



THE REPUBLIC OF UGANDA

# The National Action Plan for Artisanal and Small Scale Gold Mining in Uganda, in accordance with the Minamata Convention on Mercury



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# Foreword

Uganda became a signatory to the Minamata Convention on Mercury in 2013 and re-affirmed its commitment to protecting human health and the environment from anthropogenic emissions and releases of mercury and its compounds by becoming a Party to the Convention on 1st March, 2019. As we are all aware, the Minamata Convention on Mercury is a multilateral environmental agreement that addresses specific human activities which are contributing to widespread mercury pollution.

Results from the national Minamata Initial Assessment Studies carried out in 2018 were an eye opener that mercury emissions from the Artisanal and Small-Scale Gold Mining (ASGM) sector in Uganda were more than significant. Similarly, assessments on the national overview of the ASGM sector, including baseline estimates of mercury use and practices enhanced our understanding on mercury sources and releases in the ASGM sector and existing unsustainable gold mining and processing practices. These studies among others facilitated the development of this National Action Plan on ASGM.

With funding from the United Nations Environment Program (UNEP) through the Global Environment Facility (GEF), the National Environment Management Authority (NEMA) developed the National Action Plan (NAP) for Artisanal and Small Scale Gold Mining (ASGM) to contribute to the implementation of the Minamata Convention through the reduction of risks posed by the unsound use, management and release of mercury in the Artisanal and Small-Scale Gold Mining sector. This NAP on ASGM will guide Uganda's future actions aimed at reducing mercury emissions and releases from the ASGM sector as well as becoming compliant with Annex C of the Minamata Convention on Mercury.

This NAP on ASGM details Uganda's commitment to reducing and where feasible eliminating mercury use in the ASGM sector which includes specific, realistic and time-bound objectives, strategies and interventions including anticipated key institutions for realising the commitment.

It is my hope that this NAP on ASGM meets the expectations of all Ugandans and stakeholders who will be involved in the different programmes and activities to ensure its implementation.



**Hon. Sam Cheptoris**  
MINISTER OF WATER AND ENVIRONMENT

# Acknowledgment

The preparation of this National Action Plan (NAP) for Artisanal and Small Scale Gold Mining (ASGM), in accordance with the Minamata Convention on Mercury was a concerted effort involving a number of stakeholders including Ministries, Departments, Agencies, Civil Society Organisations, Development Partners, the private sector including Artisanal and Small Scale Miners.

With funding from the United Nations Environment Program (UNEP) through the Global Environment Facility (GEF), the National Environment Management Authority (NEMA) developed this NAP on ASGM to contribute to the implementation of the Minamata Convention through the reduction of risks posed by unsustainable use, management and release of mercury in the ASGM sector.

It is my hope that this NAP on ASGM will go a long way in guiding the users to appreciate and apprehend strategic planning and decision making in line with mercury management undertakings to ensure sustainable development.

The National Environment Management Authority acknowledges UNEP, the GEF for the financial support extended to facilitate the development of this plan. The National Environment Management Authority is also grateful for the supervisory role played by the Africa Institute for the Environmentally Sound Management of Hazardous and Other Wastes.

The valuable technical guidance by Africa Center for Energy and Mineral Policy is highly appreciated. The efforts of the NAP National Coordination Mechanism in guiding the development of the NAP on ASGM; various lead agencies; the private sector and Civil Society Organisations for their timely contributions in their capacities are appreciated.

Gratitude is extended to NEMA staff for their various technical inputs. I am particularly thankful to Ms. Anne Lillian Nakafeero, the national project coordinator for the 'Regional project on the development of National Action Plans for the Artisanal and Small Scale Gold Mining in Africa (NAP)':



**Dr. Tom. O. Okurut**  
EXECUTIVE DIRECTOR, NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

# List of Abbreviations and Acronyms

AAU	Action Aid Uganda
ACCC	Action Coalition for Climate Change
ACEMP	Africa Centre for Energy and Mineral Policy
ACODE	Advocates Coalition for Development and Environment
ACP-EU	African, Caribbean and Pacific – European Union
ASGM	Artisanal and Small scale Gold Mining
ASGMs	Artisanal and Small scale Gold Miners
ASM	Artisanal and Small scale Mining
ASMs	Artisanal and Small scale Miners
BATs	Best Available Techniques
BoU	Bank of Uganda
COMESA	Common Market for Eastern and Southern Africa
CSOs	Civil Society Organisations
CRS	Catholic Relief Services
CRSS	Centre for Research and Sustainable Solutions
DGSM	Directorate of Geological Survey and Mines
EITI	Extractives Industries Transparency Initiative
EWAD	Environmental Women in Action for Development
FAO	Food and Agriculture Organisation
GEF	Global Environment Facility
GGS	German Geographical Survey
GoU	Government of Uganda
Hg	Mercury
ICGLR	International Conference on the Great Lakes Region
IGO	Intergovernmental Organisations
ILO	International Labour Organisation
LCU	Loyalty Club Uganda
LGs	Local Governments
LPG	Liquefied Petroleum Gas
MDAs	Ministries, Departments and Agencies
MEMD	Ministry of Energy and Mineral Development
MGLSD	Ministry of Gender, Labour and Social Development
MIA	Ministry of Internal Affairs
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health
MoJCA	Ministry of Justice and Constitutional Affairs
MoLG	Ministry of Local Government
MoPS	Ministry of Public Service
MoTIC	Ministry Trade, Industry and Cooperatives
MUSPH	Makerere University School of Public Health
NAPE	National Association of Professional Environmentalists
NDP II	National Development Plan II
NEMA	National Environment Management Authority
NGO	Non-Government Organisation
OECD	Organisation for Economic Co-operation and Development
OSH	Occupational Safety and Health



OSHE	Occupational Safety, Health and Environment
PMPU	Police Minerals Protection Unit
PROBICOU	Pro-Biodiversity Conservationists in Uganda
PSF	Private Sector Foundation
PSO	Private Sector Organisations
RCM	Regional Certification Mechanism
RINR	Regional Initiative against illegal trade of Natural Resources
SACCOs	Savings and Credit Cooperative Organisations
SGD	Sustainable development Goals
SMMRP	Sustainable Management of Mineral Resources Project
SOMO	Stichting Onderzoek Multinationale Ondernemingen
TMEA	Trademark East Africa
UBA	Uganda Bankers' Association
UCPC	Uganda Cleaner Production Centre
UMA	Uganda Manufacturers Association
UNACOH	Uganda National Association of Community and Occupational Health
UNCST	Uganda National Council for Science and Technology
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UIA	Uganda Investment Authority
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organisation
UNITAR	United Nations Institute for Training and Research
URA	Uganda Revenue Authority
USAID	United States Agency for International Development
WGR	Women Global Rights
WHO	World Health Organisation

# Glossary of terms

ASM (Artisanal and Small scale Mining)	Mining operations run by individuals, families or groups of local communities or migrant workers or local enterprises, the majority of whom have no formal technical training and depend on rudimentary tools <sup>1</sup> . The Ugandan mining legislation does not provide a direct definition of “artisanal” mining; only “small-scale” mining has been defined in the Mining Act, 2003, its operations characterized by small capital investment, low levels of technological sophistication, and at least 51% ownership by Ugandan citizens <sup>2</sup> .
ASGM (Artisanal and Small scale Gold Mining) “more than insignificant”	Gold mining conducted by individual miners or small enterprises with limited capital investment and production <sup>3</sup> Mercury levels above the acceptable threshold <sup>4</sup> (BAT for metallic and inorganic Hg: Blood - 25µg/L, Urine - 100µg/L) <sup>5</sup>
Mercury Mercury compound	Elemental Mercury (Hg(0), CAS No. 7439-97-6) Any substance consisting of atoms of mercury and one or more atoms of other chemical elements that can be separated into different components only by chemical reactions <sup>6</sup>
Mercury Added Product	A product or product component that contains mercury or a mercury compound that was intentionally added <sup>7</sup>
Party	State or regional economic integration organization that has consented to be bound by this Convention and for which the Convention is in force <sup>8</sup>

<sup>1</sup>.Uganda's Minerals and Mining Policy, 2018

<sup>2</sup>.Uganda's Minerals and Mining Policy, 2018

<sup>3</sup>.Minamata Convention on Mercury, Article 2(a)

<sup>4</sup>.Minamata Convention on Mercury, Article 7(3)

<sup>5</sup>.UNEP/WHO, 2008, Guidance for Identifying Populations at Risk from Mercury Exposure. Annex B, No 9: Decision for the Diagnosis of Possible Exceedance of Chronic Mercury Threshold Limits for Mercury

<sup>6</sup>.Minamata Convention on Mercury, Article 2(e)

<sup>7</sup>.Minamata Convention on Mercury, Article 2(f)

<sup>8</sup>.Minamata Convention on Mercury, Article 2(g).

# Executive summary

## Purpose of the NAP on ASGM

The Artisanal and Small Scale Gold Mining (ASGM) sector is responsible for most mercury emissions worldwide, releasing 838 tonnes annually of mercury into the environment<sup>9</sup> (UN Environment, 2019). Sub-Saharan Africa is the second highest emitter with 252 tonnes annually of mercury into the environment. Mercury is highly toxic (IBID). It affects flora and fauna as well as human health. For humans, it poses a threat to the development of the child in utero and early stages of life leading to birth defects and body deformities. Communities and ASGMs working or living around the mines can be exposed to two forms of mercury in an ASGM context: Elemental mercury and organic mercury.

The Government of Uganda implemented a project titled “Regional project on the development of National Action Plans (NAP) for the Artisanal and Small Scale Gold Mining in Africa”. The project was in line with the Minamata Convention whose objective is to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds and it sets out a range of measures to meet that objective. The goal of the NAP project was to contribute to the implementation of the Minamata Convention through the reduction of the risks posed by the unsound use, management and release of mercury in the Artisanal and Small-Scale Gold Mining sector.

Uganda including other participating countries (Burundi, Republic of Congo, Central African Republic, Kenya, Swaziland, Zambia, and Zimbabwe) notified the Interim Minamata Secretariat that mercury emissions from the Artisanal and Small-Scale Gold Mining (ASGM) sector was more than significant in their respective territories. The NAP project was aimed at assisting participating countries including Uganda to develop National Action Plans (NAPs) to reduce the use of mercury and mercury compounds in, and the emissions and releases to the environment of mercury from, artisanal and small-scale gold mining and processing in accordance to Annex C of the Minamata Convention. By developing their National Action Plans participating countries are complying with the text of the Minamata Convention and are enabled to implement it. In addition, participating countries including Uganda, would benefit from new and updated information about the use of mercury in the ASGM sector in the country and from increased capacity in managing the risks of mercury emitted and released from such activity and to foster cooperation with similar countries for future implementation of the NAPs.

The key outputs of the NAP project were development of the national overview of the ASGM Sector, including baseline estimates of mercury use and practices” and subsequent development of the NAP on ASGM. The NBO study of 2019 and the National Minamata Initial Assessments report of 2018 among others, informed the development of the “National Action Plan (NAP) for Artisanal and Small Scale Gold Mining (ASGM) in Uganda”.

This NAP on ASGM among others gives an introduction and background to the ASGM sector in Uganda; results of the NBO study of 2019; national objectives and reduction targets; implementation strategy of the NAP on ASGM; preventing exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers from mercury used in ASGM; resource mobilisation strategy; evaluation mechanism and work-plan and budget.

## Methodology for the development of the NBO study of 2019 and the NAP on ASGM

<sup>9</sup> UN Environment (2019), GLOBAL MERCURY ASSESSMENT 2018, UN Environment programme, chemicals and health branch Geneva, Switzerland, ISBN:978-97-807-3744-8

The NBO study of 2019 was conducted using a combination of methods and approaches. The overall methodology applied for site investigations in this study is described in three existing guides:

- i. The tool kit on “Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM); Methods and Tools; Version 1.0; developed by UN Environment.<sup>10</sup>
- ii. Qualitative methodology for socio-economic ASGM Study” toolkit developed by UNITAR
- iii. Developing a National Action Plan to Reduce, and Where Feasible, Eliminate Mercury Use in Artisanal and Small Scale Gold Mining. Guidance Document. Working Draft August 17, 2015. United Nations Environment Programme, 2015.

The methodology in these guides was used to develop site investigations forms, a reporting system and calculation tools. Training on the use of the methodology was undertaken during a two-day national training workshop for consultants, key stakeholders, and the National coordination mechanism for the NAP project. Consultative meetings and interviews were held with the key stakeholders and institutions including: NEMA, Local Government officials especially the District natural resources officers in key mining regions, academic institutions such as Makerere University College of Agriculture, Ministry of Energy and Mineral Development, miners’ leaders, DGSM and UBOS, CSOs, private sector, ASG miners among others. A number of consultative meetings for drafting the NAP on ASGM and its subsequent validation were held.

## Scope of the NBO study of 2019

A multi-sectoral reconnaissance visit in gold mining districts of Kaabong, Moroto, Nakapiripirit, Bukwo, Amudat, Busia, Namayingo, Bugiri, Buhweju, Kisoro, Bushenyi and Kyegegwa, Mubende was undertaken from 11th November 2017 to 12th January 2018 by selected members of the national coordination mechanism for the NAP project. The objective of the multi-sectoral reconnaissance visit was to map the ASGM sites and get acquainted to ASGM practices so as to be able to develop adequate Terms of References for the National Consultant to undertake the NBO study of 2019. A total of 82 ASGM sites were inspected during the multi-sectoral reconnaissance visit.

The multi-sectoral reconnaissance visit was later followed by the NBO study of 2019 which was concluded in 2019. The NBO study of 2019 covered 79 ASGM sites in districts of Kaabong, Kotido, Nakapiripirit, Nabilatuk, Moroto and Amudat in Karamoja Region in North-Eastern Uganda; Busia, Bugiri and Namayingo in the Eastern Region; Kassanda and Mubende in the Central Region; Kisoro and Kabale in Kigezi Region; and Bushenyi and Buhweju in Ankole Region. Results of the NBO study of 2019 culminated into the development of the NAP on ASGM.

