nearby farm land and water resources in the identification of such buffer zones, local farmers, fishermen and nearby communities, who may otherwise be expected to be adversely affected by mercury use, will also be protected.

- **Educate stakeholders on children and women’s specific vulnerabilities**

As part of the awareness raising strategy (section 6.1h), all stakeholders of the ASGM sector will be educated and sensitized about children’s and women’s specific vulnerabilities regarding mercury poisoning and other ASGM-related health hazards. This is expected to raise demand among local stakeholders, including especially ASGM communities, for preventing the exposure of children and women of child-bearing age to mercury emissions. As such, local community members can support the establishment of buffer zones for amalgamation and exert peer pressure on miners to ensure that they do not expose these vulnerable groups to toxic vapours of mercury and acid. By communicate nuanced messages, careful attention will be paid that this does not lead to a *de facto* exclusion of women and children from the sector, but rather to protect them from exposure to the most harmful practices. Likewise, as is also discussed in the public health strategy, staff from local health clinics, MoHS and MLSS will receive more detailed training on these issues, to ensure that they can provide children and pregnant women with the appropriate advice and health care services.

- **Empower women as custodians for environmental stewardship and community health protection**

Female gold miners, who are mainly involved in panning and washing on a very small scale, do not cause much of the environmental damage stemming from artisanal mining activity. Yet, they are adversely affected by environmental degradation as they depend most on the environment for making fire and feeding their families. For this reason, and for the fact that women are traditional caregivers in their families and communities, they are well positioned to lead efforts that aim to promote environmental stewardship and health protection in their communities. Therefore, as part of the awareness raising strategy (section 6.1h), women will be trained with a Train-The-Trainers approach and further empowered to lead sensitization efforts in their communities concerning mercury poisoning and other environmental and health impacts associated with the ASGM sector.

H. Strategy for providing ASGM miners, traders and affected communities with information

The strategy for providing ASGM miners, traders and affected communities with information builds on all previous strategies and especially the strategy for engaging stakeholders in the NAP implementation and refinement. It is a strategy for both NAP implementation, as well as the wider ASGM formalization process (see section 6.1b). The strategy includes two components:

- An outreach plan for ASGM communities
- Integration of ASGM and mercury issues in other development initiatives

1. Outreach plan for ASGM communities

The outreach plan articulates what messages need to be communicated, to which target audience, in what form and with which media. As part of its communication goals, the outreach plan seek to raise awareness about the following issues:

- mercury use and its harmful effects on men, women, boys, girls and the environment
- children’s and women’s specific vulnerabilities regarding mercury poisoning and other ASGM-related health hazards
- the identified worst practices that occur in Sierra Leone, most notably the open burning of mercury amalgams in residential areas as well as the use of acid for gold purification in residential areas
- other health hazards associated with ASGM activity and the impacts they may have on men,

women, boys and girls

- simple steps that can be taken to mitigate the worst impacts of mercury use (e.g. burning mercury amalgams in ‘buffer zones’, at least 500 meters away from the community)
- simple steps that can be taken to mitigate other health and environment impacts (e.g. land rehabilitation)
- the national vision for the sustainable transformation of ASGM
- regulatory changes and the intentions behind them, new rules that apply to ASGM operations, and the costs of in compliance with these regulations and rules
- the wider formalization process and the steps that need to be taken to become fully formalized
- the provision of administrative and technical assistance and how to become eligible for accessing such assistance
- the possibility of accessing finance and how to become eligible for this
- improving occupational health and safety among ASGM miners
- improving overall hygiene, sanitation and other health issues in ASGM communities
- prevailing stereotypes, attitudes and social norms regarding gender and women in mining (see section 6.1h)

Many of these issues are described in more depth related strategies, most notably the strategies for eliminating worst practices and improving mining practices, the formalization strategy, the public health strategy, and the strategy for protecting vulnerable groups.

The outreach plan identifies the following stakeholders as the primary target audience:

- ASGM miners (diggers, processors, gang leaders and license holders)
- Gold traders, goldsmiths and exporters
- ASGM communities
- Downstream communities that are likely impacted by ASGM activity
- Chiefdom authorities

The outreach plan further identifies the following stakeholders as the secondary target audience:

- Local NGOs, universities and local and national media (important stakeholder in executing the outreach plan)
- The wider public (all stakeholders identified in table 6)

While the communication goals are broad in scope, it is important that they are communicated effectively. On the one hand, it is important that the messages are short, simple, and relevant so that they can be understood by a large audience, including less educated people and living in rural areas. Translation into local languages is therefore essential. On the other hand, when speaking about mercury use and ASGM formalization, people can sometimes misunderstand the message. For example, messages such as “stop illegal mining” or “end mercury menace” may result in social pressure within communities, which can cause social and economic harm to ASGM actors who need time to gradually improve their practices and formalize their livelihoods. Therefore, it is best to develop constructive and forward-looking messages. For example, the following message has been used during the ASGM field research:

“Artisanal gold mining is an important economic activity that provides viable livelihoods for many Sierra Leoneans, both directly and indirectly. It contributes to poverty reduction and creating jobs for many

young people and women, especially in some of the poorer regions. However, this activity also causes some negative social, environmental, and health impacts that need to be addressed. In particular, it is important to address the irresponsible use of mercury in some mining areas in Sierra Leone. Moreover, it is important to protect our lands and ensure that mining pits are filled after mining activity ends. To enable miners to address these issues, we want to give them support to formalize and to adopt better mining practices, so that they can continue this important activity in a more sustainable way that is good for everyone.”

Finally, a combination of various media will be employed to ensure that the various target audiences are reached in a customized and effective manner. In the employment of each of these media, women will play a leading role in sensitization activities. The table below illustrates the media that are envisioned.

Table 7 *Identification of media among target audiences*

Media	ASGM miners	Gold traders	ASGM communities	Downstream communities	Chiefdom authorities	Wider public
SAG meetings	X	X	X	X		
Regular health promotion activities	X	X	X	X		
Trainings on better mining practices	X	X	X			
Replication of trainings	X	X	X			
Pamphlets	X	X	X	X		
Posters	X	X	X	X		
Guidebooks	X	X				
Radio	X	X	X	X	X	X
TV	X	X	X	X	X	X
Facebook	X	X	X			
WhatsApp	X	X	X			

The SAG, which have been described in the strategy for engaging stakeholders (section 6.1e), is also mandated with awareness raising. Besides its quarterly ‘ordinary’ meetings, it will during the first year of NAP implementation (2020) conduct briefer workshops in each of Sierra Leone’s 15 main ASGM areas to raise awareness about the issues listed above. This will include the sensitization activities about the worst practices discussed in section 6.1a. Moreover, health facilities (and especially CHOs) will play an important role for raising awareness on the effects of mercury and other ASGM-related health issues as part of regular health promotion activities. The Health Education Department (HED) of the MoHS will play an important role in this, which is responsible for coordinating health promotion as indicated in the 2000 Health Education Policy.

Besides this, the trainings on better mining practices (discussed in section 6.1c) will also include a component of awareness raising. Such awareness raising events provide the opportunity for a two-way communication wherein the target audiences (ASGM communities and ASGM actors) have the opportunity to ask questions and provide comments. As such, they can help to clarify potential misinterpretations and facilitate the communication of more detailed and nuanced messages. These interventions will take a Train-The-Trainers approach wherein local ‘champions’ such as women and youth leaders will be trained and tasked to replicate these discussions in nearby communities.

In addition, simple pamphlets and posters will be printed and circulated in ASGM communities and nearby communities. These media will communicate simpler and shorter messages, focused on raising awareness of some of ASGM's negative impacts on human health and the environment, including mercury use. Moreover, as described in the formalization strategy (section 6.1b), guidebooks about the regulatory framework and formalization process will be disseminated among gold miners and traders. In addition, Radio and TV will be used to inform the larger audience, where messages such as the one quote above will be disseminated. Popular radio programmes such as Morning Coffee of the Sierra Leone Broadcasting Cooperation (SLBC), Good Morning Show of Radio Democracy, and Environmental Hour of Africel Radio could be suitable stations. Finally, Facebook and WhatsApp will be used as a tool to provide gold miners and traders with practical information about improving their mining practices. These two media will not be used to spark discussions among the larger audience because of the risk that such messages may be misinterpreted and bended in a negative way to cause unnecessary negativity around the ASGM sector among Sierra Leoneans.

2. Integration of knowledge about ASGM and mercury issues in other initiatives and institutions

To ensure scaling-up of the awareness raising activities, they will be integrated on other ongoing and future initiatives. As discussed in the public health strategy (section 6.1f), mercury poisoning and other ASGM-related health hazards will be integrated in other public health initiatives. Besides this, as mentioned under the formalization strategy (section 6.1b) knowledge about the above issues will be integrated in university curricula and institutionalized in universities and NGOs working on similar issues. In addition, this information will be included in several project undertaken in Sierra Leone's ASM sector, such as the EITAP 2 project which will have a strong component focusing on AGM, and implementation of the recommendations of the SEA for Sierra Leone's ASM sector.

6.2 Work plan

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Geoprospect and allocate land for ASGM	Conduct a nationwide airborne geophysical survey and conduct geoprospecting in the field	High	NMA	- MMR - World Bank	X	X	X	X	X	9,020,000	EITAP 2\$	Geophysical survey has been conducted all over Sierra Leone, and has made the information publicly available by December 2022	Hectares of land surveyed Availability of results on NMAs website
		Establish a geo-database, complete geological maps and make this information publicly available	High	NMA	- MMR - World Bank	X	X	X	X	X	250,000	EITAP 2\$	Geo-database has been established and 15 geological maps at 1:100,000 scale have been completed by December 2022	Availability of geo-database and geological maps on NMAs website
		Conduct geoprospecting and geochemical mapping	High	NMA	- MMR - World Bank - ASGM communities - LSM companies - Fourah Bay College - British Geological Surveys (BGS)	X	X	X	X	X	1,000,000	EITAP 2\$	Geoprospecting and geochemical mapping has been conducted all over Sierra Leone, and has made the information publicly available by December 2022	Hectares of land geo-prospected No. of orebodies suitable for AM activity identified Availability of geological maps on NMAs website
		Conduct land use mapping	Medium	EPA-SL	- NMA - MLHE - MMR - NPAA	X	X	X	X	X	100,000	TBD	Land use has been mapped in at least 7 districts and 14 chiefdoms where ASGM activity occurs by December 2020	Hectares of land mapped
		Identify the most suitable areas for establishing AM zones in consultation with stakeholders	High	NMA	- MLHE - MMR - EPA-SL - ASGM communities - Land owner - Chiefdom authorities - NPAA	X	X	X	X	X	200,000	TBD	Local stakeholders have been engaged in workshops and visits and 12 potential AM zones have been identified by December 2021	No. of potential AM zones identified Notes of stakeholder engagement available