## Description of results from the NBO study of 2019

### *Regulation of ASGM sector*

The ASGM sector is highly informal which makes implementation of regulations and policies extremely difficult. Further, Ugandan laws did not recognise ASMs until 2018, which created a perception that ASMs were operating illegally. This anomaly will be potentially rectified by the draft Mining and Minerals Bill of 2019. The Mining and Mineral Bill of 2019 proposes provisions for ASMs to acquire mining rights. However, acquisition of licences is an expensive process that favours more established mining companies and individuals. There is no law prohibiting the primary mining of mercury, as well as the importation of elemental mercury. There is no requirement for holders of location licences, who are predominantly ASMs, to carry out Environment Impact Assessments.

There is no specific law regulating the use of mercury in Uganda. Mercury is regulated and managed as part of provisions for sound management of chemicals which seek to address the unregulated import,

<sup>10</sup> O’Neill, J.D. and Telmer, K. (2017). Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM). Geneva, Switzerland: UN Environment. ISBN 978-0-9939459-8-4

utilisation and disposal of hazardous chemicals in Uganda. These include the National Environment Act No.5 of 2019, the Water Act Cap 152 of 1997, the Occupational Safety and Health Act 2006, and the East African Community Customs Management Act, 2004, among others.

There is no law regulating importation and production of MAPs; as well as transportation, handling, disposal and storage of mercury.

### *Organisation of ASGMs*

The formation of many ASM associations has been facilitated by different NGOs and others formed under government funded projects for example the World Bank-funded Sustainable Management of Mineral Resources Project. However, because of the highly migratory nature and informality of the sector, many of those associations are inactive.

### *Mineral licencing*

The Mining law makes no special provisions for low earning ASMs to acquire mining rights at affordable rates. Some ASGM sites are managed by licence holders, others by landlords (despite the existence of licence holders) and others by self-appointed or elected leaders who are sometimes pit or machine owners. Acquisition of licences is an expensive process that favours more established mining companies. Further, the Mining Act of 2003 does not recognise ASMs creating an impression that they are non-existent.

### *Institutional framework and capacity for the management of ASGMs*

Management of the ASGM sector is not decentralised and this leaves a vacuum at the local level in enforcing provisions of the ASGM regulatory framework at the local level. The Directorate of Geological Survey and Mines is both understaffed and underfunded to effectively track and report gold production across the country.

There is lack of coordination between DGSM and other national natural resource custodians in awarding ASGM licences in national parks, forests and other protected areas. The capacity to carry out detailed scientific investigation and bio monitoring is still low among key line government departments. Surveillance of mercury poisoning is crucial for Uganda's health sector, but these technologies are often expensive and require technical preparation, economic investment and personnel. However, Uganda does not have adequate systems to undertake these.

Despite the above stated findings from the NBO study of 2019, recent developments amongst mining sector stakeholder institutions point towards enhanced capacity and monitoring of ASGM operations in the near future. These include the opening up of new regional offices by DGSM to enhance the monitoring of mining operations, the formation of the Police Minerals Protection Unit to monitor artisanal mining operations and the opening up of regional offices by NEMA which brings technical services, licensing, supervision and monitoring services closer to known ASGM mercury hotspots.

### *Ore extraction*

In Uganda ASGM is both rudimentary and semi-mechanised. Miners engage in open cast mining, underground mining and alluvial mining in riverbeds and swampy areas. When gold is extracted, the ore is processed by panning or 'washing' and then mercury is introduced in order to form an amalgam which is heated to burn off the mercury. This practice is conducted in an open area, sometimes in residences or shops. In addition the miners do not properly dispose of the mercury thus contaminating the environment in and around the mines.

### *ASGM gold production and gold sales*

The NBO study of 2019 revealed that ASGM gold production in Uganda amounts to 7,081kg of gold per year which accounts for more than 90% of gold production<sup>11</sup> in Uganda. Central region is the highest ASGM gold producer with over 2,500kg/y (36%), followed by Eastern with 1,700kg/y (25%) and Karamoja with 1,400kg/y (21%). Ankole and Kigezi regions produce 1,183kg/y (17%) and 91kg/y (1%) of gold respectively. The annual gold production through use of cyanide by artisanal, small scale and medium scale miners across the regions is 3,538 (central region), 714 (eastern region), 1,362(Ankole region) totalling to 5,614 Kg/y. No cyanide use was observed in Kigezi and Karamoja regions This brings the estimated national total gold production (Kg/y) using all methods by ASGM and medium scale miners to 12,695(Kg/y).

The national average gold purity is at 85%. Karamoja region has the highest gold purity rate at 89% and the Central region has the lowest purity rate at 81%. The variations in gold purity, inadequate road infrastructure and intensity of middle men in a gold mining region, among others affect gold sales and prices at ASGM sites in Uganda. For example, miners at several sites visited in Buhweju District claimed to be paid extremely low prices for their gold due to the poor access roads that hinder their ease of access to urban markets. In Karamoja Region, there was an increase in the number of gold dealers on site which influenced prices. For example, some gold dealers in Karamoja region offered Ug. Shs 1,000 (USD 0.27) as a top up on the price of gold. This is done to ensure competitive advantage over other buyers.

### *Mercury use and hotspots*

The mercury hotspots were found to be concentrated within districts of Busia, Namayingo, Kassanda, Mubende and Buhweju. Mercury hotspots were also found in Moroto, Amudat and Nakapiripirit districts while Kigezi region was found to be mercury-free. Seventy-three percent (73%) of ASGM annual gold production is produced by the use of mercury while processing, leaving only 27% mercury-free. This is mainly due to the coarse gold particles in the ore, as evidenced in Bushenyi District in Ankole Region.

However, there are also areas in Kigezi Region where mercury use is restricted and has not been introduced in ASGM. The NBO study of 2019, revealed that over 15,000kg of mercury are used per year by ASGMs in Uganda. Further investigation showed that the Central Region uses the highest amount of mercury in gold production with over 7,800kg Hg/y (51%); followed by the Eastern Region with over 5,000kg Hg/y (33%) and the Karamoja Region which uses over 1,200kg Hg/y (8%). The NBO study of 2019, concluded that Kigezi is the only region in Uganda that engages in mercury-free ASGM.

On average 4g of mercury are applied to a sack of gold ore of about 120kgs. At some mine sites, whole ore amalgamation is used instead of concentration amalgamation. This, in addition to the poor waste management at the different mine sites, leads to mercury pollution.

### *Women engagement in the ASGM sector*

At least 45% of miners in ASGM are women. However, the sector remains typically patriarchal, deliberately preventing women from fully engaging in the entire mining value chain. Women are generally involved in processing and are hence more exposed to mercury during panning and burning.

### *Awareness on alternatives to mercury use*

There is a lack of awareness by miners on existing alternatives to mercury in ASGM.

### *Bio-monitoring of mercury in human and environmental samples*

The WHO considers 4 µg/L as a normal mercury level in human urine<sup>12</sup> and 5 µg/g creatinine an alert value. The action level is considered at 20 µg/g creatinine. However, values as high as 1,168 µg/L in urine were found in gold shop workers in confined environments The NBO study of 2019 revealed that Mubende District had the highest median blood levels of mercury (136 µg/L) relative to Busia (60 µg/L), Ibanda (43

<sup>11</sup> World Bank, Developing Uganda's Mining Sector, 2013

<sup>12</sup> WHO, 1990, Environmental Health Criteria. 101. Methylmercury. Geneva, 144 p.

µg/L) and Amudat (less than 0.001 µg/L). Similarly, the same study revealed that Mubende District had the highest median urine levels of mercury (105.5 µg/L) relative to Busia (70.6 µg/L), Ibanda (58 µg/L) and Amudat (less than 0.001 µg/L).

Findings from the NBO study of 2019 revealed that environment samples under the category of community natural portable water sources (spring wells, boreholes and ponds) in Busia, Ibanda and Mubende districts had mercury levels reading 31 µg/L, 13 µg/L and 11 µg/L respectively which are all above the permissible levels of Natural potable water limit of Mercury (total as Hg) concentration of 1 µg/L using the SO 12846 as the method test<sup>13</sup>.

It was observed that there were no designated places for collection of waste generated nor were there waste disposal mechanisms put in place at the mine sites visited, making mercury contamination of the environment inevitable.

### *ASGM and livelihood improvement*

All activities undertaken in gold mining from mineral discovery, mining, processing to finding the market, attract fees. The backward and forward linkages in the sector also generate income for different actors along the value chain. Subsequently, there is a lot of money generated from gold mining which makes a considerable contribution to the economy. In 2017, the Directorate of Geological Survey and Mines (DGSM) estimated that the mining sector directly employed between 400,000 and 600,000 people; indirectly sustaining close to two million Ugandans across the mineral sector value chain for both precious and development minerals.

### *ASGM workforce*

Table 1 shows the total ASGM workforce in Uganda to be over 31,000 with 4% being foreign miners who have migrated into the country from neighbouring countries. A report by Pact Global UK (2018), found the percentage of children to be about 20-30% of the ASGM workforce.

**Table 1: ASGM workforce across regions**

Workforce	Central	Eastern	Ankole	Kigezi	Karamoja	National Total
Total ASGM workforce	8,601	7,023	1,764	193	14,041	31,622
Local ASGM workforce	8,148	6,700	1,742	193	13,636	30,419
Foreign ASGM workforce	453	323	22	0	405	1203
Percentage of foreign workforce (%)	5%	5%	1%	0%	3%	4%

Source: The NBO study of 2019

## **Limitations of the National Baseline Overview of the Artisanal and Small-scale Gold Mining (ASGM) Sector, Including Baseline Estimates of Mercury Use and Practices**

The NBO study of 2019, was set out to cover 86 Artisanal and Small-Scale Gold mining sites within 14 districts in Uganda. However, during data collection, it was discovered that some of the originally mapped sites in Kassanda District and the Karamoja Region had been abandoned. New sites that were not originally in place were also discovered. This is not surprising because gold tends to lure miners to hotspots during gold rushes.

In Central Uganda, particularly Kassanda District, the majority of the originally mapped ASM sites were abandoned in September 2017 after the presidential directive to evict all the ASMs there. These were illegally operating in an Exploration Licence area belonging to AUC Mining Co. Limited. The detailed assessment was, therefore, not able to identify and cover all the 86 sites as earlier planned but did cover 82 sites.

<sup>13</sup>Uganda National Bureau of Standards (2014); Uganda Standard, Potable water — Specification; US EAS 12, First Edition, 2014-10-15. .

The NBO study of 2019 did not establish the approximate number of children engaged in gold mining but earlier reports by UBOS (2014)<sup>14</sup> and SOMO, Stop Child Labour (2015)<sup>15</sup> estimated 10,000 to 15,000 children are working in artisanal gold mining.

The NBO study of 2019 didn't assess the total number and names of ASGM associations, groups, cooperatives and SACCOs that are active and inactive across the country.

Furthermore, the NBO study of 2019 did not map the number of abandoned ASGM sites nor sites re-colonised by ASGM.

Though the NBO of 2019 study captured the level of knowledge of health care professionals on mercury poisoning symptoms, it did not determine whether the health care providers have knowledge on detection of mercury poisoning and remediation of the same.

## National strategies in addressing ASGM concerns

This NAP on ASGM in Uganda outlines the national targets, key strategies, work plan and interventions/actions that will be taken in order to reduce and where feasible eliminate mercury use in the ASGM sector. The NAP on ASGM also details the proposed timeframe and budget for its execution. It contains implementation strategies and associated actions as follows:

- a) **Eliminating worst practices:** elimination of whole ore amalgamation, open burning of amalgam or processed amalgam, burning of amalgam in residential areas and cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury;
- b) **Promoting the reduction of emissions, releases, and risks of exposure to mercury:** undertaking a study of mercury-free alternative technologies for gold extraction, supporting the use of mercury-free and mercury capture technologies for example retorts and capture hoods and launching a safe waste disposal programme in the ASGM sector;
- c) **Facilitating formalisation or regulation of the ASGM sector:** developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities, to build the capacity of ASGMs, to carry out geo-prospecting and zoning of ASGM mining areas and undertake a national biometric registration and mapping of all ASGM value chain key players;
- d) **Involving stakeholders in the implementation and continued development of the NAP on ASGM:** establishment of a national multi-stakeholders' working group to consistently track and monitor implementation of the NAP intervention strategies and activities;
- e) **Managing trade and preventing diversion of mercury and mercury compounds:** development of a mercury trade tracking system along the entire value chain, strengthening institutional capacity and enhancement of regional cooperation and cross-border inter-agency collaboration on the tracking of mercury;
- f) **Implementing the public health strategy on the exposure of ASGMs and their communities to mercury:** carrying out a situational analysis on public health concerns in the ASGM sector, building the capacity of health care workers on the health effects of mercury, diagnosis and treatment of the same, raising awareness of ASGMs and surrounding communities on the dangers of mercury use in gold extraction, its health effects and how they can cater for personal protection as well as seeking treatment and enabling of inter-sectoral coordination in the management of mercury use in ASGM. It also plans for the enhancement of the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector and establishment of proper OSH standards and practices at ASGM mine sites;
- g) **Preventing the exposure of vulnerable populations, particularly children, women of child bearing age, pregnant mothers and nursing mothers to mercury used in ASGM:** implementation of labour and mining regulations prohibiting child labour in ASGM, introduction of alternative income generating activities for these groups so as to safeguard their livelihoods, policy formulation protecting vulnerable populations and community outreach on the risks they face in and around mine sites;

<sup>14</sup> UBOS, 2014, Uganda National Household Survey

<sup>15</sup> SOMO, Stop Child Labour, 2015, Gold from children's hands: Use of child-mined gold by the electronics sector



- h) **Instituting market-based mechanisms for promoting reduced mercury use:** establishment of incentives for the use of alternative methods to mercury in ASGM operations and the establishment of market standards to determine mercury-free gold;
- i) **Providing alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use:** supporting the adoption of mercury-free gold mining practices and technologies;
- j) **Facilitating OSH observance at ASGM sites:** enhancing the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector, establishing OSH standards and practices at ASGM sites.
- k) **An environment management strategy for ASGM related operations:** facilitate the application of environmentally friendly mining practices among ASGMs, enforce regulations on protected areas and minimise climate change emissions from ASGM activities, and finally;
- l) **Providing information to ASG miners and affected communities:** development and implementation of a communication strategy and dissemination of information on mercury use and dangers.

The total cost for implementing the NAP on ASGM is UGX 46,651,380,000 (USD 12,447,012.13). The budget summary to implement strategies and objectives of the NAP on ASGM budget is indicated in Table 2 whereas a detailed budget is contained in Annex VI of this NAP on ASGM.

**Table 2: Budget summary to implement strategies and objectives of the NAP on ASGM**

SNo	Objective	Budget (UGX)	Budget (USD)
1	To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024	1,862,950,000	497,219.07
2	To facilitate the formalisation of the ASGM sector by 2024	16,135,950,000	4,302,938
3	To strengthen stakeholder engagement in the implementation of the NAP	2,726,000,000	726,951.07
4	To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024	6,733,500,000	1,795,966
5	To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury-related complications in ASGM by 2024	4,682,390,000	1,248,637
6	To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024	3,567,900,000	954,165
7	To develop market-based mechanisms for the promotion of reduced mercury use by 70% by 2024	904,750,000	242,746
8	To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030	113,490,000	30,263.99
9	To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030	187,500,000	50,000.00
10	To develop and enforce an ASGM environment management strategy by 2030	4,812,300,000	1,284,887
11	To continuously raise awareness and sensitisation on mercury use and its dangers in the ASGM sector.	4,924,650,000	1,313,239
	<b>TOTAL</b>	<b>46,651,380,000</b>	<b>12,447,012.13</b>

The summary workplan of this NAP on ASGM is indicated in Table 3.

Table 3: Workplan/timeline

Sn	Objective	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70%											
2	To facilitate the formalisation of the ASGM sector by 2024											
3	To strengthen stakeholder engagement in the implementation of the NAP											
4	To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024											
5	To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024											
6	To prevent exposure of vulnerable populations to mercury used in the ASGM sector by 2024											
7	To develop market based mechanisms for the promotion of reduced mercury use by 70% by 2024											
8	To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030											
9	To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030											
10	To develop and enforce an ASGM environment management strategy by 2030											
11	To continuously raise awareness and sensitisation on mercury use and its dangers in the ASGM sector											

## Conclusion

The NBO study of 2019 revealed existence of a dynamic ASGM sector with a diversity of workforce along the value chain having a potential to improve their livelihood in a sustainable way. Phasing down and eventually phasing out of mercury use in Uganda will require a multidisciplinary approach with concerted efforts from national, regional and global stakeholders. This among others calls for mainstreaming the NAP objectives and actions in sector plans and budgets, and strong engagement of private sector and CSO in NAP implementation.

## 2. Introduction and Background

This chapter describes the rationale, context of the NAP on ASGM. The chapter goes ahead to give an overview of the NAP on ASGM development process.

### 2.1. Country profile



Figure 1 Map of Africa showing Uganda's Location<sup>16</sup> source: <http://www.continentaloutdoor.com/africa/uganda>

Uganda is located in East Africa and lies across the equator, between 10 29' South and 40 12' North latitude, 290 34 East and 3500' East longitude and about 800 kilometres inland from the Indian Ocean as indicated in figure 1. The country is landlocked, bordered by Kenya in the East; South Sudan in the North; Democratic Republic of Congo (DRC) in the West; Tanzania in the South; and Rwanda in South West. It has a total area of 241,551 square kilometres, of which the land area covers 200,523 square kilometres.

Uganda has diverse cultures and ethnic groups, where major groups include: Baganda, Banyankole, Bahima,

<sup>16</sup> <http://www.continentaloutdoor.com/africa/uganda>

Bakiga, Banyoro, Batoro, Langi, Acholi, Lugbara, Karamojong, Basoga, Bagisu, and others. The Baganda are the largest ethnic group and comprise approximately 17% of the population<sup>17</sup>.

Uganda's population has continued to grow over time, from 9.5 million in 1969 to 34.6 million persons in 2014 (which represents an increase of 10.4 million persons from the 2002 census<sup>18</sup>) with a population density of 174 persons per square kilometre as revealed during the 2014 National Population and Housing Census results.<sup>19</sup> The Uganda Bureau of Statistics (IBID) projects Uganda's population to be 39 million in Mid-2018. The 2014 National Population and Housing Census results revealed that, Uganda's urban population increased from less than one million persons in 1980 to about 3 million in 2002, representing nearly a threefold increase and further increased to 7.4 million in 2014 (IBID). According to UBOS (IBID), the projected urban population in mid-2017 was 9.4 million.

The National Population and Housing Census of 2014 revealed that, the total population of Uganda was 34.6 million persons in 2014 which represents an increase of 10.4 million persons from the 2002 census.

According to UBOS<sup>20</sup>, there has been a steady increase in the literacy rates from 54 percent in 1991 to about 72 percent in 2014 with the male literacy rate being persistently higher (77 percent) than that of their female (68 percent) counterparts over the three census periods as revealed during the National Population and Housing Census of 2014. Literacy rates were higher in urban areas than rural areas. Notably there is need to raise the literacy levels of especially women between the ages of 15-49 years, to have access to sexual and reproductive health information and education, among others (IBID).

According to UBOS (IBID), the economy grew by 6.4% in the first quarter of Financial Year (FY) 2018/19, continuing with the same momentum from the last quarter of FY2017/18. This was a major improvement from the 4.5% growth that was realised in the first quarter of FY2017/18. The government is projecting the economy to grow by 6.2% in the FY2018/19. This prediction is contained in the National Budget Framework Paper (BFP) 2019/20 published by the Ministry of Finance in December 2018<sup>21</sup>.

The contribution of minerals to Gross Domestic Product (GDP) growth increased from 0.3% in FY 2012/13 to 0.6% in FY2017/18 which has also seen the value of mineral production increase from UGX 159.3b in 2013 to UGX 179.7b in 2017<sup>22</sup>. The country's mineral deposits have a tremendous potential to cause economic growth and transformation and contribute to GDP. In addition, the sub-sector can create employment since it employs about 26.5% of Uganda's population directly or indirectly<sup>23</sup>.

Uganda has a favourable geological environment that hosts over 27 commercially exploitable mineral resources. Thus, the mineral development sector has a strong opportunity to sustainably contribute to economic growth of the country through providing employment, and supporting industrialisation through backward, lateral and forward linkages.

Artisanal and small-scale gold mining in Uganda takes place in the following regions:

## Central Region

It comprises Mubende, Kassanda and Kyegegwa districts and hosts the Paleoproterozoic Rwenzori fold belt also known as the Buganda-Toro System<sup>24</sup>. Formed 2.5-1.6 billion years ago (IBID), the fold belt is mainly argillite, that is, a sedimentary rock that does not split easily, formed from consolidated clay. This explains why most of the mining in this region is underground as well as the ASMs' use of mechanised equipment

<sup>17</sup> <http://www.statehouse.go.ug/about-uganda>

<sup>18</sup> Uganda Bureau of Statistics (2016); The National Population and Housing Census 2014 – Main Report, Kampala, Uganda; <https://www.ubos.org>

<sup>19</sup> Uganda Bureau of Statistics, (2018) Statistical Abstract, <https://www.ubos.org>

<sup>20</sup> UBOS, 2014, Education: A means for Population Transformation; based on the National Population and Housing Census

<sup>21</sup> *National Budget Framework Paper 2019/20*.

<sup>22</sup> *Ministry of Finance, Planning and Economic Development, 2019*

<sup>23</sup> Ministry of Finance, Planning and Economic Development, 2019.

<sup>24</sup> Geology of Uganda; <https://en.wikipedia.org>

such as power hammers. Because of the clay-like characteristics, the rocks extracted from underground can be crushed into very fine particles that then require large amounts of mercury to liberate the gold.

Besides gold, this region also boasts of vast coarse and medium-grained granites which have potential for dimension stone production. The vegetation is a combination of forests and woodlots. Woodlands cover the largest part of the region which gets bimodal rainfall from March to May and September to November<sup>25</sup>. The most predominant economic activity is agriculture of traditional cash crops namely coffee, tea and tobacco while bananas, sweet potatoes, cassava, irish potatoes, beans, maize and ground nuts dominate the food crops<sup>26</sup>. There is also livestock rearing, mainly cattle, goats, pigs as well as poultry. Some individuals carry out fish-farming.

## Kigezi Region

It is located in Southern Uganda comprising of Kabale and Kisoro districts hosted in the Mesoproterozoic North Kibaran fold belt of South Western Uganda.<sup>27</sup> Formed 1.6-1 billion years ago, the belt is 1500km long, extending into the gold-rich Katanga Region of the DRC (IBID). Gold deposits occur in the synclinoria between the granites. This region has shallow alluvial gold workings on a small scale, entirely mercury-free.

The region has a montane climate with a bimodal rainfall pattern.<sup>28</sup> It has two main rainy seasons from March to May as the heavy rains and September to November as light rains with intervals of some dry spells<sup>29</sup>. June to August is the main dry season and December to February is the short dry period with little rain. It is a highland area with steep slopes, intensely cropped hillsides and high population density. The region is popular with tourists due to its beautiful scenery and it also sits on several mineral deposits including tantalite, wolfram, tin, iron ore, gold, coltan, lava ash, sand and clay.

## Eastern Region

Comprises of Busia, Bugiri and Namayingo districts located in the Neoproterozoic Busia-Kakamega granite-greenstone belt<sup>30</sup>. Gold was first discovered in the Busia gold district in 1932 in the Osipiri area<sup>31</sup>. Small scale mining operations on vein and alluvial deposits began soon after this discovery in Tiira, Makina, Amonikakine and Osapiri villages and are still going on. With the exception of Tira and Amonikakine where gold is recovered from reefs (hard rock), most of the gold is recovered from alluvial material.

In the recent past, gold rushes have been reported in the Bude, Nakudi and Busuma gold mines in Namayingo District where fieldwork was first undertaken (IBID). Gold mining in this region generally includes underground workings and surface mining of both alluvial and hard rock ores. In particular, Busia District's gold trade is fuelled by its geographical location at the border with Kenya which is also the main entry point for mercury into Uganda.

## Ankole Region

South Western Uganda comprises of Buhweju and Bushenyi districts and is hosted by the platform sedimentary rocks of the post Rwenzori fold belt<sup>32</sup>.

The Proterozoic lithologies (Karagwe-Ankolean System) that occur in the area consist of meta-sediments, mainly shale's, phyllites, mica schists, quartzites and conglomerates. Ironstone lenses, commonly specular and sometimes massive occur in these lithologies (IBID). The metamorphism in the Karagwe-Ankolean

<sup>25</sup> National Environment Management Authority (1998), National State of Environment Report

<sup>26</sup> MAAIF (2010). Agricultural Sector Development Strategy and Investment Plan 2010/11-2014/15. Ministry of Agriculture, Animal Industry and Fisheries. Kampala.

<sup>27</sup> Geology of Uganda; <https://en.wikipedia.org>

<sup>28</sup> National Environment Management Authority (1998), National State of Environment Report

<sup>29</sup> MAAIF (2010). Agricultural Sector Development Strategy and Investment Plan 2010/11-2014/15. Ministry of Agriculture, Animal Industry and Fisheries. Kampala.

<sup>30</sup> Geology of Uganda; <https://en.wikipedia.org>

<sup>31</sup> ACEMP 2017, Understanding Artisanal and Small Scale Mining in Uganda

<sup>32</sup> Geology of Uganda; <https://en.wikipedia.org>

System is very low and mainly increases towards the base of the Karagwe-Ankolean System. Mineral resources associated with the Karagwe-Ankolean System include cassiterite, wolframite, nickel, copper, gold, silver, niobium-tantalum, magnetite, talc, ochre, mica, uranium, thorium, beryllium, lithium, bastnasite, semi-precious stone, cobalt, platinum, chromium, titanium, vanadium and iron. Gold is recovered from reefs as well as alluvial material.

The Ankole Region is largely agricultural with only a few people, mainly men, engaging in ASGM. Most of the mining is done on private land although some companies are beginning to acquire licences, triggering conflict with historical landowners<sup>32</sup>.

## Karamoja Region

Found in North Eastern Uganda, this region comprises of Amudat, Abim, Nakapiripirit, Napak, Kaabong, Moroto, Nabilatuk and Kotido and is hosted by the reworked Archaean basement rocks and/or in the upper amphibolite–lower granulite facies rocks of the Neoproterozoic Mozambique fold belt<sup>33</sup>. Gold occurs in deformed high-grade metamorphic rocks of the belt that stretches from north to south Karamoja in the Upe region.<sup>34</sup> Within Karamoja, major structures that run through the region include shear belts (extended zones of rock fracturing and faulting), which occur in Late Precambrian age rocks, and large areas covered by Archean rocks.<sup>35</sup>

Karamoja is semi-arid and more locals prefer to engage in ASGM rather than agriculture given the erratic rain patterns in the area. Karamoja has a blend of both alluvial gold workings along river beds, and as well as hard rock extraction in some districts.