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline												Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2	2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Geoprospect and allocate land for ASGM	Designate the authority to establish AM zones and establish AM zones	High	MMMR	- NMA	X	X	X	X	X	X	X	X	50,000	EITAP 2\$	The amended 2009 Mines and Minerals Act lists NMA's authority to establish AM zones and MIMMR has published a decree for the establishment of 20 AM zones by December 2023	No. of AM zones established Percentage of female miners with access to AM zones Publication of a decree by MIMMR				
		Manage ASGM in protected areas	Medium	NPAA	- NMA - EPA-SL - MIMMR	X	X	X	X	X	X	X	X	300,000	NPAA annual budget	50% of artisanal miners operating in NPAs have been transferred to an established AM zone or included in alternative livelihoods programmes and 100% of SSGM companies operating in NPAs have been evicted by December 2022	No. of AM miners transferred and enrolled in alt. liv. programmes No. of SSGM companies evicted				
		Mediate ASGM-LSM co-existence, explore potential partnerships and resolve other land disputes*	High	NMA	- MIMMR - MLHE - EPA-SL - ASGM communities - Land owner - Chiefdom authorities - LSM companies	X	X	X	X	X	X	X	X	200,000	NMA and MIMMR ann. budgets	At least 3 land sharing/partnership agreements between ASGM and LSM have been signed by December 2022 Land use around at least 3 potential AM zones and any other land disputes have been mediated by December 2021	No. of formal agreements signed between ASGM and LSM companies No. of land disputes resolved				
		Build NMA's capacity on training artisanal miners on "SMART mining", on geopropecting, and on gender issues	Medium	NMA	- MIMMR - World Bank - EPA-SL	X	X	X	X	X	X	X	X	250,000	EITAP 2\$	Each regional office of the EPA-SL and Ministry of Mines has two vehicles and staff has been trained on ASGM, mineral geology and gender issues by June 2020	No. of vehicles in NMA's regional offices No. of staff trained in NMA regional offices				

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Geoprospect and allocate land for ASGM	Build the capacity of laboratories including provision of equipment	Medium	NMA	- Laboratories - MIMMR - World Bank	X	X	X	X	X	400,000	EITAP 2\$	X laboratories equipped by December 2022	No. of laboratories equipped
		Create partnerships with and build the capacity of academic and technical institutions	Medium	NMA	- MIMMR - EPA-SL - World Bank - Fourah Bay College	X	X	X	X		315,000	EITAP 2\$	5 universities or technical institutions trained and engaged in workshops, and 2 partnerships formed by December 2022	No. of universities and technical institutions participated in trainings and workshops No. of partnerships formalized
		Investigate where and how SSGM companies operate**	Medium	NMA & EPA-SL	- Relevant NGOs - Relevant universities	X	X				100,000	NMA and EPA ann. budgets	The whereabouts of small-SSGM companies has been investigated by December 2020	Availability of full study on SSGM companies in Sierra Leone
		Investigate current forms of organization and social arrangements	Medium	International consultant	- NMA - MIMMR - World Bank	X					100,000	EITAP 2\$	AGM miners' and small traders' current forms of organization and social arrangements in all the countries' 15 main AGM areas as part of the 'Baseline Study on Artisanal Mining' by December 2019	Availability of AM Baseline Study report with a dedicated section on organization and social arrangements
Facilitate AGM miners' organization	Facilitate AGM miners' organization	Organize workshops to provide information and to facilitate discussions about various modes of organization	High	NMA	- MIMMR - World Bank - Community leaders - AGM groups - Chiefdom Mining Committees	X	X				50,000	NMA ann. budget	At least 8 workshops organized with at least 30% of female and at least 30% of youth participation by December 2020	Availability of workshop reports including lists of participants (LoP) disaggregated by sex and age
		Facilitate the establishment of entities and provide ongoing assistance	High	NMA	- MIMMR - World Bank - Community leaders - AGM groups - Chiefdom Mining Committees	X	X				100,000	NMA ann. budget	At least 8 workshops organized with at least 30% of youth and female participation At least 5 AGM entities with at least 25% female and at least 25% youth established and trained by December 2021	Registration of AGM entities Availability of workshop and training reports including LoPs disaggregated by sex and age Percentages of female miners and youths occupying leadership roles in mining entities

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline				Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators			
						2	0	1	9							
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Facilitate AGM miners' organization	Train the established entities on cooperative governance, business management, and gender equality	High	NMA	<ul style="list-style-type: none"> - MIMR - World Bank - MTI Cooperatives Department - National Cooperative Credit Union Association-Sierra Leone (NaCCUA-SL) - Community leaders - AGM groups - Chiefdom Mining Committees 	2	0	1	9	50,000	NMA ann. budget	Established entities trained on cooperative governance, business management, and gender equality by December 2021	Availability of training reports including LoPs disaggregated by sex ASGM entities provide their members with regular training and information			
						2	0	2	2							
						2	0	2	2							
						2	0	2	2							
		Facilitate the establishment of a national AGM federation or union through the conduct of democratic elections	High	NMA	<ul style="list-style-type: none"> - Established AGM entities - Community leaders - AGM groups - Chiefdom Mining Committees MIMR 			X		50,000	NMA ann. budget	National AGM federation or union established democratically through supervised elections by December 2022	Registration of national AGM federation or union Workshop report including LoPs disaggregated by sex			
		Investigate SSGM companies' current forms of organization and working conditions**	High	NMA and EPA-SL	<ul style="list-style-type: none"> - EPA-SL - MIMR 	X				100,000	NMA and EPA ann. budget	SSGM companies' current forms of organization and working conditions investigated throughout Sierra Leone by December 2020	Availability of full study report on SSGM			
		Prepare and diffuse templates for decent workers' contracts among SSGM companies	High	NMA	<ul style="list-style-type: none"> - MLSS - MOHS - MIMR 	X				25,000	NMA ann. budget	Template of basic contract terms prepared and diffused among all SSGM companies operating in Sierra Leone by December 2022	Availability of template for basic contracts			

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	License and regulate ASGM	Train MMMR, NMA and EPA-SL-SL in policy making, ASM formalization and gender issues	Medium	Fourah Bay College, Geology Department	- NMA - MMMR - EPA-SL	X	X	X	X	X	X	30,000	TBD	At least 15 members of MMMR staff, NMA staff and EPA-SL-SL staff trained in policy making, ASM formalization and gender issues by December 2022	Availability of training report including LoP disaggregated by sex No. of NMA, MMMR and EPA-SL staff trained
		Redefine 'artisanal mining' in the amendment of the 2009 Mines and Minerals Act to allow for a larger scale of operation in terms of depth and use of equipment	High	MMMR	- NMA - World Bank - EPA-SL - AGM communities	X						50,000	EITAP 2\$	'Artisanal mining' redefined in the amendment of the 2009 Mines and Minerals Act by December 2020	Publication of new Mines and Minerals Act including a new definition for AM
		Redesign artisanal mining licenses in the amendment of the 2009 Mines and Minerals Act to reconcile legal gaps and become more practical in use	High	MMMR	- NMA - World Bank - EPA-SL - AGM communities	X	X					50,000	EITAP 2\$	Provisions for AM licenses are amended in the new Mines and Minerals Act by December 2020	Publication of new Mines and Minerals Act including new provisions for AM licenses No. of AM miners and percentage of women in possession of valid licenses
		Harmonize surface rent and community development fees in the artisanal licensing process	Medium	MMMR	- NMA - Chiefdom Mining Committees - World Bank - AGM communities	X	X					50,000	EITAP 2\$	Surface rents and community development fees for artisanal licensing are harmonized among chiefdoms by December 2020	Consistency in rates paid by applicants for AM licenses for rents and fees
		Pursue negotiations with the MRU to harmonize regional fees, tax, and royalty rates ****	High	MMMR	- Mano Rover Union - NRA - MoFAIC - MoF - NMA	X	X	X	X		50,000	EITAP 2\$ MMMR ann. budget	Regional fees, tax, and royalty rates are harmonized in the MRU by December 2022	AGM fee, taxes and royalty rates in MRU countries	

Strategy	Subcomponent	Activity	Priority	Agency responsible	Parties prenanates appuyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	License and regulate ASGM	Train NRA's staff, strengthen taxation systems and provide applicants for AM or SSM licenses with Taxpayer Identification Numbers (TIN) as part of the licensing process	Medium	NRA	- NMA - MoF - Mano Rover Union - MMMR	X	X	X	X	X	250,000	EITAP 2\$	At least 100 of NRA's staff trained and taxation systems strengthened by December 2022	Availability of training reports including LoPs disaggregated by sex Possessions of TINs among AM and SSM license holders Amount of taxes levied from the ASGM sector annually	
		Review mine safety and worker health standards for AM and SSM in the amendment of the 2009 Mines and Minerals Act and require license holders to appoint a "health and safety officer"	Medium	SLSB	- MMMR - NMA - MLSS - MOHS	X	X	X	X		50,000	EITAP 2\$	Enhanced mine safety and worker health standards for AM and SSM in the new Mines and Minerals Act and "health and safety officers" appointed by 50% of new license holders December 2022	Publication of new Mines and Minerals Act including updated mine safety and health provisions Presence of operational health and safety officers in AGM areas	
		Ban the 'worst practices' as described in Annex C of the Minamata Convention on Mercury in Sierra Leone's ASGM sector in the amendment of the 2009 Mines and Minerals Act	High	MMMR	- EPA-SL - MOHS - MLHE	X	X				10,000	EITAP 2\$ MMMR ann. budget	The 'worst practices' are banned in the new Mines and Minerals Act by December 2020	Publication of new Mines and Minerals Act including a ban of the use of worst practices	
		Adopt a provision for restricting ASGM activity in National Protected Areas in the 2009 Mines and Minerals Act	Medium	MMMR	- NPAA - EPA-SL - MLHE	X					10,000	EITAP 2\$ MMMR ann. budget	The new Mines and Minerals Act includes a provision for restricting ASGM activity in National Protected Areas by December 2020	Publication of new Mines and Minerals Act including a provision for restricting ASGM activity in NPAs	
		Design and disseminate practical and regulatory guidelines for land rehabilitation and mine closure that are tailored to AM and SSM operations	High	EPA-SL	-NMA -MMMR -MLHE -Chiefdom Mining Committees -ASGM entities -Relevant NGOs -Relevant universities	X	X	X		200,000	EPA ann. budget	Practical and regulatory guidelines for land rehabilitation and mine closure are disseminated among 40% of AM and 100% of SSM operations by December 2021	AM and SSM operators in possession of guidelines for land rehabilitation No. of AM and SSM operators rehabilitating land		