## 2.2. ASGM and the Minamata Convention on Mercury

Article 2 of the Minamata Convention on Mercury defines ASGM as “gold mining conducted by individual miners or small enterprises with limited capital investment and production”. The convention addresses mercury, a naturally occurring heavy metal and harmful chemical, whose emissions are retained in the atmosphere for long periods of time affecting populations over generations. Reducing and eliminating anthropogenic sources (originating from human activity) of mercury is a key objective under the Convention.

The number of signatories to the Minamata Convention currently stands at 128, while the number of parties is 113<sup>36</sup>. The Uganda government signed onto the Convention on October 10, 2013 and deposited their instrument of ratification on March 1, 2019.

Uganda is also party to the Basel, Rotterdam and Stockholm conventions which look to promote “a clean planet, healthy people, sound management of chemicals and waste” and the Strategic Approach to International Chemicals Management, a global policy framework that looks to foster the sound management of chemicals so as to minimise significant adverse impacts on environment and human health.

The Minamata Convention includes control measures to reduce mercury supply sources and trade. The ASGM sub-sector is a major source of mercury release and environmental pollution in the world.<sup>37</sup> Article 7 of the Minamata Convention on Mercury requires that any country that determines that the use of mercury in its ASGM activities is “**more than insignificant**”, must notify the Secretariat, and must develop and implement a NAP.

<sup>33</sup> ACEMP 2017, Understanding Artisanal and Small Scale Mining in Uganda

<sup>34</sup> <https://ctph.org/pian-upe/>.

<sup>35</sup> Hinton, J., Kabongo, I., Kabiswa, C., Okedi, J., Mbabazi, R., 2011. Baseline Assessment of the Mining and Minerals sector in Karamoja, Uganda: Development opportunities and constraints. Ecological Christian Organisation (ECO).

<sup>36</sup> As of 28th August, 2019

<sup>37</sup> Artisanal and Small-scale Gold Mining (ASGM) is estimated to be responsible for over 700 tonnes per year of mercury emissions to into the atmosphere and an additional 800 tonnes per year of mercury releases to land and water, making it the largest anthropogenic source of mercury (AMAP/UNEP 2013). 30 Geology of Uganda; <https://en.wikipedia.org>

Uganda's ASGM sector remains largely informal. There is not much awareness on mercury issues among risk groups, the general public or government agencies and institutions having responsibilities pertaining to mercury and mercury containing wastes.

### 2.3. Contribution of the ASGM sector to Uganda's economy

A recent joint study sanctioned by MEMD and ACP-EU/UNDP Development Minerals<sup>38</sup> reveals that the ASM sector contributes about 3.5% to GDP and estimated unregulated illegal ASM miners to be over 200,000 across the country. The study further estimates that unlicensed artisanal gold miners alone are responsible for over 2.8 tonnes of gold every year. The NBO study of 2019 revealed that, the national total of ASG miners is over 31,000 across the Karamoja, Ankole, Eastern, Central and Kigezi Regions.

The ACP-EU/UNDP study of 2013 further revealed that the government of Uganda benefits from the legal fees/taxes and Non-Tax Revenues (NTRs) from the ASGMs. Direct and indirect tax collected from miners and associated mineral dealers who get licences to trade in minerals contributes to all levels of revenues, from local to central government from exploration and location licences fees and other NTRs like royalties. While taxes and fees are retained in the Consolidated Fund, as per the Mining Act (2003), royalties are currently divided according to a formula, that is, 80% of royalties retained by Central Government, 17% to Local Government and 3% to the land owner.

Because ASM is largely informal and unlicensed (and in many cases undertaken seasonally to supplement agricultural livelihoods), contributions to mineral production and local economies are rarely captured by official statistics and miners are often invisible to the mainstream or, in some cases, regarded as criminals<sup>39</sup>. All activities along the value chain from mineral discovery through to the market attract charges. Subsequently, there is a lot of money exchanging hands from gold mining activities.

The ASM activities contribute directly to the local and national economy both formally and informally through legal fees/taxes and NTRs; direct and indirect tax collected from miners and mineral dealers who get licences to trade in minerals; exploration and location licences fees; royalties, among others. These are accumulated at the Central Government coffers and later redistributed to Central and Local Government, and land owners.<sup>40</sup> Because of insufficient documentation of gold sales coupled with rampant smuggling, royalty payments are irregular and, in many cases, non-existent.

The metallic minerals exported annually from Uganda produced by ASM are not always captured in the official annual statistics since they are produced without licences and are smuggled without going through the designated channels. For instance, Uganda's 2015 official gold export statistics show only 0.54kg of gold originating from Kassanda was exported to Korea. Research by SOMO, Stop Child Labour (2015)<sup>41</sup> and SOMO, CRSS (2016)<sup>42</sup> estimated that 20kgs of gold could have been produced on the Lubali mining site in Kassanda alone per month. In 2016, the Uganda Observer newspaper reported that national gold exports had hit \$300m but Bank of Uganda could not identify the origin and exporters of this cargo.

### 2.4. Institutional framework for ASGM management

The Ministry of Energy and Mineral Development (MEMD) oversees the energy and mining sector in Uganda. The Ministry works hand in hand with several other agencies in the execution of its mandate. The Directorate of Geological Survey and Mines is the lead agency for control of mining operations although NEMA is mandated to take lead in all aspects of environmental management. Other lead agencies that have stakes in mining activities include NFA, UWA, URA, Ministry of Internal Affairs/Immigration Department and MGLSD, among others.

<sup>38</sup> Levin Sources: Market Study and Value Chain Analysis of selected Development Minerals in Uganda, 2017.

<sup>39</sup> Hinton, J., Kabongo, I., Kabiswa, C., Okedi, J., Mbabazi, R., 2011. Baseline Assessment of the Mining and Minerals sector in Karamoja, Uganda: Development opportunities and constraints. Ecological Christian Organisation (ECO).

<sup>40</sup> ACEMP, 2017: Understanding Artisanal and Small scale mining in Uganda

<sup>41</sup> SOMO, Stop Child Labour (2015). Gold from Children's Hands

<sup>42</sup> SOMO, CRSS, 2016, No Golden Future, Use of child labour in gold mining in Uganda, Amsterdam

With regard to inter-sectoral cooperation, MEMD requires to cooperate with a wide range of institutions in order to control mercury use. Activities in the mining sector are often cross-cutting and other institutions come into play either as a legal requirement or a courtesy requirement. Most often, the sectoral activities have to be performed where other sectors are mandated, for example institutions that handle land, gender, tourism, trade, health, forestry, wildlife etc.

Limited resources continue to affect research and planning (e.g. the inability to identify and monitor cases of mercury pollution in a timely manner, insufficient research capacity to evaluate and respond to problems, insufficient extension services to promote good mining practices, and limited access to inputs) suggest that the mining sector is presently not prepared to address mercury pollution risks in an effective manner. However, recent developments amongst mining sector stakeholder institutions point towards enhanced capacity and monitoring of ASGM operations in the near future. These include:

- a) The opening of new regional offices by DGSM to enhance monitoring of mining operations. A Karamoja regional office was opened in 2017 and there are plans to open others in Fort Portal, Ntungamo and Tororo districts. These are aimed at bringing geological and mining services closer to the people. There remains a challenge of under-staffing and underfunding for these offices to function effectively.
- b) The formation of the Police Minerals Protection unit under the Ministry of Internal Affairs whose mandate includes monitoring artisanal mining operations. The Unit has established operational bases in the districts of Mubende, Isingiro, Ntungamo, Busia, Kisoro, Rubanda, Kabale and Buhweju.
- c) The opening of regional offices by NEMA which brings technical services, licensing, supervision and monitoring services closer to known ASGM mercury hotspots.

## 2.5. Legal and regulatory framework

The Mining and Mineral Policy, 2018 proposes the organisation and legislation of artisanal and small-scale mining operations and the management of OSH and the environment with special attention to mercury use in gold extraction in the ASGM sector.

Objective six (6) of the Policy promotes and protects health, safety and environment in the mineral sector and strategy six (6) thereof establishes a mechanism to monitor and enforce compliance to health, safety and environmental standards. Under this policy intervention, government seeks to promote the use of environmentally sound exploration and mining techniques and technology and to regulate the use of toxic and hazardous substances such as mercury and cyanide.

Furthermore, the government has tabled the Mining and Mineral Bill, 2019 to give effect to the Mining and Mineral Policy, 2018. The Bill has considerable provisions that regulate artisanal and small scale mining operations. It introduces new aspects such as artisanal mining permits and defines what artisanal mining is. It also provides for the formalisation and regulation of artisanal mining.

The Mining and Mineral Bill, 2019 aims at strengthening the current institutional arrangements and establish relevant supporting institutions. It also sets out to create specialised agencies to carry out specific tasks to support DGSM. To that effect the Bill has established several units providing their specific roles and functions. These include the Mineral Exploration Unit, Licensing/Mining Cadastre Unit, Mineral Audit Agency; National Mining Company and Mining Tribunal.

## 2.6. Organisation of ASGM

The ASGM sector in Uganda is informal, with an intricate chain of stakeholders who include landowners, tenants, miners, traders and family members. In some areas, the landlords will lease land out to miners in return for a share of the proceeds. However, in Karamoja, the land on which mine sites are situated is communally and individually owned by the miners. While it is common to find many miners on one site, with several members from the same family working together, quite often majority of them are self-



employed with no specific chain of leadership, except where they operate under an association.

The formation of associations and cooperatives by ASGMs has been greatly encouraged and facilitated by different actors including the government and CSOs. ASGM groups or associations require a constitution in order to register with the Sub County Community Development Office where they are also required to pay UGX 50,000/USD 13.33 to be registered at the district level.

The Uganda Association of Artisanal and Small Scale Miners (UGAASM) is the national umbrella of all ASMs in Uganda. It has under it, regional executives in each of the mining regions (i.e. Eastern, Ankole, Central, Karamoja and Northern which is not a gold mining region). The NAP on ASGM, in its strategies and interventions, provides for the formation of a national ASGM association which will capture the already registered and new ASGM associations. This gives ASGMs a common platform on which to voice their concerns and have their issues presented and addressed to the relevant authorities. It also eases the formalisation of the sector and allows for efficient engagement between the authorities and the miners.

## 2.7. The development of the NAP on ASGM

The Government of Uganda is committed to eliminate mercury use in the ASGM sector. Therefore, the NAP on ASGM outlines strategies for the management of mercury in the ASGM sector and will put in place specific, realistic and time-bound strategies for the reduction, and elimination of mercury use in the ASGM sector and identify government institutions or agencies and other stakeholders responsible for the implementation of these strategies.

The NAP on ASGM aims at contributing to the implementation of the Minamata Convention through the reduction and eventual elimination of mercury use in ASGM. Annex C Paragraph 1(a) requires that countries set national objectives and reduction targets for NAPs.

The development of this NAP relied heavily on the UN environment Global Mercury Partnership template<sup>43</sup> and suggested Table of Contents for NAP Guidance Document from the Minamata Convention Secretariat<sup>44</sup> and the National Overview of the Artisanal and Small-scale Gold Mining sector, including, Baseline Estimates of Mercury Use and Practices report of 2019.<sup>45</sup> The Baseline Estimates of Mercury Use and Practices report of 2019, contains baseline information, data and statistics on geographical distribution of ASGM in Uganda; mining and processing; baseline estimates of the amount of mercury used by the ASGMs; the legal and regulatory status of the sector; leadership and organisation of ASGM at national and local levels; mercury trade and demand; economic aspects; demographic and social information; environmental information; and health information.

The development of the NAP on ASGM covered ASGM country-wide and engaged different government MDAs, the private sector, the media, academia, development partners, civil society, NGOs, medium and large-scale miners, community leaders and local government from ASGM areas, technical experts in gold mining, technical experts in OSHE, human rights groups, academic and research institutions, legal professionals, relevant land holders, police and custom officials, regulatory authorities, and the general public.

The overall process of development of the NAP on ASGM followed these steps and activities:

1. A coordinating mechanism and organisation of process was established to ensure that the process is highly participatory and representative. Terms of Reference for the national coordination mechanism for the NAP project are detailed in Annexes II, III and IV of this NAP.
2. The national overview of the ASGM sector, including baseline estimates of mercury use and practices developed as part of the mercury inventory activity, as well as a baseline health assessment for ASGM communities was conducted.
3. Goals, national objectives and mercury reduction targets, including elimination of mercury use in ASGM where feasible were developed by the Country Working Group during the NAP on ASGM inception meeting.

4. An implementation strategy, including identifying necessary budgetary resources and institutional capacity building mechanisms was formulated with the full consultation and participation of the Country Working Group.
5. The evaluation process for the NAP on ASGM was developed.
6. The NAP's finalisation, endorsement and submission by the government to the Minamata Convention Secretariat will be undertaken after its final review.
7. Lastly, as the NAP on ASGM is being implemented, it shall be evaluated and its progress monitored. The data generated from the monitoring exercises will also be submitted as part of progress review reports to be submitted under article 21 of the convention.

The tools administered in the data collection and development of the NAP included Estimating Mercury Use and Documenting Practices in ASGM: Methods and Tools, Participatory Appraisal Approaches, Institutional mapping, Self-assessment and SWOT analysis, Semi-structured Interviews, Focus Group Discussions (FGDs), Site visits, and observations and Workshops/Meetings.

The NAP on ASGM has also been linked as often as possible to high level National Development Goals and initiatives, such as Poverty Reduction Strategies, Sustainable Development Goals, National Development Plans, Sector Development Plans and Strategies among others. This will ensure that is in line with national, regional and international development programmes.