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuquant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators								
						2	2	2	2	2	2					2	2						
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	License and regulate ASGM	<p>Include gender-sensitive provisions in the amendment of the 2009 Mines and Minerals Act, fully in line with Sierra Leone's obligations under CEDAW</p> <p>Prepare a simple guidebook on applicable regulations, penalties, guidelines, penalties, basic mining rules, and general information about ASM, diffuse it among AM and SSM operations and communicate it radio and TV programmes and townhall meetings</p> <p>Redesign small-scale mining licenses in the amendment of the 2009 Mines and Minerals Act to reconcile legal gaps and become more practical in use</p> <p>Redesign EIAs in the 2008 Environment Protection Agency Act and the 2009 Mines and Minerals Act by decreasing license fees while including more social and health considerations in the EIA's requirements</p> <p>Ban the use of mercury in SSM operations in the amendment of the 2009 Mines and Minerals Act</p>	High	MMMR	<ul style="list-style-type: none"> -MSWGCA -NMA -Relevant NGOs -Relevant universities 	X	X	X	X	X	X	50,000	MMMR ann. budget	Gender-sensitive provisions included in the new Mines and Minerals Act by December 2020	Publication of new Mines and Minerals Act including gender-specific provisions								
																2	2	2	2	2	2	2	2
																0	0	0	0	0	0	0	0
																1	2	2	2	2	2	2	2
						9	0	1	2	3	4												
			High																				
			High	NMA	<ul style="list-style-type: none"> -MMMR -EPA-SL -NRA -Chiefdom Mining Committees -Relevant NGOs -Relevant universities 	X	X					200,000	NMA ann. budget	50 copies of the guidebook are diffused in each of the country's 25 identified AGM communities and among all SSM companies operating in Sierra Leone and through at least 3 radio and/or TV stations and 1 townhall meeting by December 2020	No. of AM miners and SSM companies in possession of and familiar with (the contents of) the guidebooks								
			High	MMMR	<ul style="list-style-type: none"> -NMA -World Bank -EPA-SL -AGM communities -SSM companies 	X	X					50,000	EITAP 2\$ MMMR ann. budget	Provisions for SSM licenses are amended in the new Mines and Minerals Act by December 2020	Definition of SSM in new Mines and Minerals Act No. of SSM companies in possession of valid licenses								
			High	EPA-SL	<ul style="list-style-type: none"> -MLHE -NMA -MMMR -Chiefdom Mining Committees 	X	X					50,000	EPA ann. budget	EIAs redesigned by December 2020	Publication of new Environment Protection Agency Act and new Mines and Minerals Act including new provisions for EIAs								
			High	EPA-SL	<ul style="list-style-type: none"> -Ministry of Environment -NMA -MMMR -Chiefdom Mining Committees 	X	X					10,000	EPA ann. budget	Use of mercury banned in SSM operations in the new Mines and Minerals Act by December 2021	Publication of new Mines and Minerals Act incl. provisions that ban mercury use in SSM								

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiant	Timeline				Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators	
						2	2	2	2					2
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Organize the gold supply chain	Further investigate the domestic and regional AGM supply chain as part of the 'green gold pilot' of the EITAP 2 project	High	Int. consultant	- NMA - MIMR - World Bank - Chiefdom Mining Committees - Gold traders, goldsmiths and exporters - AGM communities	X				100,000	EITAP 2\$	The domestic and regional artisanal gold supply chain is further investigated by December 2019	Availability of green gold pilot study report including a dedicated section on the gold supply chain	
		Organize workshops to engage dealers, exporters, dealers' and exports' agents, goldsmiths and other relevant stakeholders for mapping gold trade routes and new ways of structuring gold trade	High	NMA	- Gold traders, goldsmiths and exporters - AGM communities - Chiefdom Mining Committees - MIMR - NRA - EPA-SL	X				50,000	NMA ann. budget	3 workshops conducted to engage dealers, exporters, dealers' and exports' agents, goldsmiths and other relevant stakeholders by December 2020, with at least 20% female and 20% youth participation	Workshop reports incl. LoPs disaggregated by sex and age	
		Support dealers, exporters, dealers' and exports' agents and goldsmiths to organize into dealers' associations or exporting companies and facilitate the registration of such associations/ companies	High	NMA	- Gold traders, goldsmiths and exporters - Chiefdom Mining Committees - MIMR - NRA			X	X	X	100,000	NMA ann. budget	At least 3 associations or companies of dealers/exporters/ dealers' and exports' agents/ goldsmiths are registered and in possession of dealers' licenses by December 2023	Registration of dealers' associations or exporting companies No. of dealers, exporters and agents possessing valid licenses Percentage of women possessing valid licenses
		Identify and train staff in mercury-free gold processing and refining and gold valuation and install processing, refining and valuation facilities	High	Int. consultant	- NMA - EPA-SL - Fourah Bay College, Geology Department - FINIC - MIMR - Chiefdom Mining Committees - World Bank				X	X	100,000	NMA and EPA ann. budgets	At least 20 staff trained in mercury-free gold processing and refining and gold valuation and employed in a SGBP by December 2022	Availability of training report including LoP disaggregated by sex No. staff trained No. of trained staff working with SGBP

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Organize the gold supply chain	Establish two accredited regional gold-buying stations in close proximity to some of the identified AM zones which buy, process and valueate gold without mercury and sell it to the Central Bank	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NMA - EPA-SL - Central Bank - MIMR - Fourah Bay College, Geology Department - World Bank 	X	X	X	X	250,000	Gold refiners Central Bank	2 accredited regional mineral buying stations established in close proximity to some of the identified AM zones which buy, process and valueate gold without mercury and sell it to the Central Bank by December 2022	No. of regional mineral buying stations registered No. of transactions between the SGBP and the Central Bank No. of community and chiefdom members involved in monitoring the SGBP's activities	
		Establish a system for tracing artisanal gold trade from the mine to the point of export and the various channels in between in full compliance with the OECD Due Diligence Guidance standard	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NRA - NMA - Central Bank - AGM communities - GBP - MIMR - World Bank - Relevant NGOs - Relevant universities 	X	X	X	X	200,000	TBD	1 system for tracing artisanal gold trade in full compliance with the OECD Due Diligence Guidance standard has been established and is fully functional by July 2023	No. of functional traceability systems for AGM Kg's of gold traced from mine to Central Bank	
		Pilot a certification system that operates along with the traceability system, and pilot an associated community development fund using the premium that may be paid for certified 'responsibly-produced gold'	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NRA - NMA - Central Bank - AGM communities - Chiefdom Mining Committees - SGBP - MIMR - World Bank - MLGRD - Relevant NGOs - Relevant universities 	X	X	X	X	200,000	TBD	1 certification system and 1 associated community development fund piloted by December 2023	No. of certification systems Kg's of gold certified USD's or Leones distributed in community dev. fund	
		Investigate the domestic and regional gold supply chain for SSGM companies**	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NMA - MIMR - World Bank - Chiefdom Mining Committees - SSGM companies - Gold traders, goldsmiths and exporters 	X	X	X	X	100,000	TBD	Domestic and regional gold supply chain for SSGM companies investigated by December 2020	Availability of full study on SSGM with a dedicated section on SSGM gold supply chains	

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators	
						2	2	2	2	2					2
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Organize the gold supply chain	Establish a system for tracing small-scale gold trade from the mine to the point of export and the various channels in between in full compliance with the OECD Due Diligence Guidance standard	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NRA - NMA - Central Bank - AGM communities - SGBP - MMR - World Bank - Relevant NGOs - Relevant universities 									No. of functional traceability systems in SSGM Kg's of gold traced from mine to Central Bank	
		Conduct a financial needs assessment among AGM miners	Medium	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - AGM communities - NMA - MMR - World Bank - Chiefdom Mining Committees - Corporate and development banks - Central Bank - MoF 									Availability of financial needs assessment report, including details of the occupations, sex and age of respondents	
	Facilitate access to finance	Organize a workshop to educate identified financial institutions about AGM, to sensitize them about the importance of facilitating AM miners with access to finance and to obtain their feedback for moving this forward	High	NMA	<ul style="list-style-type: none"> - MMR - World Bank - AGM communities - Chiefdom Mining Committees - Corporate and development banks - Central Bank - MoF - LSM companies - Relevant NGOs - Relevant universities 									Workshop report, incl. LoP disaggregated by sex Identified financial institutions displaying better understanding about AGM	
		Train AGM miners and small traders on financial literacy, the financial products that are available among the identified financial institutions, and the process for accessing them	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - AGM miners - AGM communities - NMA - Chiefdom Mining Committees - Corporate and development banks - Central Bank - MoF 									At least 25 AGM miners in each of the country's identified AM zones are trained by July 2021, with at least 30% women and 30% youth participation	Training report, incl. LoP disaggregated by sex and age No. of miners trained

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Facilitate access to finance (Cont.)	Provide the established AGM entities with ongoing assistance on opening bank accounts, developing savings, and loans schemes, and accessing micro-credit	High	Int. consultant or relevant NGO	- AGM miners - AGM communities - NMA - Chiefdom Mining Committees - Corporate and development banks - Central Bank - MoF	X	X	X	X	X	150,000	TBD	The established AGM entities are provided with ongoing assistance in accessing finance by December 2021, with at least 30% women and 30% youth participation At least 5 AGM entities have opened bank accounts and have either developed savings and loans schemes or accessed micro-credit by December 2022	No. of female and young AGM miners with access to finance No. of AGM entities with bank accounts No. of AGM entities with access to micro-credit
		Reserve a dedicated budget to assist AGM miners and small traders, such as from pension funds or national budget allocations	High	MoF	- NMA - NASSIT - Central Bank - MFAIC - NRA - MLSS	X	X	X	X	X	TBD (charged later on)	Ann. budget GoSL	At least \$5,000,000 is reserved to assist AGM miners and small traders by December 2024	No. of USD's allocated for assisting AGM miners and small traders
Facilitate access to assistance (see also the strategy on better mining practices for concrete provision of assistance)		Include AM in Sierra Leone's National Strategy for Financial Inclusion for 2017-2020 or subsequent period	High	GoSL	- MoF - NMA - Central Bank - NRA - NASSIT - MLSS	X	X	X	X	10,000	Ann. budget GoSL	AM is included in Sierra Leone's National Strategy for Financial Inclusion for 2017-2020 or subsequent period by December 2020	Publication of Sierra Leone's updated National Strategy for Financial Inclusion	
		Conduct a needs assessment among AGM miners and small gold traders as part of the Baseline Study on Artisanal Mining	Medium	International consultant or relevant NGO	- NMA - MMMR - World Bank - EPA-SL - Relevant NGOs - Relevant universities	X					50,000	EITAP 2\$	2 Needs assessment conducted among AGM miners and small gold traders as part of the Baseline Study by December 2019	Availability of AM Baseline Study report including a dedicated section on miners' and traders' needs

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Facilitate access to assistance (see also the strategy on better mining practices for concrete provision of assistance)	Institutionalize expertise and strengthen relevant NGOs and university departments working with AGM miners by including them in any relevant trainings and policy discussion workshops or meetings on AGM, and by supporting research in this subsector	High	NMA	<ul style="list-style-type: none"> - Fourah Bay College, Geology Department - Njala University, School of Environmental Sciences, and the Institute of Environmental Management and Quality Control - National Coalition on Extractives (NACE) - Women In Mining - International Growth Centre - KOCEPO - AYMIE - EPA-SL - Other relevant NGOs/universities 	X	X	X	X	X	X	300,000	EITAP 2\$NMA ann. budget	Relevant NGOs and university departments working with AGM miners included in at least 5 trainings and 5 policy discussions by December 2024	<ul style="list-style-type: none"> Training report, incl. LoP disaggregated by sex Workshop reports incl. LoPs disaggregated by sex No. of studies conducted by NGOs and universities about AGM
		Develop an educational programme on AM to educate students and professionals on technical, financial, legal, environmental, health and commercial issues relevant to the sector, and include it in the regular curriculum of relevant disciplines	Medium	MEST	<ul style="list-style-type: none"> - NMA - EPA-SL - Fourah Bay College, Geology Department - Njala University, School of Environmental Sciences, and the Institute of Environmental Management and Quality Control - Other relevant universities and NGOs 	X	X	X	X	X	X	500,000	MESTann. budget	1 curriculum on AM has been developed and included in the regular curriculum of at least 3 relevant disciplines (e.g. geology, environmental science, development, public health, public policy) by December 2024	<ul style="list-style-type: none"> Updated curricula of relevant disciplines (e.g. geology, environmental science, development, public policy)
		Conduct a needs assessment among SSGM companies regarding training needs for improving mining practices**	Medium	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - SSGM companies - NMA - EPA-SL - LSM companies - Chiefdom Mining Committees 	X					50,000	TBD	Needs assessment among SSGM companies conducted by December 2021	<ul style="list-style-type: none"> Availability of full study on SSGM including a dedicated section on SSGM companies' needs 	

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Facilitate access to markets	Train regional NMA officers and/or SGBP staff on gold valuation and value addition	High	Int. consultant or relevant NGO	- NMA - World Bank - Relevant universities and NGOs - Gold traders, goldsmiths and exporters		X	X	X	X	X	50,000	EITAP 2\$	At least 20 regional NMA officers trained on gold valuation and value addition by December 2022	Training report, incl. LoP disaggregated by sex No. of NMA staff trained
		Train AGM miners and small gold traders on gold trade, valuation and value addition	High	Int. consultant or relevant NGO	- AMG entities - Small gold traders - NMA - World Bank - Relevant universities and NGOs			X				100,000	EITAP 2\$	At least 15 AGM miners and 10 small gold traders trained in each of the country's identified AM zones, with at least 30% and 30% youth participation by December 2022	Training report, incl. LoP disaggregated by sex and age No. of miners and small traders trained Percentage of women trained
		Develop and implement a Green Gold marketing strategy and branding campaign for Sierra Leone's mineral sector, present this in at least two fair trade conferences and engage international gold buyers for sourcing such gold from Sierra Leone	High	MMMR	- MoFAIC - NMA - MTI - World Bank - Gold traders, goldsmiths and exporters - AGM miners			X	X			200,000	EITAP 2\$	1 Green Gold marketing strategy and branding campaign for Sierra Leone's mineral sector developed and presented in at least 2 fair trade conferences, and at least 10 different international gold buyers are engaged by December 2022	Gold marketing strategy and branding campaign available Reports of fair trade conferences Expressions of interest of international gold buyers for sourcing gold from Sierra Leone
		Facilitate workshops or meetings to explore viable business relations between AGM miners and LSM companies operating in the same areas in Sierra Leone*	Medium	NMA	- AGM miners or entities - LSM companies - SSM companies - ASGM communities - Chiefdom Mining Committees			X				n.a.	NMA ann. budget	3 workshops or meetings conducted with AGM miners and LSM companies by December 2022	Workshop or meeting reports incl. LoPs disaggregated by sex
Monitoring and enforcing ASGM regulations		Task compliance officers under the NMA inspectorate with inspection and technical assistance provision, review the suitability of current staffing and hire new staff	High	NMA	- MMMR - Chiefdom Mining Committees - EPA-SL	X					50,000	NMA ann. budget	The suitability of current staffing is reviewed and new staff is hired by December 2020	Annual reports on NMA staffing displaying changes in staff	

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Monitoring and enforcing ASGM regulations	Establish multi-stakeholder "local oversight committees" in each chiefdom where ASM takes place	High	NMA	- Chiefdom Mining Committees - AGM communities - Relevant NGOs - Relevant universities - EPA-SL - MMMR	X						100,000	NMA ann. budget	Establish multi-stakeholder "local oversight committees" in each chiefdom where ASM takes place by December 2020	No. of local oversight committees established
		Designate unique responsibilities to each oversight committee for monitoring AGM and SSGM operations in predetermined geographical areas	High	NMA	- Chiefdom Mining Committees - AGM communities - Relevant NGOs - Relevant universities - EPA-SL - MMMR	X	X					100,000	NMA ann. budget	Unique responsibilities designated to each oversight committee to by December 2021	No. of local oversight committees established with a clearly specified mandate
		Train the staff of all established local oversight committees, and provide the requisite monitoring infrastructure including at least motorbikes, communication technology, sampling equipment and drones	High	Int. consultants or relevant NGO	- NMA - Local oversight committees - AGM communities - Relevant NGOs - Relevant universities - EPA-SL - MMMR - World Bank	X	X					250,000	EITAP 2\$	The core staff of all established local oversight committees is trained and the requisite monitoring infrastructure are provided by December 2021	No. of staff of local oversight committees trained Average no. of vehicles, motorbikes, phones and computers per local oversight committee
		Decentralize financial resources to provincial and district-level NMA and EPA-SL offices and local oversight committees that are adequate enough to carry out their mandates and to increase monitoring officers' wages as a disincentive to bribery and corruption	Medium	NMA & EPA-SL	- Local oversight committees - MMMR	X					TBD	NMA and EPA ann. budget	Financial resources are decentralized to provincial and district-level NMA offices and local oversight committees monitoring officers' wages are increased by December 2021	Amount of allocated financial resources to local oversight committees on an annual basis	

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Monitoring and enforcing ASGM regulations	Adopt a new monitoring system including the use of drones for remote sensing after obtaining informed consent from community and chiefdom authorities and intensify monitoring efforts, especially among SSM operations	Medium	NMA	<ul style="list-style-type: none"> - Local oversight committees - AGM communities - Relevant NGOs - Relevant universities - MMMR - EPA-SL 										<p>Compliance assessment reports by NMA displaying use of remote sensing technology and aerial footage</p> <p>No. of mine site inspections carried out annually</p>
		Pursue ongoing discussions with the Mano River Union for strengthening border controls, and enhance coordination between the various regional institutions mandated with regulating cross-border trade***	High	MMMR	<ul style="list-style-type: none"> - MoFAIC - NMA - MRU - NRA - MMMR - MTI - FIU - Local oversight committees - Relevant NGOs - Relevant universities 										
		Train customs officers on curtailing gold smuggling and increase their wages to disincentivize bribery and corruption	High	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NRA - NMA - MRU - FIU - Local oversight committees - AGM communities - Relevant NGOs - Relevant universities - MMMR - World Bank 										<p>Training reports including LoP</p> <p>No. of customs officials trained</p> <p>NRA wage publications</p> <p>Reports by the anti-corruption commission</p>

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiantes	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators						
						2	2	2	2	2	2					2	2				
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Monitoring and enforcing ASGM regulations	Enhance monitoring and enforcement with penalties among traders and customs officers for 'turning a blind eye' to gold smuggling and engaging in gold smuggling respectively, and establish new mechanisms (whistle blowing policy) to incentivize disclosure of illegal activity	High	NMA	<ul style="list-style-type: none"> - NRA - Anti-corruption commissions - MMMR - MRU - FIU - Local oversight committees - AGM communities - Relevant NGOs - Relevant universities 	1	2	2	2	2	2	9	0	1	2	3	4	100,000	EITAP 2\$ NRA and MMMR ann. budget	At least 30% of cases of bribery and corruption is penalized, 1 new mechanism to incentivize disclosure of illegal activity has been established, and instances of bribery and corruption have decreased with at least 25% by December 2024	<p>Reports by the anti-corruption commission</p> <p>No. of penalties enforced among offending customs officers</p> <p>No. of agreed mechanisms for disclosing illegal activity</p>
		Enforce compliance with 'soft' coercive measures when compliance can reasonably be expected, and with tougher measures in the case of continued in-compliance when compliance can reasonably be expected among miners in AM zones, SSM companies and mineral traders	Medium	NMA	<ul style="list-style-type: none"> - Local oversight committees - NRA - Anti-corruption commissions - MMMR - AGM communities - Relevant NGOs - Relevant universities - EPA-SL 	2	2	2	2	2	2	2	2	0	0	0	0	0	n.a.	NMA annual budget	Compliance is enforced with 'soft' coercive measures and if needed with tougher measures among 40% of AGM miners operating in AM zones and among 70% of SSGM companies by December 2024

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators				
						2	2	2	2	2	2					2	2		
Formalization strategy (including sustainable and socio-economic development issues, and market-based mechanisms)	Monitoring and enforcing ASGM regulations	Train law enforcement personnel on human rights and ASGM issues and deploy them in certain areas to enforce compliance among the worst offenders with the use of force among SSM companies	High	National police and security forces	<ul style="list-style-type: none"> - NMA - Local oversight committees - NRA - MIA - MoJ - Anti-corruption commissions - MIMMR - EPA-SL 	2	2	2	2	2	2	100,000	TBD	Law enforcement personnel is trained on human rights and ASGM issues and deployed in certain areas, and compliance is enforced among 50% of the worst offending SSM companies by December 2024	Compliance assessment reports by NMA Reports by the anti-corruption commission No. of law enforcement personnel trained and employed				
						0	0	0	0	0	X	X	X	X					
						1	2	2	2	2	2								
						9	0	1	2	3	4								
Better mining practices	Actions to remove the worst practices	Implement a sensitization programme with the SAG among AGM communities, SSGM companies and nearby affected communities to highlight the dangers of mercury amalgam and acid burning in residential areas, and to designate areas for mercury amalgamation and acid-gold purification	High	EPA-SL	<ul style="list-style-type: none"> - NMA - Local oversight committees - Local health clinics - MoHS - ASGM communities - Relevant NGOs - Relevant universities 	X	X	X	X		50,000	EPA ann. budget	The identified worst practices of burning mercury amalgams and acid-gold purification in residential areas is eliminated among all AGM operations and SSM companies by December 2022	No. of (AGM) communities sensitized No. of SSGM companies sensitized No. of buffer zones established and distance of such zones to nearby communities, schools and water resources					
	Introduction of better mining practices	Conduct a first round of training programmes among AGM miners to introduce better mining practices, including on land rehabilitation, and assessment of the need for and suitability of potential new technologies per AGM site	High	NMA & EPA-SL	<ul style="list-style-type: none"> - Local health clinics - ASGM communities - Relevant NGOs - Relevant universities - FINIC 	X					100,000	TBD	A first round of training programmes is conducted in Sierra Leone's 15 most productive AGM areas by December 2020	Training reports including LoP disaggregated by sex and age No. of AGM miners that have improved current practices Hg content in breast-milk among breast-feeding mothers in ASGM communities					

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Better mining practices	Introduction of better mining practices (Cont.)	Conduct a training programme among SSGM companies to introduce better mining practices, including on land rehabilitation and mercury-free gold production	High	NMA & EPA-SL	<ul style="list-style-type: none"> - Local health clinics - ASGM communities - Relevant NGOs - Relevant universities - FINIC - SGBP - MMR - World Bank 									<p>One series of trainings is conducted among all reachable SSGM companies operating in Sierra Leone by December 2021</p> <p>Mercury use in SSGM has reduced with 50% by December 2022, and is completely eliminated by December 2024</p>	<p>Training reports including LoP disaggregated by sex and age</p> <p>No. of AGM miners</p> <p>Kg's of mercury estimated to be used in AGM annually</p> <p>No. of mine sites that have been rehabilitated</p>
		Conduct a second round of training programmes among AGM miners, including the introduction and testing of new technologies that are deemed suitable for certain AGM sites where mercury is used, and provide ongoing assistance to ensure the correct use of the new technology	High	NMA & EPA-SL	<ul style="list-style-type: none"> - Local health clinics - ASGM communities - Relevant NGOs - Relevant universities - FINIC - SGBP - MMR - World Bank 										<p>A second round of training programmes is conducted in Sierra Leone's 15 most productive AGM and new technologies are introduced in all mercury-using areas by December 2021</p> <p>Mercury use in AGM has reduced with 30% by December 2022, with 50% by December 2024 and is eliminated by December 2029</p>