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<sup>43</sup> <http://web.unep.org/globalmercurypartnership/template-nap>

<sup>44</sup> <http://web.unep.org/globalmercurypartnership/nap-guidance-document>

<sup>45</sup> NEMA, 2019, The National Overview of the Artisanal and Small-scale Gold Mining (ASGM) Sector, Including, Baseline Estimates of Mercury Use and Practices

# 3. National Overview of the Artisanal and Small-Scale Gold Mining (ASGM) Sector

## 3.1. Introduction

Annex C (d) of the Minamata Convention states that a key task for a country developing a NAP is to develop a "Baseline estimate of the quantity of mercury used and the practices employed in artisanal and small-scale gold mining and processing within its territory." The phrase 'within its territory' means the entire nation.

In 2018, NEMA embarked on the exercise of undertaking the NBO study of 2019 which was concluded in 2019 after covering 79 ASGM sites across Uganda. Many of these ASGM sites were visited during the multi-sectoral reconnaissance visit in 2018 to map the scope ASGM sites and practices to be able to develop adequate Terms of References for the National Consultant to undertake the NBO study of 2019. The reconnaissance visit covered a total of 82 ASGM sites.

The ASGM sites visited were located in the following Districts:

- i. Karamoja Region (Amudat, Abim, Nakapiripirit, Napak, Kaabong, Moroto, Nabilatuk and Kotido);
- ii. Eastern region (Busia, Bugiri and Namayingo districts);
- iii. Central region (Kyegegwa, Mubende and Kassanda districts);
- iv. Kigezi region (Kisoro and Kabale), and;
- v. Ankole region (Bushenyi and Buhweju districts).

This NBO study of 2019, was also guided by the MIA of 2018 undertaken by NEMA.

The main objective of the study was to collect baseline information that can provide a foundation for the development of a NAP to reduce, and eventually eliminate mercury use; and implement steps to support the formalisation and regulation of ASM and build technical capacities of relevant offices in order to achieve the objectives of the Minamata Convention. The field data places ASGM production of gold at 7,082kgs per year. Of the total gold produced annually, 5,152kgs are produced using 15,233kgs of mercury.

## 3.2. Methodology used to develop the National Overview of ASGM in Uganda

The National Overview was conducted using a combination of methods and approaches. The overall methodology applied for site investigations in this study is described in three existing guides:

- i. The tool kit "Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM) Methods and Tools, Version 1.0, developed by UN Environment<sup>46</sup>. This principle tool was used hand in hand with other methods such as:
- ii. Qualitative methodology for socio-economic ASGM Study" toolkit developed by UNITAR which has also been used by other countries to develop their NAPs.
- iii. Developing a National Action Plan to Reduce, and Where Feasible, Eliminate Mercury Use in Artisanal and Small Scale Gold Mining. Guidance Document. Working Draft August 17, 2015. United Nations Environment Programme, 2015.

The methodology in these guides was used to develop site investigations, forms and a reporting system and calculation tools.

<sup>46</sup> O'Neill, J.D. and Telmer, K. (2017). Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM). Geneva, Switzerland: UN Environment. ISBN 978-0-9939459-8-4

## Training on tools and reporting system for site specific investigations and country baselines of mercury use in the ASGM sector in Uganda

Training in the methodology to collect data on mercury use in Uganda's ASGM sector was undertaken during a two-day national training workshop for consultants and key stakeholders, and the National Task for Management of Chemicals in Uganda. The training was facilitated by representatives from Africa Institute for the Environmentally Sound Management of Hazardous and other Wastes. The workshop consisted of presentations, exercises and feedback from the participants. The presentations addressed a number of key items:

- a) Developing Baseline Estimates of Mercury Use in Artisanal and Small Scale Gold Mining Communities: A Practical Guide, Version 1.0. Persaud, A., Telmer, K., Artisanal Gold Council. Victoria, BC, 2015.
- b) Minamata Convention requirements and linkage to related activities
- c) Basics on organisation of ASGM sites, extraction methodologies and the use of mercury
- d) Value chain of mercury for ASGM and linkage with the value chain of gold
- e) Introduction to the reporting system and calculation tool (including showing how the tool works – this was documented in PPT slides).
- f) Developing ASGM site-specific baseline estimates
- g) Planning and developing country baselines for mercury use for ASGM

The training also involved a one-day field visit to ASGM sites in Buhweju District. This training involved two international facilitators from Africa Institute, South Africa and was aimed at offering practical field-based training in site investigation methods.

### Reporting system and calculation tool - the excel workbook

The consulting team used a calculation tool and a reporting system based on Excel workbooks developed by UNEP. The workbook was developed to supplement the UNEP Toolkit for mercury inventories and can be operated by users with limited Excel skills. The workbook was used for calculations and reporting of site investigations which form the initial national baseline estimates. The worksheets provide for units of calculations, formulas based on gold extraction, processing, production, trade and other socioeconomic aspects.

A specific worksheet is provided for collection of information on each site and a summary is generated. Based on the entered data, the calculation tool combines automatic calculations of various output parameters with manual selections and/or estimates of some parameters by triangulation and generates summary estimates. The estimates for mining sites are added together to arrive at the estimates for a mining region, and the estimates for regions are added together to arrive at estimates for the whole country.

For the latter estimates, expert assessments were carried out for assessing quality differences in estimates based on different input parameters and calculation methods (e.g. differences between extraction based and income-based gold production estimates).

The data in this worksheet is organised in a way that facilitates the import of data into a database programme. The results of all site investigations are automatically summarised in order to provide an overview of the results of all site investigations and form the basis for extrapolation at a national level. The workbook is protected so cells calculating the various output parameters cannot be changed by the user.

### National stakeholder inception meeting

A national stakeholders' workshop was organised by NEMA where the consultant presented the methodology for carrying out the baseline estimates of mercury in Uganda and also provided guidance and input towards country specific needs and real experience. The workshop also validated the methodology and provided input to the site-specific investigation tools. The workshop introduced the consultant to the key stakeholders and provided guidance on the design for the study and specific data sources.

## Planning and collection of data

Planning was undertaken by the consultant for the collection and eventual analysis of the collected data in order to satisfy requirement (d) of the Minamata Convention on conducting baseline estimates of the quantities of mercury used and the practices employed in ASGM. To fully appreciate the ASGM sector within Uganda, the consultant reviewed several reports and studies previously undertaken by national, regional and international organisations and researchers, MEMD Sector Plans, Joint Sector Review Reports, Policies and regulations, National Development Plans and Vision 2040. The literature generated by this report was instrumental in the creation of national objectives, reduction targets and exposure prevention strategies, strategies for the promotion of mercury-free methods and stakeholder identification, buy-in and targeted areas in a realistic timeline for the NAP implementation that considers a holistic approach for the country's ASGM sector.

The baseline plan applied strategic scientific approaches for the estimation of mercury use appropriate for each region where ASGM data was collected. The baseline covered technology and practices used in ASGM mining and processing across the country, recognising accessibility or remoteness of the ASGM sites. The baseline also mapped visible ASGM sites and stakeholders prior to the data collection which proved instrumental during field data collection and accurate baseline estimates.

## Literature Review

Documentary and literature review was undertaken before and during the course of the data collection and through the analysis and triangulation of the results. Some of the literature reviewed included:

- i. Official government and trade data documents to obtain estimates of gold produced within the country and imported gold into the country for re-export, Medium to Large Scale and ASGM gold export statistics, mercury import/export, population estimates, ASGM activity maps, and cadastral information on ASGM concessions/permits. Some examples of official documents include: national government reports, minerals yearbooks, sector commodities summaries, industry surveys, ASGM governing policies, laws and regulations, project white papers (e.g., GEF GOLD, World Bank, UN Agencies, Development Agencies, Academic and industry Journals, thesis/dissertations from university and NGO reports).
- ii. Previous ASGM baseline research conducted in the country. Reports considered to contain useful information of various types as well as engaging researchers for insightful information were considered.
- iii. Previous ASGM inventories, social development, health, geology and research done in country were reviewed.
- iv. Previous chemical management inventories;
- v. National Implementation Plans for multilateral Conventions such as Stockholm Convention;
- vi. Inventories of new persistent organic pollutants;
- vii. Sector specific reports for environment, waste management etc;
- viii. Health records and medical reports were all also studied.

## Capacity assessment methods

Capacity is defined as the ability of people, organisations and society as a whole to manage their affairs successfully; and capacity development is understood as the process whereby people, organisations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time.<sup>47</sup> The capacity assessment of the different institutions determined capacity needs by comparing desired capacities against existing capacity assets. A number of approaches were used to gather information on capacity assets and needs and included one-on-one interviews, focus groups, and surveys. The institutional mandates of MEMD, MAAIF, MWE, NEMA, MWT, MoH, URA, Uganda National Bureau of Standards (UNBS), DNROs, and National Laboratories were reviewed to understand their role and specific responsibility in the management of mercury in Uganda including: supervision, management, storage, use, disposal, and monitoring of mercury.

<sup>47</sup> <https://europa.eu/capacity4dev/public-cd-tc/wiki/about-capacity-development>

The capacity of the above institutions and agencies was assessed in terms of:

- i. Institutional management systems specifically for managing mercury right from planning, documentation, use and handling, monitoring systems, reporting and evaluation practices;
- ii. Competence/qualifications and experience of staff to supervise all aspects of mercury use;
- iii. Resources (personnel and funds) in place;
- iv. Equipment and strength of laboratories.

## Field studies and stakeholder consultations

Consultative meetings and interviews were held with the key stakeholders and institutions including: NEMA, Local Government Officials especially the DNROs in key mining regions, academic institutions such as Makerere University College of Agriculture, MEMD, DGSM, UBOs, ASGM site leaders, among others. Details of data analysis process is contained in Annex V. of this NAP on ASGM

### 3.3. Previous experiences in addressing concerns in the ASGM sector

There are several initiatives and frameworks that Uganda has officially subscribed to in a bid to promote sustainable mining and eliminate environmentally destructive mining practices. These include:

#### (a) Due Diligence Guidance for Responsible Supply Chains for Minerals from 'Conflict-Affected or High-Risk Areas'

The Organisation for Economic Cooperation and Development (OECD)<sup>48</sup> has developed a Due Diligence Guidance for Responsible Supply Chains for Minerals from 'Conflict-Affected or High-Risk Areas'. The OECD guidance includes an Appendix on ASGM, which suggests that stakeholders support formalisation and legalisation, and help miners create verifiable supply chains. Uganda, as a participating member of the OECD Due Diligence Guidance on Responsible Supply Chains for Minerals from 'Conflict-Affected or High-Risk Areas', is bound by the need to develop more regulations and restrictions on mercury use in ASGM and ensure that its gold supply chains become mercury-free. Due diligence initiatives require gold buyers to source gold from suppliers that meet certain criteria, in particular suppliers that abide by laws and requirements related to ASGM gold production. The due diligence guidance provides for safe and sustainable mining.

For successful implementation of the OECD Due Diligence Guidance, there is need for the Government of Uganda to uphold the principles of good governance, transparency and accountability along the entire mineral supply chains. Swift action should be taken so as to fully implement the existing policy and legislative provisions that support the implementation of this initiative.

#### (b) Regional Initiative against the Illegal Exploitation of Natural Resources (RINR) in the Great Lakes Region

The Government of Uganda has put in place an enabling environment to allow it fulfil its commitments in building a responsible mining sector based on the commitments of the 2010 ICGLR Heads of State Lusaka Declaration. The Ugandan government is now being seen to return to track and the recent passing of the International Conference on the Great Lakes Region (implementation of the pact on security, stability and development in the Great Lakes Region) Act No 11, 2018 gives proof. Article 22 of the Protocol of the Regional Initiative against the Illegal Exploitation of Natural Resources in the Great Lakes Region recommends the harmonisation of the legislation of Member States.

Uganda is in advanced stages of revising the Mining Act, 2003 with the Mining and Minerals Bill, 2019 currently tabled before parliament. Inter alia, new draft Mining and Minerals Bill has, in addition to benchmarking the Africa Mining Vision, also been aligned to the ICGLR Model Law to give effect to those

<sup>48</sup> <http://www.oecd.org/fr/daf/inv/mne/mining.htm>; <http://www.oecd.org/daf/inv/mne/GuidanceEdition2.pdf>

aspects of the ICGLR Protocol Against the Illegal Exploitation of Natural Resources relating to Tin, Tantalum, Tungsten and Gold originating within the region; to require supply chain due diligence by entities dealing in these minerals; to institute mechanisms for mineral certification and for related matters.

The increasing demand for minerals and metals in emerging economies and developed countries is one of the factors that have led to the successful implementation of RINR in countries such as Rwanda. However, there is need for awareness creation and sensitisation of the different actors in the mining sector which will lead to action for industry legislation, consumer responsibility and NGO campaigns. Lessons should be applied from countries which have successfully implemented the initiative.

### **(c) ICGLR Strategy for Artisanal and Small-scale Gold**

The Strategy outlines key intervention areas and activities that should be pursued by ICGLR and Member States in order to contribute to improved ASM gold sector due diligence and business performance in the region. Under this framework there is consensus amongst Member States that professionalisation of the ASGM sector is also a key outcome of formalisation which would lead to improved and safer working practices; improved access to information, skills and technology, enhanced exploration, production and recovery rates, improved access to formal financial services; and better environmental management, among others.

The DGSM has since developed the following documents:

- \* Mine site inspection manual for Uganda
- \* Mine site inspection template
- \* Terms of reference for chain of custody service providers
- \* Mineral export procedures

These tools and procedures are used to carry out checks along the mineral value chain, i.e. from extraction to export, including the ASGM sector.

One of the tools developed by the Strategy allows for transparency and accountability. Joining EITI is recommended under the Strategy against the Illegal Exploitation of Natural Resources assigned by the member states and this will be a necessary step to the successful implementation of this initiative. Furthermore, another is a tool on formalisation of artisanal miners such that they can be captured under this framework. This Strategy puts emphasis on Member States to formalise their ASM sectors which, if done, will lead to the successful implementation of the Strategy.