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Better mining practices	Introduction of better mining practices (Cont.)	Organize a demonstration session where the newly adopted mining practices and technology has replaced the use of mercury, and include miners from nearby AGM sites and SSGM companies where mercury is currently used, as well as environmental inspectors, compliance officers, in the session	High	NMA & EPA-SL	<ul style="list-style-type: none"> - Local health clinics - ASGM communities - Relevant NGOs - Relevant universities - FINIC - SGBP - MMMR - World Bank 			X	X			50,000	EITAP 2\$	1 successful mercury-free demonstration session has been held and mercury-using AGM miners and SSGM companies have participated by December 2022	Press coverage No. of AGM miners, gold traders, SSM companies and other stakeholders that have participated in the demonstration session
		Develop a video of the better mining practices and new technology that have replaced the use of mercury, and broadcast the video on national television	Medium	NMA & EPA-SL	<ul style="list-style-type: none"> - Relevant TV stations and media - MMMR - MOHS - MLSS - ASGM communities - FINIC - Relevant NGOs - Relevant universities 				X			25,000	TBD NMA & EPA ann. budgets	1 video of mercury-free mining practices has been developed and broadcasted on national television by December 2022	Video footage available Broadcasting of National TV stations
		Take samples at sites previously mined in Masumbiri, Maranda, Laminaya and Kampala to assess the presence and extent of mercury contamination, and to	High	EPA-SL	<ul style="list-style-type: none"> - NMA - Chiefdom authorities - ASGM communities - SSGM companies 			X	X			200,000	TBD	At least 5 samples have been taken and analyzed from mine sites in Masumbiri, Maranda, Laminaya and Kampala by December 2021	Report with an analysis of sample results available Strategy for rehabilitating mercury-contaminated sites available
		Design and pilot a strategy for rehabilitating identified mercury-contaminated sites and other mined out areas	High	EPA-SL	<ul style="list-style-type: none"> - NMA - Chiefdom authorities - ASGM entities - SSGM companies 			X	X			200,000	TBD	1 strategy for rehabilitating mercury-contaminated sites has been developed by December 2021 and piloted in at least 1 ASGM community by December 2022	Strategy for rehabilitating mercury-contaminated sites available Evaluation report for piloted mine site rehabilitation available

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuyant	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2				
Better mining practices	Introduction of better mining practices (Cont.)	Train all environmental desk persons that have been established across all of Sierra Leone's MDA on issues of ASGM, mercury, and related environmental and health issues	Medium	EPA-SL	- MAF - MFMR - NRA - MTI - MLSS - MoHS - MSWGCA - MLGRD - NMA - MMMR	X	X				20,000	TBD	At least 15 environmental desk persons of different MDA's have been trained by December 2021	Training reports including LoP disaggregated by institution and sex
		Develop and enact new regulations concerning the sound management of mercury during its entire lifecycle, including, among other things, a ban of mercury in SSM from January 2021 onward	High	EPA-SL	- MEHS - NMA - MoHS - MMMR	X	X				30,000	EPA ann. budget	1 new regulation on mercury management has been developed, published and enacted by December 2021	Publication of new regulations on mercury
Managing mercury trade		Further investigate mercury supply and trade as part of the gold supply chain analysis of the 'green gold pilot' of the EITAP 2	High	Int. consultant	- NMA - MMMR - EPA-SL - World Bank - Chiefdom Mining Committees - Gold traders, goldsmiths and exporters - AGM communities				X		20,000	EITAP 2\$	Domestic and regional mercury trade is further investigated by December 2019	Availability of green gold pilot study report including a dedicated section of mercury trade and supply to AGM operations
		Include in the new regulation on the sound management of mercury provisions for banning mercury imports from 2024 onward, with the exception of use special purposes	Medium	EPA-SL	- EPA-SL - NRA - MTI - NMA - MMMR - MoFAIC - MoJ	X					10,000	EPA ann. budget	The new regulations on the sound management of mercury have been amended to practically ban mercury imports from 2024 onward, with the exception of use special purposes, by December 2021	Publication of a new regulation on the sound management of mercury, including provisions restricting mercury trade

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiantes	Timeline				Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators	
						2	2	2	2					2
Managing mercury trade		Engage laboratories and importers of skin lightening creams and other mercury-added products in meetings or a workshop for monitoring mercury trade and preventing the diversion to ASGM	Medium	EPA-SL	<ul style="list-style-type: none"> - MTI - Laboratories - Producers of mercury-added products - NRA 	2	2	2	2	2	50,000	TBD EPA ann. budget	Laboratories, and importers of skin lightening creams and other mercury-added products have been engaged in at least 2 meetings or workshops by December 2021 and no mercury from such sources reaches ASGM operations by December 2024	Meeting/workshop reports including LoPs disaggregated by sex and age
						0	0	0	0	0				
						1	2	2	2	2				
						9	0	1	2	3				
Managing mercury trade		Train local oversight committees on monitoring mercury trade as part of monitoring gold trade (see formalization strategy)	Medium	Int. consultants or relevant NGO	<ul style="list-style-type: none"> - Local oversight committees - EPA-SL - NRA - NMA - AGM communities - Relevant NGOs - Relevant universities - MMMR - World Bank 	X					20,000	EITAP 2\$	The core staff of all established local oversight committees is trained on monitoring mercury trade by December 2021	Training report including LoPs disaggregated by sex and age No. of staff trained Periodic capacity assessment of local oversight committees
Managing mercury trade		Train customs officers and other NRA staff on monitoring and enforcing illegal mercury trade as part of monitoring and enforcing illegal gold trade	Medium	Int. consultant or relevant NGO	<ul style="list-style-type: none"> - NRA - EPA-SL - NMA - MTI - Local oversight committees - AGM communities - Relevant NGOs - Relevant universities - MMMR - World Bank 				X		20,000	TBD	At least 100 customs officers trained on monitoring and enforcing illegal mercury trade by December 2022	Training report including LoPs disaggregated by sex and age No. of customs officers trained NRA wage publications Reports by the anti-corruption commission
Managing mercury trade		Pursue ongoing discussions with the Mano River Union for strengthening border controls regarding mercury trade, and enhance coordination between the various regional institutions mandated with regulating cross-border trade***	High	EPA-SL	<ul style="list-style-type: none"> - MTI - MoFAIC - NMA - Mano River Union - NRA - EPA-SL - MMMR - Local oversight committees - Relevant NGOs - Relevant universities 						20,000	MMMR ann. budget	Discussions with the MRU and coordination with regional institutions have taken place on 3 occasions under Sierra Leone's leadership by December 2021	Meeting reports including LoPs disaggregated by sex and age

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators		
						2	2	2	2	2	2					2	2
Stakeholder engagement and awareness raising	Stakeholder engagement	Conduct biannual meetings with the NICCM in Free-town to discuss the progress of NAP implementation	Medium	EPA-SL & NMA	- Identified NICCM members, including all relevant MDAs and relevant donors	X							TBD EPA and NMA ann. budgets	Every year, two MCN meetings are held and two meeting reports are developed and diffused among the MCN members	Meeting reports including LoPs disaggregated by stakeholder category and sex		
							X	X	X	X	X						
						0	0	0	0	0	0						
						1	2	2	2	2	2						
						9	0	1	2	3	4						
			Establish a Stakeholder Advisory Group (SAG) with the mandate to engage ASGM actors, communities and civil society, and organize workshops on a quarterly basis	High	EPA-SL & NMA	- ASGM communities - ASGM actors - Relevant NGOs - Relevant universities - Chiefdom Mining Committees											
			Conduct awareness raising workshops in each of Sierra Leone's identified ASGM communities under leadership from women in the SAG	High	SAG, EPA-SL & NMA	- ASGM communities - ASGM actors - Relevant NGOs - Relevant universities - Chiefdom Mining Committees											
			Develop simple pamphlets and posters in local languages about mercury and other ASGM-related hazards and circulate them in ASGM communities and nearby communities	High	EPA-SL & NMA	- ASGM communities - ASGM actors - Relevant NGOs - Relevant universities - Chiefdom Mining Committees											
			Organize radio and television shows about ASGM formalization, mercury use and other issues of the ASGM sector	Medium	EPA-SL & NMA	- Relevant TV stations - Relevant radio stations - ASGM communities - ASGM actors - Relevant NGOs - Relevant universities - Chiefdom Mining Committees											

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuoyant	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Public health strategy		Collect more data about health issues related to ASGM and the capacity of health service providers for addressing these issues, including through a field study in ASGM communities	Medium	EPA-SL	<ul style="list-style-type: none"> - MHS - MLSS - NIMA - Community health officers and clinics 	X						50,000	EPA, NIMA, MHS and MLSS ann. budgets	Primary data about the effects of mercury exposure of other ASGM-related health impacts, and about the level of prEPA-SL readiness among health care providers for tackling such issues available by December 2021	ASGM health study report
						0	0	0	0	0	0				
						1	2	2	2	2	2				
						9	0	1	2	3	4				
		Develop a curriculum of health issues in AM as part of the curricula developed under the formalization strategy (see above) and facilitate local health workers' access to this curricula	High	Relevant local universities	<ul style="list-style-type: none"> - MEST - MHS - MLSS - EPA-SL - NIMA - Fourah Bay College, Geology Department - Njala University, School of Environmental Sciences, and the Institute of Environmental Management and Quality Control 	X					100,000	Ann. budget GoSL	1 curriculum on health issues of AM has been developed and included in the regular curriculum of at least 3 relevant disciplines (including public health) by December 2024	Updated curricula of relevant disciplines (e.g. geology, environmental science, development, public policy) No. of health workers that have followed courses on AGM	
		Undertake an annual training on ASGM-related health issues and vulnerabilities of women and children among staff members and volunteers of the health clinics in close proximity to the main ASGM areas	High	Relevant local universities	<ul style="list-style-type: none"> - Community health officers and clinics - MEST - MHS - MLSS - Public hospitals - EPA-SL - NIMA - Fourah Bay College, Geology Department - Njala University, School of Environmental Sciences, and the Institute of Environmental Management and Quality Control 	X					100,000	TBD	Personnel of at least 30 health clinics in close proximity to Sierra Leone's 15 main ASGM areas (at least two clinics per ASGM area) have been trained by December 2021 and are thereafter trained on an annual basis	Training reports including LoPs disaggregated by sex and age No. of health workers trained	

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiantes	Timeline						Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2				
Public health strategy		Integrate relevant health authorities and health care providers in the NICCM and the SAG respectively and ensure their meaningful participation in periodic meetings	High	EPA-SL & NMA	<ul style="list-style-type: none"> - MoHS (including HED) - MLSS - Local health officers and clinics - Public hospitals 	2	2	2	2	2	2	n.a.	MHS and MLSS ann. budgets	MHS and MLSS regularly participate in the NICCM's biannual meetings and local health officers and clinics participate in the SAG's quarterly meetings, and ASGM-related health issues including mercury are included in their regular programming by December 2022	NICCM meeting reports including LoPs disaggregated by sex and age SAG meeting reports including LoPs disaggregated by sex and age MHS and MLSS programming in rural Sierra Leone
						0	0	0	0	0	X				
						1	2	2	2	2	X				
						9	0	1	2	3	4				
Public health strategy		To conduct a detailed assessment of existing public health programmes in rural areas, and to include ASGM-related health hazards, including but beyond mercury, in such programmes for those areas where ASGM occurs	Medium	EPA-SL	<ul style="list-style-type: none"> - MHS - MLSS - NMA - Community health officers and clinics 							30,000	EPA, MHS and MLSS ann. budgets	A detailed assessment of existing public health promotion programmes in rural areas has been undertaken, and ASGM-related health issues have been included in such programmes in by December 2022	Availability of assessment of existing public health programmes in rural areas The scope of current public health programmes in rural areas
						X	X	X	X	X					
		Develop Standard Operating Procedures and processes to support engagement and response to ASGM-related health issues and include simple mercury prevention, diagnosis and treatment protocols in heavy metal programs	Medium	EPA-SL	<ul style="list-style-type: none"> - MHS - MLSS - Local health officers and clinics - Public hospitals 							50,000	EPA and MHS ann. budgets	SOPs and processes developed and mercury prevention, diagnosis and treatment protocols are included as part of heavy metal programs by December 2022	MHS's standard operating procedures and processes MHS's programming on heavy metals

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes impliquées	Timeline					Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators				
						2	2	2	2	2					2	2	2	
Public health strategy		Conduct basic occupational health and safety trainings and provide basic safety equipment, including gloves, mouth caps and first aid kits for all AGM miners, helmets for AGM miners in pits and shafts, and mouth caps for local small gold to AGM miners		MLSS	<ul style="list-style-type: none"> - MHS - EPA-SL - NMA - Local health officers and clinics 								<p>In all 25 main AGM areas, at least 100 miners and traders have received basic occupational health and safety trainings and basic safety equipment by December 2022</p> <p>TBD</p> <p>150,000</p>	<p>Training reports including LoP's disaggregated by sex and age</p> <p>Use of safety equipment by AGM miners and small gold traders</p> <p>Percentage of women using safety equipment</p>				
Protecting women and children (further activities for promoting gender equality and child labour have been listed under the formalization strategy above and are streamlined in the awareness raising strategy and other strategies)		Install basic sanitary facilities, including public latrines and sanitary wash facilities in all 15 major AGM areas		MLSS	<ul style="list-style-type: none"> - MHS - EPA-SL - NMA - Local health officers and clinics 								<p>No. of latrines present at AGM areas</p> <p>No. of sanitary wash facilities present at AGM areas</p>					
Protecting women and children (further activities for promoting gender equality and child labour have been listed under the formalization strategy above and are streamlined in the awareness raising strategy and other strategies)		Provide vocational training to selected groups of women who wish to pursue alternative livelihoods	High	MSWGCA	<ul style="list-style-type: none"> - MHS - MLSS - EPA-SL - NMA - Female AGM miners 								<p>Training reports including LoP's disaggregated by sex and age</p> <p>No. of female miners trained</p>					
Protecting women and children (further activities for promoting gender equality and child labour have been listed under the formalization strategy above and are streamlined in the awareness raising strategy and other strategies)		Integrate AGM and women's role in the sector in various gender action plans and policies under CEDAW	High	MSWGCA	<ul style="list-style-type: none"> - MHS - MLSS - EPA-SL - NMA - Female AGM miners 								<p>Publication of updated gender action plans and policies with provisions for AGM</p> <p>AGM and women's role in the sector is integrated in various gender action plans and policies under CEDAW by December 2022</p> <p>n.a.</p> <p>Ann. Budget MSWGCA</p>	<p>AGM and women's role in the sector is integrated in various gender action plans and policies under CEDAW by December 2022</p>				
Protecting women and children (further activities for promoting gender equality and child labour have been listed under the formalization strategy above and are streamlined in the awareness raising strategy and other strategies)		Investigate children's presence and participation in AGM	Medium	International consultant	<ul style="list-style-type: none"> - NMA - MMR - World Bank - EPA-SL - MLSS 								<p>Children's presence and participation in all the countries' 15 main AGM areas as part of the 'Baseline Study on Artisanal Mining' by December 2019</p> <p>50,000</p> <p>EITAP 2\$</p>	<p>Availability of AM Baseline Study report with a dedicated section on children in AGM</p>				

Strategy	Subcomponent	Activity	Priorité	Agence responsable	Parties prenantes appuiantes	Timeline												Budget (\$)	Funding sources (\$ is funded already)	Expected results	Indicators
						2	2	2	2	2	2	2	2	2	2	2	2				
Protecting women and children (further activities for promoting gender equality and child labour have been listed under the formalization strategy above and are streamlined in the awareness raising strategy and other strategies)		Establish state-sponsored day care and free school programmes for under age children in AGM communities	High	MEST	<ul style="list-style-type: none"> - MHS - MLSS - EPA-SL - Local health officers and clinics - NMA - Children in ASGM and their parents 	2	2	2	2	2	2	2	2	2	2	2	2,000,000	Ann. budget GoSL	50% of under-age children in AGM communities have free access to day care and school programmes as an alternative to AGM by December 2024	Enrolment rate of under age children living in AGM communities in day care and education programmes Average distance from main AGM communities to the nearest day-care programmes and primary and secondary schools	
						0	0	0	0	0	0	0	0	0	0						
						1	2	2	2	2	2	2	2	2	2	2					
						9	0	1	2	3	4										
		Compensate families of children that have been removed from AGM mines with social protection programmes and/or subsidiary support	Medium	MLSS	<ul style="list-style-type: none"> - MHS - EPA-SL - Local health officers and clinics - NMA - Children in ASGM and their parents 											500,000	Ann. budget GoSL	At least 50% of families of children whom have been removed from AGM sites but don't have effective access to free day care or education have received compensation by December 2024	No. of families that have received compensation in the form of access to social protection programmes and/or subsidiary support		
		Provide children working in AGM mines, who do not have effective access to day care, education or any forms of compensation, with school kits to continue learning besides their work	High	MEST	<ul style="list-style-type: none"> - MLSS - MHS - EPA-SL - Local health officers and clinics - NMA - Children in ASGM and their parents 										50,000	Ann. budget GoSL	At least 50% of children working in AGM who do not have effective access to free day care, education or compensation have received school kits by December 2021	No. of children that have received school kits No. of children that frequently use their received school kits			
Total estimated costs:																		22,385,000			

**This will be part of one and the same comprehensive study on SSGM companies operating in Sierra Leone*

***These activities are already funded and ongoing*

Regarding activities where funding is “to be determined”, GoSL, in collaboration with Parliament, the MoF and the Central Bank, GoSL will make allocations from the national budget to ensure that the responsible MDAs have the requisite resources for implementing the respective activities. Moreover, private banks, LSM companies and relevant financial institutions will be engaged for supporting the NAP financially, and bilateral and multilateral donors will be engaged for levying external resources.

07 Evaluation Mechanism

According to the Minamata Convention, each country that is required to submit a NAP is required to report on progress made in meeting its obligations under Article 7 every three years, and must include this progress review in reports submitted under Article 21. To ensure that Sierra Leone meets this obligation, this section presents an evaluation mechanism for tracking progress made in implementing the NAP according to the workplan presented in the previous section. The mechanism will also help to review the NAP's impacts, and consider whether ongoing efforts are continuing to meet Sierra Leone's evolving needs and national vision for the ASGM sector.

The evaluation process will use some of the same mechanisms that are envisioned to be used for stakeholder engagement (see section 6.1e). Three separate mechanisms will be used, which will be coordinated by EPA-SL and NMA (who maintain ultimate responsibility for the evaluation process):

- The **NICCM will organize biannual meetings** in Freetown to engage NICCM members (i.e. relevant MDAs) for discussing the progress of NAP implementation. Since ASGM formalization is a key strategy of the NAP, additional MDAs enlisted in Table 6 may be added to the NICCM and included in its meetings. The NICCM will focus on measuring institutional advance at the central level.
- The **SAG will organize quarterly meetings** to evaluate more tangible progress made in ASGM communities (e.g. regarding the adoption of better mining practices), based continues monitoring by the SAG members. As detailed in section 6.1e, the SAG serves to engage all stakeholders in the various regions where ASGM activity occurs, and EPA-SL and NMA will have permanent representatives in each meeting who report back to the NICCM.
- Once in two years, a **periodic desk and field study** will be undertaken to periodically update the ASGM overview. This will be done by relevant universities and NGOs (which have been identified in section 6.1e) who are not directly involved in the NAP implementation and are therefore more neutral parties. The results will be reported back to the NICCM and SAG to inform their discussions.

The methods used for the periodic studies will mirror those used for the ASGM overview. As such, they will make use of surveys, semi-structured interviews, participant observations, group discussions, and geospatial data. Such information will be collected from both ASGM actors and ASGM stakeholders. While investigating the sector's socio-economic, regulatory, health and environmental aspects, the studies will focus more specifically on progress made on the realization of the NAP's objectives. For example, specific emphasis will be put developing new baseline estimates of mercury use, investigating the adoption of better mining practices and investigating relative levels of formality in each ASGM community.