### **(d) Fairtrade Foundation supports artisanal small scale gold miners in Busia**

This is to promote internationally responsible gold production and supply chain standards for Ugandan-sourced gold to be acceptable to downstream buyers and consumers. The cutting-edge new Investment Facility has been carefully designed to give ASGMs access to finance, often for the first time, to invest in cleaner, more efficient equipment for processing gold. This will reduce miners' reliance on mercury and accelerate their alignment with Fairtrade standards. For example, Fairtrade Foundation is credited for introducing a safer and environmentally friendly borax gold extraction technology in the Busia gold mining fields.

Thus far, Fairtrade has been successfully implemented in Busia District. However, there is need to roll it out across other gold mining regions and districts along with awareness creation and sensitisation on the processes involved so as to aid the successful implementation of the initiative.

### **(e) Drawing from global initiatives in mercury-free ASGM, Uganda has also implemented several national and regional projects to contribute to phasing out mercury from ASGM**

1. The SMMRP was launched in 2004 with an objective to spur growth in the minerals sector. The project was undertaken and financed by the Government of Uganda. Other funders included: the World Bank, the Nordic Development Bank, and the African Development Bank. A principal component of the SMMRP was an extensive aerial survey of Uganda's mineral resources and the production of detailed maps of mineral resource endowments covering 80 per cent of the country with only Karamoja left out due to conflicts in the region. The DGSM, however, intends to undertake an aerial survey over the remaining 20 per cent.

Under the same project the Government of Uganda trained ASMs (including ASGMs) on environmentally friendly technologies and alternatives to mercury use. The project also supported the formation of 50 ASM associations, put in place an umbrella national association of ASM and provided capacity building to government staff in supporting the ASM sector.

The SMMRP developed a Small-scale Mining Handbook that was to be used as a guidebook for improving the performance of Artisanal and Small-scale Mining in Uganda. This handbook which contains vast information on mining and its techniques including those that are environmentally friendly was published in only English. Many ASGMs are not familiar with English. Furthermore, the project trained district and subcounty government officers and local leaders but did not account for the turn over as many of these officers and leaders keep leaving these positions.

2. Under the same project the Government of Uganda trained ASMs (including ASGMs) on environmentally friendly technologies and alternatives to mercury use. The project also supported the formation of 50 ASM associations, put in place an umbrella national association of ASM and provided capacity building to government staff in supporting the ASM sector.
3. In 2008-2010, Uganda conducted a Chemicals Management Profile where it was observed that human activities in Uganda are causing the release of mercury to the environment. Artisanal and small scale gold mining was found to be one of these activities as the gold miners use mercury to process gold. A National Implementation Plan for Sound Management of Chemicals under the Strategic Approach to International Chemical Management was developed. The Strategic Approach to International Chemical Management, however, did not directly address nor give recommendation on the use of mercury in ASGM as well as elimination.
4. In 2015, Government of Uganda, through NEMA, carried out inventories for the New Persistent Organic Pollutants, and a National Implementation Plan for the implementation of the Stockholm Convention. The implementation plan aims at the management and monitoring of Persistent Organic Pollutants, and whereas the growing mining industry was sited as one of the emitters of these pollutants, the Artisanal and Small scale Gold Mining sector was not specifically mentioned and yet it is the leading cause of mercury emissions in the mining industry.
5. Development of Minamata Convention on Mercury Initial Assessment (MIAs) in Africa project: With funding from GEF through UNEP, National Environment Management Authority (NEMA) on behalf of Government of implemented the Minamata Initial Assessment (MIA) project to strengthen national decision making towards ratification of the Minamata Convention and build capacity towards implementation of future provisions. This project was approved for implementation in September 2014 and took off in August 2015. It was completed in 2018.

The MIAs project had the following objectives;

- i. Establishing of a coordination mechanism and organisation of the process
- ii. Assessing of the national infrastructure and capacity for the management of mercury, including

<sup>32</sup> NEMA, 2019, The National Overview of the Artisanal and Small-scale Gold Mining (ASGM) Sector, Including Baseline Estimates of Mercury Use and Practices

<sup>33</sup> NEMA, 2018, National Minamata Initial Assessment Report



- i. national legislation
- ii. Developing of a mercury inventory using the UNEP mercury toolkit and strategies to identify and assess mercury contaminated sites
- iii. Identifying of challenges, needs and opportunities to implement the Minamata convention on Mercury
- iv. Preparing, validating of the National MIA report and implementation of awareness raising activities and dissemination of results
- v. Information exchange, capacity building and knowledge generation

The Assessment found the total mercury released in Uganda to be 31,087kg per year, with ASGM contributing 18,495kg of the total (about 59.5%)<sup>49</sup>. These high figures made it necessary to undertake the National Overview of the ASGM sector, including baseline estimates of mercury use and practices and the development of a National Action Plan which comes up with strategies that aim to eliminate the use of mercury in the ASGM sector.

The Assessment further carried out a preliminary review of the potential populations that face risk and potential health risks due to the use of mercury in ASGM as well as the gender dimensions related to the management of mercury thus leading to the National Overview study that was undertaken by NEMA in 2018.

A miner interacted with during the development of this NAP intimated that during this time, the price of mercury dropped. When asked why, he mentioned that due to the awareness campaigns being undertaken by NEMA during the MIAs project, miners' use of mercury had lowered. This, however, was short-lived as the use of mercury resumed and increased after a few months. This goes to show that awareness creation and sensitisation on the dangers of mercury has to be continuous.

6. In 2012-2013 Uganda participated in the East African Dental Amalgam Phase Down (EADP) Project – Kenya, Tanzania and Uganda. Funding for the project was provided by the Government of Norway (Overseas Development Assistance) through UNEP, with additional support from WHO; FDI and IDM; and Ground work, Friends of Earth, South Africa. The project explored essential conditions for a phase down approach in the use of dental amalgam by emphasizing phasing down" instead of "phasing out" dental amalgam. The major achievement under EADP project was the installation of three (3) Amalgam separators at three demonstrations sites (Mulago Dental School, Mengo Hospital and Jubilee Dental Clinic).

NEMA prepared the national environment act no. 5 of 2019 and Waste Management Regulations to incorporate provisions of the Minamata Convention on Mercury.

7. NEMA has supported Local governments to develop Ordinances against mercury use. For example, "The Local Governments (Buhweju District) (Environmental Protection and Natural Resources Management) Ordinance, 2017". This prohibits mercury use in Buhweju District.
8. On 4th July 2017, NEMA requested Ministries, Departments, Agencies, umbrella Civil Society Organization's (CSOs), Private Sector to develop specific mercury pollution reduction action plans. Uganda Revenue Authority, Uganda CSOs, DGSM, Local Governments (Namayingo and Buhweju Districts), Uganda National Bureau of Standards, Department of Environment Affairs/Ministry of Water and Environment have shared their plans with NEMA.
9. NEMA has prepared Information, Education and Communication materials to enhance awareness on the Minamata Convention Obligations and eliminate worst practices in ASGM. Media publications and radio talk show programmes have been undertaken by NEMA to raise awareness on worst practices in ASGM.

<sup>49</sup> NEMA, 2018, National Minamata Initial Assessment (MIA) Report

1. The eviction of the Mubende miners: On August 3, 2017, acting on a Presidential directive, hundreds of police officers and armed soldiers evicted ASGMs of Kitumbi and Bukuya sub-counties in then Mubende District (now Kassanda District). The miners were given two hours to vacate the land on which they mined and lived. This area is part of an Exploration Licence that had been awarded to a private investor, AUC Mining Company. The land was occupied by about 70,000 people of whom over 20,000 were directly involved in the mining value chain. The miners' houses and property were destroyed, machinery confiscated and millions of shillings lost. The affected have since been allocated a new area to mine for which a location licence was awarded. However, they claim that the land on which they previously worked was richer in gold ore than the new one.
2. The biometric registration and management of ASM in Uganda project: The Biometric Registration and Management of ASM in Uganda Project (BRASM) is a creation of the Mining and Minerals Policy 2018 and the Mining Act, 2003. In May 2018, the Uganda Cabinet endorsed a new mining and minerals policy framework, which, inter alia, focuses on the formalisation and regulation of the ASM sector. It is part of the government's broader strategy of ensuring that mining becomes one of the key economic drivers of the Ugandan economy as envisaged by the country's Vision 2040 and National Development Plan II (2015/16 – 2020/21).  
This project is a result of the country's drive to enhance the quality of life for ASMs so as to increase their contribution to Uganda's sustainable development. It is also to ensure that ASM is a preserve for Ugandans by eliminating illegal non-citizens from ASM operations while building lasting relations with foreign formal miners building long-term business relations with mineral rich communities and ASMs. This scope covers the entire country and specifically recognises a new mining sub-sector previously not appreciated i.e. the Development Minerals sub-sector, in addition to the well-known traditional minerals and precious metals. Ultimately, it is understood that this process is a precursor to the integration of ASM activities into the broader mining legal framework as well as integration of informal ASM activities into the formal fiscal and economic system, designed to reduce or eliminate the social and environmental negative impacts and externalities of ASM operations, streamline ASM operations alongside medium to large scale mining operations and concessions and capture lost economic value of the sector for the sustainable development of the economy.
3. The Mining and Minerals Bill, 2019: The mining subsector is currently governed by the 1995 Constitution of Uganda as amended, the Mining Act 2003, the Mining Regulations 2004 and the Mining and Mineral Policy 2018. Until May 2018, the mining subsector was governed by the Mineral Policy of Uganda 2001. However, the Policy became obsolete and was unable to address emerging policy and legal issues arising from the dynamic nature of the sector. For example, the mining regime was not in tandem with the 1995 Constitution of Uganda. The growth and importance of ASM in the economic growth of the country was not well captured. There was an expanding exploitation of Developmental Minerals; there were excessive discretionary powers of the commissioner that had led to an increase of speculators; among other things.

The emerging trends in the global mining industry, the anticipated opportunities and the challenges in the sector prompted the approval of the Mining and Mineral Policy 2018 to address the said and more issues. This Policy thus formed the basis for the review of the Mining Act 2003, majorly, to align the mining sector's strategic direction with the Constitution, the Mining Vision 2009 and the Uganda Vision of 2040. To that extent, the government has tabled the Mining and Minerals Bill 2019 to give effect to the Mining and Minerals Policy of Uganda.

**(f) Other projects have been spearheaded by NGOs, working closely with government. These include the following:**

- 1) The National Association of Professional Environmentalists (NAPE) in collaboration with the UNACOH and Ban Toxics from the Philippines have, since 2015, been promoting mercury-free gold

funding support from the Danish Government through Dialogos, a Danish NGO<sup>50</sup>. The project seeks to develop the capacity of ASGM miners and regulatory mechanisms within the local government, to promote mercury-free technology by use of borax in the processing of gold, and monitor mercury in the environment. It was implemented in seven districts of Uganda i.e. Mubende, Buhweju, Bugiri, Namayingo, Busia, Moroto and Nakapiripirit and has trained 59 miners in mercury-free technologies. These miners currently use mercury-free technologies. The project also highlighted the importance of the Government and local CSOs working together to share knowledge, learning and skills in the area of mercury-free gold mining which trickle down to the mining communities. The project, however, faced a few challenges while training the miners in the borax technology as the miners claimed that borax was not as easy to access as mercury, adding that one had to travel to Kampala to purchase it while mercury was easily accessible at mine sites and mining communities. They further expressed their concern that to effectively use borax, one needs high grade ore i.e. ore that has a high percentage of gold which is not guaranteed in every mine site and requires sampling to be carried out which they say they can not afford. In addition to these, the miners did not appreciate the fact that the new technology and mining methods were not supported with on-going technical support on the ground. Other than the local trainers, the project did not station a technical person at the demonstration site that was set up in Bukana Subcounty in Namayingo District to guide the local miners on a regular basis on the new mining technology. This challenge was highlighted by miners, the local community and district leaders as well as some of the implementing partners and it was noted that the possibility of miners reverting back to use of mercury was high given that they were not being supported on a regular basis with the new technology. There is therefore need to undertake Training of Trainers so as to enroll more miners and enable sustainability.

2) Environmental Women in Action for Development (EWAD) also launched a mercury-free gold project in partnership with Fairtrade Africa in 2012<sup>51</sup>. The project works with the Syanyonja Artisan Miners' Alliance (SAMA) and has set up a mercury-free processing centre equipped with a gold-kacha and a gold konka, both mercury-free concentration machines. The downside to the concentration machines is the need for constant supply of electricity. The miners use generators to run the gold kacha machine which comes at an expense to them. The ASMGs are, however, faced with challenges in the use of the gold konka because unlike the gold-kacha, it can not be run by a generator as its required voltage is too high and can only be efficiently operated by use of hydropower electricity which is not accessed by the SAMA processing site in Syanyonja village. The gold konka machine which was received by the association in 2017 has not been used to date for this very purpose. This slows down work at the site which doubles both as a demonstration site and a mine site. This hinders the use of the mercury-free technology and brings about the need to seek alternatives that will best integrate mercury free technologies with the current operational dynamics of ASGMs. Nonetheless, even with these challenges faced, the project also achieved success, as the group of miners who were the first mining cooperative in Africa to become Fairtrade certified, are able to recover 95% of gold from the ore they process using the gold kacha which is mercury-free processing equipment. They have also been able to sell their mercury free gold to the Fairtrade global markets. This outcome is one that will encourage ASGMs across the country to carry out mercury free gold mining through other projects implemented by NGOs.