The work plan presented in the previous section has already presented specific indicators to measure progress made in the achievement of specific objectives. For each objective, the identified lead agency will be responsible for providing insights into the identified indicators, insofar as that can be realistically expected. While most of these indicators are quantitative in nature, additional qualitative aspects will be investigated in the field study to allow for a more contextualized understanding of the overall progress made in achieving the NAP's objectives. To this end, the following qualitative issues will be investigated:

- The effectiveness of measures undertaken to reduce mercury emissions and releases and minimize human exposure through the adoption of better mining practices

- The affordability, cost-effectiveness and cultural acceptance of newly introduced mining practices and potential technologies, and the general likelihood of scaling-up in Sierra Leone
- The perceived effectiveness of trainings delivered to gold miners, traders, MDAs, universities and NGO on ASGM, mercury, formalization, health, environment and gender, and display of enhanced knowledge on these topics
- The extent to which women, youth and other typically-disadvantaged groups have been effectively reached and included in NAP interventions
- Changes in women's access to land, finance, mining groups, markets or alternative livelihoods
- The extent to which children's wellbeing and development potential has effectively improved from NAP interventions
- The ease of access to mercury in rural areas
- Local stakeholders' sense of ownership over the NAP implementation process
- The perceived effectiveness of communication tools that have been adopted to engage and raise awareness among ASGM communities and wider stakeholders
- MDAs' capacities to carry out their mandates in NAP implementation at the national, chiefdom and district level
- The level of political will for NAP implementation and ASGM formalization and enhanced integration of NAP issues in MDA programming
- The overall effectiveness in addressing urgent socio-economic, health and environmental issues

In addition to the above measures, which measure the progress of NAP implementation, the following qualitative issues will be used to measure progress and effects of the formalization process:

- The economic and geological viability of AM zones and other land allocated for ASGM activity
- The extent to which individual diggers, miners, traders, goldsmiths and exporters are in compliance with the regulatory framework
- The extent to which the identified barriers to formalization have been removed
- ASGM stakeholders' participation in the design and improvement of ASGM policy and regulations
- The extent to which ASGM actors have an enhanced understanding of the regulatory framework
- Net socio-economic effects of formalization on ASGM actors and surrounding communities
- Changes in the distribution of revenue in the ASGM supply chain
- Miners' and traders' perceived incentives to formalize
- Miners' and traders' experienced administrative and financial costs to formalize
- Shifts in public perceptions about the ASGM sector

Further aspects, such as issues that are discussed in research methodologies developed by UNITAR and UN Environment, may be included in the periodic study as appropriate.^{89 90}

89 UNITAR, 2018. Socio-economic ASGM Research Methodology. Geneva, Switzerland. Authors: J.S. De Haan & B. Turner. <http://www.unitar.org/cwm/portfolio-projects/artisanal-and-small-scale-gold-mining-asgm>

90 O'Neill, J.D., and Telmer. K.H., 2017. Estimating Mercury Use and Documenting Practices in Artisanal and Small-Scale Gold Mining (ASGM). Geneva, Switzerland: UN Environment. <http://wedocs.unep.org/handle/20.500.11822/22892>

With the use of such data, the NICCM and the SAG will use their periodic meetings to review and discuss the progress made in achieving the NAPs objectives, identify challenges and opportunities for enhancing the NAP's effectiveness, and articulate corresponding new or updated approaches for implementing NAP in the subsequent period. All of these issues will be tracked and reported in the NICCM's and the SAG's meeting reports, which will be developed by EPA-SL and NMA, and annually distributed among all relevant stakeholders, including relevant donors.

Annexes

Annex 1: Terms of Reference of the National Inter-sectoral Committee on Chemicals Management (NICCM)

Introduction

1. The chemicals management is very broad in its scope, including ideally all the chemicals during the whole lifecycle. This broad scope conditions the multi-sectoral nature of the chemicals management. In order to achieve an integrated approach to chemicals management in national level, a coordinating mechanism through which different sectors and actors can exchange information and coordinate activities is of a high importance.
2. The goal of the inter-sectoral coordinating mechanism on chemicals management is to enhance the cooperation and to enable the coordination of activities related to chemicals management among Government ministries, departments, agencies (MDAs) and other development partners in order to protect human health and the environment and to facilitate the sustainable management of chemicals.
3. The proposed Terms of Reference for the inter-sectoral coordinating mechanism on chemicals management aim to ensure that this body is operational plays its coordinative role and different actors are adequately represented.

Title of the inter-sectoral mechanism on chemicals management

4. The inter-sectoral coordinating mechanism on chemicals management shall be called National Inter-sectoral Committee on Chemicals Management (NICCM)

Mandate and status of NICCM

5. The mandate of the committee would be to facilitate policy dialogue; harmonization of mandates and when it is required by the parties involved resolution of inter-institutional conflicts over mandates, roles and functions; and facilitation of compliance by government MDAs with their statutory obligations.
6. NICCM will act as a consultative forum for policy and decision making coordination, information exchange and peer review, with no binding decision making mandate.

Member MDAs and other participants

7. The NICCM will comprise members of relevant MDAs, non-governmental organizations (NGOs), trade unions, private sector, etc.
8. MDAs, NGOs, trade unions, private sector, etc. Listed below constitute the NICCM set out in this document

- Ministry of Lands and Housing
- Ministry of Environment
- Ministry of Agriculture and Forests
- Ministry of Water Resources
- Ministry of Health and Sanitation (Pharmacy Board, Health Security, Entomology, etc.);

- Ministry of Labour and Social Security;
- Ministry of Trade and Industry
- Ministry of Finance
- Ministry of Foreign Affairs
- Ministry of Justice
- Ministry for Local Government and Rural Development
- Ministry of Fisheries and Marine Resources
- Ministry of Information and Communication
- Ministry of Mines and Marine Resources
- Ministry of Education and Technology
- Ministry of Social Welfare, Gender and Children Affairs
- Ministry of Internal Affairs
- Ministry of Youth Affairs
- Ministry of Water Resources
- Environment Protection Agency-Sierra Leone
- National Minerals Agency
- National Revenue Authority
- Sierra Leone Police
- Sierra Leone Standards Bureau
- Sierra Leone Ports Authority
- Universities and Research Institutions
- Consumers Protection Agency;
- NGOs and CBOs on Chemicals and Waste
- Chamber of Commerce
- Importers Association
- Association of Manufacturers
- Office of National Security
- National Water Resources Management Agency⁹¹
- National Public Health Agency⁹²
- Chiefdom Mining Committees
- Financial Intelligent Unit
- National Protected Area Authority
- Miners
- Gold traders, dealers, goldsmiths, exporters, and supporters
- Mercury traders
- Community leaders

⁹¹ Newly established by Act No. 5 of 2017 under the Ministry of Water Resources

⁹² This Agency is in the process of establishment. It will subsume all the functions of environmental health, safety and security departments of MoHS.

- SSM and LSM companies
- Corporate and rural development banks
- Bank of Sierra Leone (Central Bank)
- Other private sector partners
- Local NGOs and relevant development agencies
- Media and communication groups
- Environmental and human health organizations
- Human Rights Commission Sierra Leone and human rights groups
- National Youth Commission
- Representatives of women

Roles of NICCM

9. NICMM shall facilitate cooperation among Government MDAs which have a mandate over chemicals management. It shall, additionally, provide a forum and a mechanism for coordination of the functions of government MDAs concerned with chemicals management as well as NGOs as stipulated in the SAICM Overarching Policy Strategy (OPS) and Global Plan of Action (GPA).

10. NICCM, when requested by the parties (the agencies), shall address issues of overlap, duplication and potential conflict between the agencies which have a mandate over chemicals management, raise policy concerns and whose resolution might ultimately require amendment to the laws related to chemicals management and hazardous waste.

11. Another key function of NICCM would be to promote and provide a forum for policy dialogue among government MDAs and non-governmental stakeholders on the identification of gaps in the policy and legal framework, inadequate human, technical and financial resources; awareness among stakeholders about the risks presented by poor management of chemicals and hazardous wastes;

12. NICCM would serve as a network for information exchange among the members of the mechanism. Presently, ministerial mandates are sectoral in nature and there is limited flow of information horizontally. NICCM would identify the categories of data whose unrestricted exchange among members of the mechanism should be encouraged and other categories of data which might be restricted on confidentiality grounds or be made available only at a cost to the user.

13. NICCM would act as a forum for consultation among government agencies and nongovernment agencies on proposed action by a mandated agency in regard to applications for registration and permits for import, export, manufacture, use and storage of chemicals and pesticides.

14. Through NICCM value addition can be encouraged and facilitated so that the decision making process is enriched by contributions from members of the mechanism, who are likely to comprise the experts on issues of chemicals management. The networking encouraged by the mechanism would also facilitate identification of experts (nationally and internationally) who can contribute and add value to the decision making process. The practice can be encouraged that before major policy decisions are taken and before permits in respect of certain key applications are granted, the NICCM must be consulted.

15. NICCM can mediate, when requested to do so, between government MDAs and facilitate resolution of conflicts arising from non-compliance by government MDAs. It would provide mechanisms for

facilitating compliance without the need to resort to enforcement action, for instance by promoting benchmarking, peer review mechanisms and internal dialogue to promote compliance.

16. NICCM would promote synergy in the implementation of international multilateral agreements on chemicals management.

Organizational and operational issues

17. The Chemicals management department of the Environment Protection Agency-Sierra Leone will provide the secretariat functions for NICCM, regardless of the issue being addressed.

18. The member MDAs and development partners nominate formally their representatives to NICCM. The nominations are sent to the NICCM secretariat.

19. The secretariat plans, coordinates and monitors all NICCM related activities, including distributing of agenda, attending the meetings, preparing minutes and reporting the recommendations. The secretary is responsible that the agenda of the meeting is made available to all the members before the meeting.

20. The secretariat reports within four weeks of each NICCM meeting the outcomes and recommendations of the meeting to all the NICCM members, depending on the level of the meeting.

21. The Secretariat will decide on the level of the meeting to be convened, either with the participation of all members or with the participation of few members, based on the proposed agenda of the meeting.

22. The meeting of the Committee will be chaired by Ministries. The chair will act as such, till the next chair is elected by the NICCM meeting.

23. The meeting recommendations shall be decided by consensus, where possible. Where consensus is not achieved, recommendations shall be decided by simple majority vote of the full members. In case of a tied vote, the person acting as chair shall be entitled to a second or casting vote.

24. NICCM may decide (by consensus or majority vote) to ask parties who are not members of the committee to participate in a meeting, so that they can provide relevant information, material or knowledge to NICCM.

25. For specific technical issues, ad hoc issue specific working groups can be set up, with the decision of the Committee. NICCM secretariat would be providing secretariat functions for all working groups.

26. Meetings would be held periodically but, in any case, at least once in every 4 months. The secretariat may organize a meeting of the NICCM when it is consensus of at least one-third members of the NICCM that it is necessary to do so.

27. No member of the NICCM may participate in a discussion where such participation would give rise to a potential conflict of interest.

Financial considerations

28. The NICCM takes care for the venue and other logistics for NICCM meetings. The participation in the meetings is at the expenses of its members.

Endorsement

29. The NICCM functions based on a Decision of the GoSL, which will derive by the Law on Chemicals and associated waste.

Annex 2: Summary of the geology and mining practices in the visited ASGM areas

No	District	Chiefdom	Locality	Ore type/setting	Category of mining	Processing method	Mercury use	Comments	
1	Karene	Sella Limba	Kathantha	swamps and terraces	artisanal	Panning	No	Flakes of gold large enough to be separated by panning	
2	Karene	Sella Limba	Kasassie	limited mining ongoing in swamps				No	Both Kathantha, Kassassie, Laminaya and Kampala were in the exploration concession of ARM gold.
3	Karene	Sanda Loko	Laminaia	swamps and terraces	artisanal	sluice boxes and panning	No	Magnetic separation also used; previous small-scale mining used mercury	
4	Karene	Sanda Loko	Kampala	swamps and terraces	artisanal	sluice boxes and panning	No	Previous small-scale mining used mercury	
5	Koinadugu	Diang	Dalakuru (Yamfara 1,2, 3)	swamps and terraces	artisanal	sluice boxes and panning	No	Area previously mined by small-scale company; pits (dama) dug to depths of 12m to recover gravel; casings used made from local material	
	Koinadugu	Diang	Kuwait	weathered rocks	artisanal	sluice boxes and panning	No	Pits (dama) dug to depths of 10m to recover gravel; no casing used	
6	Koinadugu	Diang	Makonie	swamps and terraces	small-scale	mechanized system with excavator and sluice boxes	No	Dojo Resources is actively mining gold here (Chinese and Russian contractors)	
7	Tonkolili	Simiria	Masumbiri	primary deposit	artisanal	crushers (local), sluice boxes and panning	No	Pit depths of up to 6m and underground workings also present	
	Tonkolili	Simiria	Masumbiri	primary deposit	small-scale		no response from on-site personnel	Dayu Mining (started operations in Dec 2017 with 25yr LOM)	
8	Tonkolili	Simiria	Bonga Town	river bed, swamps and terraces	artisanal	sluice boxes and panning	No	Pampana River is diverted before mining; pits continue underground	
9	Tonkolili	Simiria	Maranda	weathered rocks	artisanal	mechanized crusher; sluice boxes and panning	No	Miners from Burkina Faso used mercury in previous small-scale operation	
10	Tonkolili	Kunike Barina	Makong	weathered rocks	artisanal	crushers (local), sluice boxes and panning	No	Gold flakes finer grained compared to Dalakuru and Maranda	
11	Tonkolili	Yele	Rossint	flood plain and terraces	artisanal	sluice boxes and panning	No	Depth to gravel is up to 8m on the banks of Taia River possible only in dry season	
	Tonkolili	Yele	Yele	Taia River bed	small-scale	mechanized system with dredge and sluice boxes	Yes	Dredge mining by Chinese contractors (M&S Ventures);	
12	Bo	Valunia	Baomahun	weathered rocks, swamps and terraces	artisanal	crushers (local), sluice boxes and panning	Yes	Amalgam is heated to obtain sponge gold; silver by-product present; mercury use dates far back to 1980; mercury mainly imported from Guinea and Liberia	