3) Since 2016, ACEMP has been piloting interventions to promote the formalisation of ASGM, through mobilisation, engagement and training. The ongoing country-wide process has led to the registration of the ASGMs into associations and groups which facilitate their formalisation. ACEMP has also piloted model projects in business and human rights in Uganda's ASGM subsector. These have included providing legal aid to the miners that were evicted from the Lujinji mines in Mubende District (now Kassanda) and more recently, those whose mining activities were halted in the Katenga mines in Buhweju District. Furthermore, ACEMP aided the Mubende United Miners Assembly acquire location licences which enable the miners to legally mine and sell gold. In addition to this, ACEMP has built the

<sup>50</sup> NAPE Promotes Alternative Methods of Extracting Gold from the ore without Mercury: [www.nape.or.ug](http://www.nape.or.ug), 2017

<sup>51</sup> Uganda on course to ratify the Minamata Convention on Mercury: [www.ewadmission.org](http://www.ewadmission.org), 2017

miners in entrepreneurship skills, business skills and financial literacy including book keeping, saving and beneficial investment. The organisation has also put in place interventions for gender inclusiveness whereby in every ASM association whose formation and registration is facilitated by the organisation, it is encouraged that women are involved and moreover that one of the three main executive members i.e. chairperson, secretary or treasurer has to be a woman. This has led to the inclusion of women along the mining and mineral value chain linkages thus seeking alternative livelihoods and improving business skills.

Whereas NGOs have raised awareness on the dangers of mercury use, skilled ASGM miners and provided mercury free alternatives, they have also faced challenges in the elimination of mercury use in ASGM. These include, among others, that mercury is cheap, available and trusted in the process of gold amalgamation unlike the new methods being introduced. Furthermore, the rampant informal mercury supply to the sector has been a challenge to the authorities in terms of tracking and monitoring of mercury trade especially as funds are crucial to carry out intelligence so as to curb the smuggling of mercury into Uganda. The lack of finances for artisanal and small-scale gold miners also hinders their transformation to mercury-free technologies as some of the technologies, for example, the gold kacha and gold konka mentioned above require constant running electricity which the miners cannot afford.

### 3.4 Geographical distribution of ASGM

Figure 2 shows Uganda's mineral occurrences with the yellow dots representing the areas which hold gold deposits or gold ores.

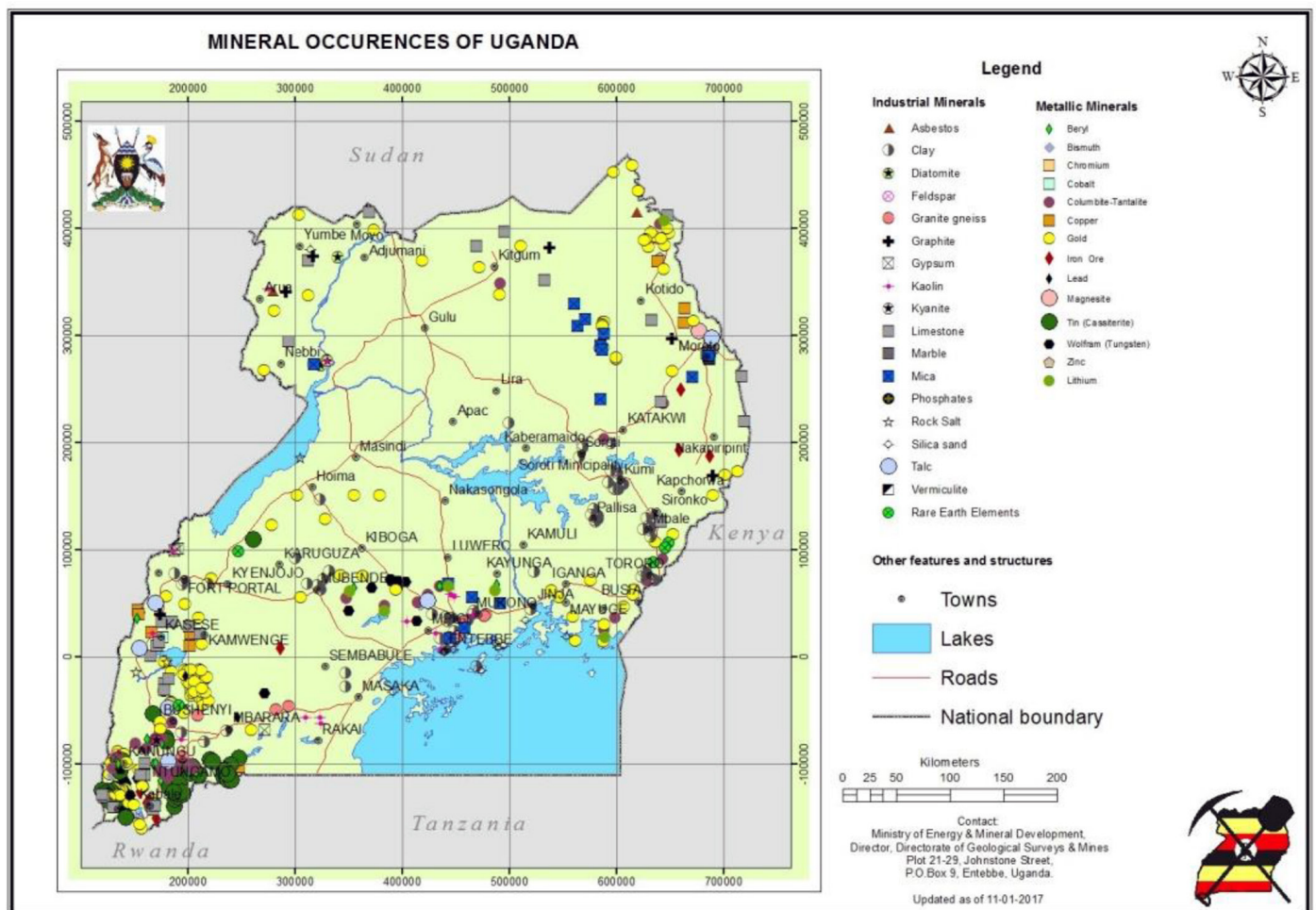


Figure 2 Map showing Mineral Occurrences of Uganda Source: MEMD, 2017

Information to develop the NBO study of 2019 was collected from seventy nine (79) ASGM sites whose details including GPS coordinates are indicated in Table 4. The sites under green represent the mercury-free sites while those under red represent the sites that use mercury.

Table 4: Sites visited during the NBO study of 2019

	SNo	Site	Location	Coordinates	Description and key characteristics
<b>No mercury use</b>	1	Kotome	Kaabong	N: 03.55948 E: 034.17480	The miners extract soil from the river bed after which, the holes created during extraction are used as processing sites using water to wash the ore. <b>Alluvial mining, gravitational method, no mercury used.</b>
	2	Mutunan	Kaabong	N: 03.57476 E: 034.31408	Mutunan mining site is extremely hard to access. It is accessible after a drive through a road covered by overgrown shrubs and a 5-hour walk to the mine site. <b>No mercury used.</b>
	3	Nangoromit	Kaabong	N: 03.46144 E: 033.97388	Mining takes place along a river. Shallow pits, seemingly abandoned, are visible on the river bed. <b>No mercury used.</b>
	4	Usake	Kaabong	N: 03.76931 E: 034.03638	The miners extract gold ore about five kilometres away from River Usake. After extraction, the ore is packed in basins and polythene bags and later transported by the miners on foot to the river where it is washed. It is because of this that miners can only be found extracting early in the morning since they later walk to the river to wash the ore. <b>Alluvial mining; no mercury used.</b>
	5	Lopedo	Kaabong	N: 03.31957 E: 034.16404	Lopedo mining site is inaccessible by road from Kaboong, one is required to walk to the mining site. Travel from Kampala to this mining site ranges between 14-15 hours. The estimated workforce is 32 miners. Mining covers about a 5km stretch along River Lopedo. Ore is extracted from a hard rock. Although there was <b>no mercury use</b> identified on site, reports indicated that mercury was once used by the Turkana.
	6	Nakapel	Kaabong	N: 03.44439 E: 034.27111	The mining site is about five acres. Extraction and processing take place in close proximity depending on the season. <b>Alluvial mining; no mercury use identified.</b>
	7.	River Nariwobwal	Kaabong	N: 03.52647 E: 034.15435	The miners extract soil from the river bed after which, the holes created during extraction are used as processing sites using water to wash the ore. <b>Alluvial mining; no use of mercury.</b>
	8.	Sokodu	Kaabong	N: 03.58102 E: 034.19277	Sokodu is easily accessible off the main road. The area has about 12 pits from which about 70 women participated in carrying ore from the pits. However, on site, just one previously active pit is visible. <b>No mercury.</b>
	9.	Lomonye	Kaabong	N: 03.58708 E: 034.19114	Alluvial mining. The miners wash the ore in the river and use gravitational method to process the gold. <b>No use of mercury.</b>
	10.	Lois	Kaabong	N: 03.58357 E: 034.07998	Lois is accessible by road. The miners in Lois have not been exposed to mercury processing methods. <b>No use of mercury identified.</b>
	11.	Namoru	Kaabong	N: 03.645925 E: 33.869302	Alluvial mining. <b>Mercury use was not identified.</b>
	12.	Lokanayona	Kaabong	N: 03.38893 E: 034.23591	Alluvial mining. <b>Mercury use was not identified.</b>
	13.	River Lokale	Kaabong	N: 03.45102 E: 034.27542	Alluvial mining. <b>No use of mercury.</b>
	14.	River Nakagwo	Kaabong	N: 03.62231 E: 034.16365	Alluvial mining. <b>No use of mercury.</b>
	15.	Naukoret Lopedo Parish, Lokido Subcounty	Kaabong	N: 03.594890 E: 034.222506	Estimated workforce is 250 miners. Mining takes place along River Nariobwal, in the riverbed. Mining is mainly alluvial and there was <b>no use of mercury</b> identified, although reports indicated that people from Buganda came to the site and used mercury once.
	16.	Katiliba	Kotido	N: 03.16595 E: 033.95517	Katiliba mining site is located about 5kms from the trading centre. However, the site is not accessible by car. One has to use a motorcycle and walk through hills and valleys to access the pits on the riverbanks on which mining is done. <b>No use of mercury.</b>
	17.	Nakabat	Moroto	N: 02o 40.197' E: 034o45.194'	Located about 12kms North of Rupa Subcounty, the site is located on about 4-5 acres of land. <b>Mercury not used.</b>
	18.	Lokatukoi	Nakapiripirit	N: 01.98236 E: 034.72193	Lokatukoi is situated along the main road in Acherere Subcounty. The mines are easily accessible by road and a number of exposed rocky pits are visible on the site.

19.	Nyakazinga	Bushenyi	00o 23.279 030o 09.638	Easy to access by road. Only 8 miners were found on site. Mining takes place in a low land along a stream and this is mainly alluvial. Gold is sold on site. Exaction is done by rudimental tools, such as hoes, pick-axe, etc. <b>No use of mercury.</b>
20.	Nyabitote	Bushenyi	00o 23.445' 030o 09.518	Located in a valley/low land. It is characterised by papyrus, shrub and clay soils. It can be accessed by a road and is approximately five hours from Kampala. Alluvial ore is mined, although during the rainy season, the clay is impossible to penetrate so the miners turn to farming for a few months.
21.	Rubaare	Bushenyi	00.22990 030.09469	Easy to access by road and has a total of 45 miners. Mining is alluvial, and the ore is processed by panning and gravitational method. <b>No mercury used.</b>
22.	Kayanga	Bushenyi	00.38061 030.113620	Abandoned due to disagreement with the land owner. Prior to this, no mercury was being used by the miners. Had two pits.
23.	Kibingo	Bushenyi	00.39168 030.126740	Abandoned mine of two pits. The land owner evicted the miners so as to set up commercial fish ponds. <b>No mercury was being used prior to this.</b>
24.	Kikumbagazo	Bushenyi	00.385949 030.157432	Reported to have had only two miners working in one pit who were evicted by the land owner. No mercury was being used although they washed the ore in River Kyambura.
25.	Kyamuhanga	Bushenyi	00.38626 030.151750	Abandoned mine of three pits. <b>No mercury was being used.</b>
26.	Kyamahungu	Buhweju	S:00.31680 E:030.37267	The site is strictly for extraction and is located on a rock from which the miners extract the ore.
27.	Akayamba Cell I	Buhweju	S:00.33371 E:030.35243	The site is located in a swamp in Nyakishana Subcounty in which extraction as well as processing is done.
28.	Akayamba Cell II	Buhweju	S:00.33364 E:030.35054	The site is also located in a swamp with different groups of people consisting of about 10 members in each group extracting ore from the bottom of the swamp.
29.	Bihanga	Buhweju	S:00.26392 E:030.32720	The site is located in the middle of a banana plantation in which alluvial mining takes place as well as processing using sluice boxes
30.	Muti	Buhweju	S:00.28146 E:030.38800	Mining is done down a valley from ore extracted from hard rocks. The site has about 14 active pits with 100 people.
31.	Nyakitaraka	Buhweju	S:00.28046 E:030.38118	The site is located down a valley just like Muti and has different groups of miners extracting both alluvial gold and those extracting ore from hard rocks.
32.	Kibimba	Buhweju	S:00.33145 E:030.42068	The site is located in a wetland down a valley and is extremely difficult to access.
33.	Kikondera	Buhweju	S:00.33597 E:030.42682	Alluvial mining is done at the road side with different groups of people mining in the area many of whom are not easy to locate because of the vegetation cover.
34.	Bisya	Buhweju	S:00.30060 E:030.45292	Alluvial mining takes place in a wetland in Bisya. The nature of gold is in nuggets hence the absence of mercury use.
35.	Kapata	Kisoro	N:-1.304058 E:29.693349	Small scale mining takes place along the stream located in between two hills and bordered by communities. The mining was alluvial and ore is extracted from five pits. <b>No use of mercury.</b>
36.	Kyahanama	Kisoro	N:-1.11197 E:29.66819	The site is located in close proximity to Kisoro Town, just about five kilometres. It is located in a farmland reason for which as miners dig, there are women backfilling pits.
37.	Musezero	Kisoro	N:-1.12472 E:29.70216	Musezero mining site is located near a swamp. However, the site was abandoned because it was no longer productive. There are about eight pits on the site, many of which were not backfilled and are currently filled with water.
38.	Nyabiremura	Kisoro	N:-1.12096 E:29.67555	The site is located two kilometres away from Kisoro Town and is accessible by road for part of the distance, the rest of which is half a kilometre walk to the site. Mining is done in a valley and processing is done on River Kashasha.
39.	Kibani	Kyegegwa	N:00.4973 E:030.8999	The site is located in Rwabategura swamp, Kakabara Subcounty and was active until November 2017. Fifteen people were working there but were stopped by local authorities for lack of appropriate documentation permitting them to do mining there.