No	District	Chiefdom	Locality	Ore type/setting	Category of mining	Processing method	Mercury use	Comments
12	Bo	Valunia	Baomahun	hills, swamps and riverbed	artisanal	sluice boxes and panning	Yes	Algom Resources Ltd's (Algom) is doing exploration work and will start extracting soon. The company's exploration licenses covers most of the artisanal mining areas, but the company allows artisanals in certain areas as long as they do not use heavy machinery
	Bo	Valunia	Outskirts of Baumahun	Riverbed	small-scale	Processing plant	Unknown	Unregistered American small-scale company is mining alluvial gold using a processing plant with a crusher, sieves and sluices
13	Bo	Baoma	Baoma Station	Sewa River bed	artisanal	Panning	No	Mining dates far back to 1970; occurs mainly in dry season; gold in the form of flakes and powder; diamond tailings present
14	Kono	Nimikoro	Komahun	fresh and weathered rocks	artisanal (but high level of mechanization)	crushers and grinding machines used	Yes	Miners use mercury to recover gold from tailings washed mostly by women; mercury imported from Guinea and Liberia, also from funeral homes and hospitals
	Kono	Nimikoro	Komahun - New Site	fresh and weathered rocks	artisanal	excavators used	Yes	Wankong (Chinese small-scale mining) to take over operations in this area (5 companies were witnessed)
	Kono	Nimikoro	Komahun - Somalia	quartz vein (primary deposit)	small-scale	crushers with sluices attached	No	Possibility of mercury use in washing of tailings; more than 15bags of quartz veins produced daily; pit depths more than 40m
	Kono	Nimikoro	Komahun - Israel, Libya, Iraq & Bethlehem	highly weathered (soft) rocks	NR	crushers with sluices attached	NR	Bulldozer used in Libya, excavators used in all locations except Bethlehem; 50-100bags of gravel extracted per day when the gravel is reached; former employees of NML started the first operations in Bethlehem
	Kono	Nimikoro	Komahun	highly weathered (soft) rocks	small-scale	crushers with sluices attached	NR	2/3 small scale operations visited (Chinese contractors); conflicts occur over concession boundaries often resolved by local authorities
	Kono	Nimikoro	Komahun	highly weathered (soft) rocks	small-scale	crushers with sluices attached	No (gold purification by acid flux)	Hongxing Mining Company; 6 excavators in 3 sites; 4 armed OSP personnel working on shifts;
15	Kono	Sandor	Tefeya & Wydalla	Bafi River bed	artisanal	diamond processing plant with sluice attached for gold processing	NR	Mostly diamond mining on the Bafi River; excavators and bulldozers reportedly used in artisanal mining
	Kono	Sandor	Mexico	Bafi River bed	small-scale		NR	Pluto Mining Company; processing plant for diamonds and gold

Annex 3: The ASGM Overview of Sierra Leone Research Team

The team consisted of four members from EPA and UNITAR. Additionally, the research team was reinforced by professional drivers from EPA: Alie Badara Koroma, John B. Sesay, Abdul Karim Kamara and Edward Vincent performed their duties diligently giving the team access to one of the most remote corners of the country.

Team	Affiliation	Roles	Responsibilities
	<p>Senior Environment Officer, Chemicals Control and Management, EPA-SL</p>	<p>Team leader</p>	<ul style="list-style-type: none"> • Coordination • Planning • Logistics • Research (socio-economic and health related aspects)
	<p>Consultant, EPA-SL</p>	<p>Lead researcher</p>	<ul style="list-style-type: none"> • Research (technical and environmental aspects) • Coordination • Planning • Reporting
	<p>Consultant, EPA-SL (Lecturer, Department of Geology, Fourah Bay College, University of Sierra Leone)</p>	<p>Researcher</p>	<ul style="list-style-type: none"> • Research (geological and technical aspects)
	<p>UNITAR</p>	<p>Researcher</p>	<ul style="list-style-type: none"> • Research (socio-economic and health related aspects)

References

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20. Exchange rate at the time of research: \$1= Le7,500. This rate is used throughout the rest of the document.

21. The gold spot price on 11 February 2018 was \$42.7/g. This price is used throughout the document.

22. Licenses are valid for 1 year and can be renewed up to three times for a period not exceeding one year at a time.

23. According to the Mines and Minerals Act 2009, AM licenses can be a maximum of half-an-hectare.

24. The methods used for estimating gold production, ASGM workforce and mercury use are explained in section 3.1 of the ASGM Overview Report (see footnote 12)

25. Spot gold price on 11 February 2018. <https://goldprice.org/fr/spot-gold.html>. Accessed on 22/05/2018.

26. Although one large-scale gold mining company, Dayu Mining Company Limited, has in the meantime started mining gold concentrate in Masumbiri, Simiria chiefdom. Moreover, at the time of research, several other industrial gold mining companies were doing exploration, and they may start gold production in the near future, including in Baomahun, Valunia chiefdom.

27. See section 3.8 for explanation of some of the terminology used in this figure

28. As opposed to definitions adopted in international regulations such as the Minamata Convention on Mercury, this definition of ASM does not explicitly refer to the scale of operation in terms of technology used

29. Such a new definition will be captured in an amendment of the Mines and Minerals Act 2009, which is expected to be published in 2019

30. In some cases, the gang leader is involved in the work, while in other cases, he or she only supervises the work and motivates and supports the workers. The gang leader may also appoint one of the labourers as a 'team leader' who is responsible for overseeing the work in the gang leader's absence.

31. The license fee includes a license fee (Le250,000), demarcation fee (Le250,000), monitoring fee (Le250,000), application fee (Le100,000), rehabilitation fee (Le150,000) as well as additional payments to chiefdom and other authorities which could include surface rent and development fees and vary between chiefdoms

32. For further details on these, refer to sections 4.7.3 and 4.6.1 of the ASGM Overview report (see footnote 12)
33. Out of the 26 licensed dealers and 9 licensed dealers' agents listed in NMA's online repository by the time of research, very few could be traced. <https://sierraleone.revenue.gov.sl/dashboard>. Accessed on 22/5/2018.
34. The lowest and highest investments in AGM production reported concern Le250.000 and Le20.000.000 respectively
35. Hunter, M. & Smith, A., 2017. Follow the Money: Financial Flows linked to Artisanal and Small-Scale Gold Mining in Sierra Leone. Global Initiative against Transnational Organized Crime.
36. The methods used for estimating gold production, ASGM workforce and mercury use are explained in section 3.1 of the ASGM overview report (see footnote 12)
37. This 'standard estimate' applies to concentrate amalgamation and is based on the work done by Kevin Telmer and Marcello Veiga (Telmer, 2009)
38. The company in question was extracting ore under an exploration license. In addition to this company, a handful of other companies were encountered in the field which were not operating under an (extraction) license. More information about this can be found in the full research report.
39. Given the time constraints of the field study, as well as limited available information about small-scale gold mining companies operation in Sierra Leone, this is a rough estimate which needs further research
40. UNEP Chemicals and Health Branch, 2013. *Global mercury Assessment 2013: Sources, Releases and Environmental Transport*. UNEP, Geneva; and UNEP Chemicals and Health Branch, forthcoming. *Global mercury Assessment 2018: Sources, Releases and Environmental Transport*. UNEP, Geneva (in preparation)
41. For example, some stakeholders believed that exposure to mercury causes death, which is very seldomly the case and typically occurs only after chronic and extensive exposure
42. World Bank, 2016. Mercury trade and use for artisanal and small-scale gold mining in Sub-Saharan Africa - Final Report. https://wedocs.unep.org/bitstream/handle/20.500.11822/26445/Mercury_Trade_Africa.pdf?sequence=1&isAllowed=y
43. Paramount Chief, Baoma Chiefdom
44. It should be mentioned that taking into account the seasonality of alluvial gold mining, on average, artisanal miners work only 7 months per year (the other months are typically used for farming or other activities)
45. This is particularly important because as mentioned before, in most communities visited, education isn't free
46. For example, see:
- Cartier, L. E., & Bürge, M., 2011. Agriculture and artisanal gold mining in sierra leone: alternatives or complements? *Journal of International Development*, 23, 1080-1099.
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Sub-Saharan Africa: An Introduction.” *Journal of International Development* 23 (8): 1031–41.

47. For more on this, see

- Maconachie, R., and Hilson, G. 2011a. “Artisanal Gold Mining: A New Frontier in Post-Conflict Sierra Leone?” *The Journal of Development Studies* 47 (4): 595–616.
- Maconachie, R., 2017. “Navigating the Intergenerational Divide?: Youth, Artisanal Diamond Mining, and Social Transformation in Sierra Leone.” *Extractive Industries and Society* 4 (December): 744–50.

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56. According to the 2017 Finance Act, alluvial gold mining license holders should pay an annual tax of Le150,000 to the National Revenue Authority, and five% of yearly production as Royalty according to the 2009 Mines and Minerals Regulations.

57. Including the mining license fee, application fee, demarcation fee, monitoring fee, rehabilitation fee, manager’s certificate and financial supporter’s certificate (see section 3.6 for breakdown of costs)

58. Le1,050,000 (\$140) license fee and Le360,000 (\$48) of taxes per gold dealer; Le3,750,000 (\$5,000) license fee and Le600,000 (\$80) of taxes per gold exporter; and Le1,050,000 (\$140) license fee and Le360,000 (\$48) of taxes per gold exporters’ agent.

59. License fees and taxes are not included here because they depend on the amount of land that is used, which is not known about these companies

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68. These issues should be appreciated in a context of low salaries, precarious working conditions and general low levels of monitoring infrastructure and capacity of the respective officers taking bribes
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91. Newly established by Act No. 5 of 2017 under the Ministry of Water Resources
92. This Agency is in the process of establishment. It will subsume all the functions of environmental health, safety and security departments of MoHS.