Mercury use	40.	Bwera	Kyegegwa	N: 00.48333 E: 031.03208	Located within the Kyegegwa Town Council, this site is an abandoned processing centre. It is located in the Rwera swamp. The operator used to bring ore from Mubende, crush it and process it here. Ten people used to work at the site which was abandoned in May 2018.
	41	Loolung	Moroto	N: 02.40794 E: 034.41519	Small scale mining takes place on a flat land. The mining carried out is alluvial. Open pits are formed and ore is extracted from these pits by use of hoes, spades, basins and pans.
	42	Kapiyosho	Amudat	N: 01.465730 E: 034.802086	Small scale mining takes place on a hilly area about 70km out of Amudat Town. The mining carried out is alluvial using tools such as pick axes, hoes and spades. Ore is then transported to the processing site which is located in the centre of the mining camp by workers using wheelbarrows. <b>Mercury is used</b>
	43	Chepkararat	Amudat	N: 01.4455758 E: 034.7935070	Alluvial mining takes place in the bed of the seasonal River Chepkararat. The extraction process is very rudimentary, and processing takes place on the same site. <b>Mercury is used during processing.</b>
	44.	Cheptakol	Amudat	N: 01.44919 E: 034.78881	Cheptakol site is located about 80 kilometres from Amudat Town and just about 20 kilometres from Lokales Trading Centre. Alluvial deposits. <b>Mercury use suspected.</b>
	45.	Riantum	Amudat	N: 01.44405 E: 034.77463	Riantum site is located on approximately two acres of land filled with pits one metre apart. The ore is transported by women in basins to the ball mill where it is crashed and later transported to River Giriki for processing. Alluvial deposits. <b>Alluvial deposits.</b>
	46.	Lokales Bridge	Amudat	N: 01.45043 E: 034.72236	Small scale mining takes place on a flat land about 75km out of Amudat Town. The mining carried out is alluvial.
	47.	Giriki River	Amudat	N: 01.44485 E: 034.72050	The site is located on half an acre of land about half a kilometre away from Giriki River. The site has heaps of ore waiting to be processed.
	48.	Karita River	Amudat	N: 01.54163 E: 034.82931	Soft ore is extracted near the river and washed by panning in the river. <b>Alluvial mining.</b>
	49.	River Nakoit	Nabilatuk	N: 02.40794 E: 034.41519	River Nakoit mining site is located beneath a bridge on the Nabilatuk Road. There are a few pits on the site and some dry processing points.
	50.	Utut Mining site	Nakapiripirit	N: 01.92474 E: 034.75233	Utut is located about 3kms off the main road on the Nakapiripirit - Amudat Road. One has to cross two seasonal rivers to get to the famous Utut mining site previously referred to as 'Somalia' during the gold rush.
	51.	Acherere Lopini	Nakapiripirit	N: 01.924762 E: 034.752279	Small scale mining takes place on a hilly area about 40km out of Nakapiripirit Town. The mining carried out is alluvial. <b>Mercury is used.</b>
	52	Budde	Bugiri	N: 00.39179 E: 033.82440	Open pits are excavated on a low-lying area near the highway. The mines are easily accessible but the miners also easily move on to other places once the ore gets depleted. There are many children involved in the mining. <b>Mercury is used.</b>
	53.	Kayango	Bugiri	N: 0.5776100 E: 033.8544780	The site is located just about 15 minutes from the trading centre near a rice project. Ore was extracted from a hill and processing done at a nearby river. However, the site was abandoned and pits left open.
	54.	Nabalwa	Bugiri	N: 00.37834 E: 033.81667	Nabalwa site is an ASGM site which sits on four acres on the border of Bugiri and Namayingo districts. The miners were planning to shift from mercury use to cyanide and were setting up a plant.
	55.	Busia United Small Scale Mining Association (BUSSMA)	Busia	N: 00.51222 E: 034.07972	BUSSMA is an association of 50 members, 15 are women. The association has a Location Licence, LL 0989 and even pays 5% royalty to the government. The mines are located in Sikuda Subcounty and lie on 14 hectares. Both hard-rock and alluvial mining practiced, with ore crushed in ball-mills and concentrated in sluices, after which mercury is used and amalgam is formed in washing pans and burned openly, though allegedly sometimes with retorts.
	56.	George Onega, Agaata	Busia	N: 00.56333 E: 034.06878	George Onega has a Location Licence, LL 1039 and is also a land owner where the mining is taking place. It is located in Agaata which is approximately 20km from Busia Town and is on 16 hectares. The miners use mercury during processing.

57.	Charles Buyinza	Busia	N: 00.56575 E: 034.06480	Buyinza recently acquired a Location Licence but the site already had ASMs working on it. There is currently conflict between the concession holder Buyinza, the ASMs and the land owner.
58.	Musa	Busia	N: 00.56485 E: 034.06619	Musa's site is also in Agaata. Open pit alluvial mining is carried out.
59.	Syanyonja Artisanal Miners Association (SAMA)	Busia	N: 00.54864 E: 034.05260	SAMA is an association with mines in Busitema. They have a shaft from which they extract ore and use both a gold kacha (concentrator) and mercury to process the ore. SAMA is made up of 38 members, 18 are female. Only hard-rock mining practiced, with concentrate amalgamation done in washing pans. Amalgam is burned in the open.
60.	Agoriat Mining Site	Busia	N: 00.48504 E: 034.09818	Agoriat is found in Buteba sub county. The miners do not have an agreement with the land owner who usually chases them off the site. Processing using mercury is done in River Nanguke which is harmful to the community as the same water is used for domestic consumption.
61.	Tiira Site, Abochet, Buteba	Busia	N: 00o 30.704' E: 034o 04.785'	Mining takes place within a community setting with households less than 10 metres from the mining site. Processing is done on site and a basin of sand is washed at UGX 5,000. Mercury is stored in small bottles. One gramme of mercury is used for every 10 basins of ore.
62.	Agaata Village	Busia	N: 00o 33.905' E: 034o03.689'	The area is characterised by both hard rock and alluvial mining. The area has four location licences with two wet mills and eight ball mills. 0.5 gramme of mercury is used in every basin of ore. Each basin produces one point of gold (0.1 g) of 89% purity.
63.	Agaata II	Busia	N: 00o 33.855' E: 034o03.926'	The area is characterised by both hard rock and alluvial mining. The area has four location licences. It has a total of 25 wet mills and eight ball mills. 0.5 gramme of mercury is used in every basin of ore. Each basin produces one point of gold of 89% purity. Panning done using perforated basins.
64.	Angariama I	Busia	N: 00o 30.462' E: 034o04.444'	Mining takes place within a community setting with households less than 10 metres from the mining site. The miners used an excavator to create a large open pit, and then built a shaft at the centre of the pit. There is one active pit operated by the Angariama ASM Association. The mining was alluvial and hard rock. Located 9km from Busia District, the site is accessed through a narrow feeder murum road in a motorable condition.
65.	Angariama II	Busia	N: 00o 30.558' E: 034o04.492'	Description same as Angariama I
66.	Buyanga Site	Namayingo	N: 00.08045 E: 033.82276	Buyanga lies in Sighulu Subcounty which is on Lake Victoria. About half the population are Luos from Kenya. Processing by use of mercury is done in the Lake and this same water used for domestic consumption.
67.	George Onega, Buyanga	Namayingo	N: 00.08213 E: 033.81920	George Onega has a Location Licence, LL 1499 in Buyanga but has yet to carry out mining activities. Instead there are other ASMs mining in his licence as there was conflict when he acquired his LL with the ASMs saying they were there first. Mercury is used by the miners.
68.	Simase Mining Site	Namayingo	N: 00.21770 E:033.81335	Simase is an abandoned site in Mutumba Subcounty in Namayingo District.
69.	Nsango B	Namayingo	N: 00.23400 E:033.49500	Nsango is accessible by tarmac road and is located on the Kampala-Bugiri Highway. The village is on the Bugiri-Namayingo border, approximately four hours from Kampala. Soft rock (alluvial) extraction takes place on the low lands where the ground is excavated using pick axes, hoes and spades.
70.	Nakudi	Namayingo	N: 00o 12.888' E: 033o49.749'	Small scale mining takes place on a flat low land bordered by communities. There were a total of 25 pits. Nineteen of the pits had stopped operation and only six were still productive. The mining was both alluvial and hard rock. Mercury is used while processing.
71.	Buhere	Namayingo	N: 00o 10.051' E: 033o49.088'	This is about two acres in size. The processing site is in the valley below within the community, on approximately half an acre. The distance between the extraction and processing sites is approximately 500 metres. Mercury is fed straight into the wet pan mill during processing.
72.	Katenga I/Buhweju Miner Assn	Buhweju	N: 00 18.283 E: 030 22.994	Alluvial mining taking place in a hilly area, characterised by processing using sluicing and gold amalgamation using mercury. 90% of the area covered under a licence.



73	Katenga II	Buhweju	N: 00° 18.311' E: 030° 22.963'	Alluvial mining taking place in a hilly area, characterised by processing using sluicing and gold amalgamation using mercury. A total of 30 people were reported to work on site. It was reported that two grammes of mercury could produce 35 grammes of gold.
74	Katenga III	Buhweju	N: 00° 18.548' E: 030° 22.742'	Alluvial mining taking place in a hilly area, characterised by processing using sluicing and gold amalgamation using mercury. A total of 107 people were reported to work on site. Easy to access by road. Numbers of people increased due to evictions in Mubende in 2017.
75	Kagaba Mining Site	Mubende	N: 00.69619 E: 031.77858	Kagaba Mining Site is on a hill in Kitumbi Subcounty. There are 10 deep shafts with three of them active. The site has a big percentage of Rwandans working with the Ugandans. Kagaba is about three hours from Kampala and was a rush site in 2013-14. Hard rock mining takes place with ore crushed in ball mills and concentrated in sluices before being amalgamated and burned in the open.
76	Kayindiyindi Site	Mubende	N: 00.81709 E: 031.66074	Kayindiyindi had two active pits. The ore is taken for processing at Kitumbi-Kayonza site where mercury is used.
77	Sunga Mine Site	Mubende	N: 00.72085 E: 031.82229	Sunga is about 20km from Kassanda Town. It lies on about half an acre, with 10 pits but only two were active. The abandoned pits are not backfilled.
78	Kayonza-Kitumbi, Lubaali	Mubende	N: 00 45.333 E: 031 43.893	Rush site in 2013-14. Mainly informal, hard-rock mining, but some alluvial in the riverbed. Mainly concentrate amalgamation, but one incidence of whole-ore amalgamation. Ore is crushed in ball mills, concentrated in sluices and panned, after which amalgam is burned in the open.
79	Kampala, Lujinji	Mubende	N: 00 38.914 E: 031. 46.010	Kampala lies in the new district of Kassanda cut off Mubende District. It is on a hilly area and was abandoned when the miners that worked there were evicted in August of 2017. It is currently guarded by the Police Mineral Protection Unit which makes access difficult. Visitors have to go through a lot of protocol to gain access.

Source: The NBO study of, 2019

### 3.5 Mining and processing information

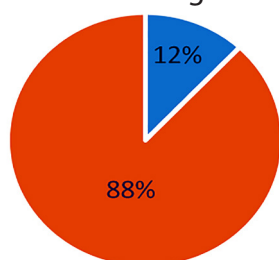
#### 3.5.1 Mining information

##### 3.5.1.1 Ore production

Production of ore and subsequent gold production varies across different ASGM sites in Uganda and depends on the mining technique. In places where mining occurs along the river banks and is hugely dependant on availability of water, the miners only work during the day and hence produce much less ore and gold than groups that run a 24hour roster with two shifts. In places where mining is done underground, the miners are able to supply electricity and oxygen to the underground pits and work for two shifts, day and night.

In that case, an average pit can produce between 500 and 1,000kgs of ore per day. The location of the pit determines the richness of the ore extracted. In Nakudi Sub-county, Namayingo District, the miners are able to achieve averagely 60grammes of gold per tonne of ore processed from one adit with an average workforce of 15 people.

The NBO study of 2019 indicates that 88% of the ASGM gold production is done through pits and only 12% done through shafts as indicated in figure 3.



■ Shafts ■ Pits

Figure 3: Percentage of gold production from shafts and pits. Source: The NBO study of 2019

$$\text{Percentage of gold produced from shafts and pits} =$$

$$\text{Shafts} = \frac{\text{Total amount of gold produced from shafts}}{\text{Total amount of Gold produced}} \times 100\%$$

$$\text{Pits} = \frac{\text{Total amount of gold produced from pits}}{\text{Total amount of Gold produced}} \times 100\%$$

This is because it is much more expensive to construct shafts because it requires timbering, electricity, water evacuation and in some cases, oxygen supply if the shaft is deep.

In the East and Central regions where mining technology is semi-mechanised, miners engage in underground mining. Shafts are sunk as deep as 50-200 feet and are accessed by makeshift ladders. The miners use function hammers to aid in rock breaking and subsequent extraction. In these same regions, some of the mines construct adits to enable them follow a vein of gold. While shafts are vertical, adits are horizontal. Alluvial mining takes place in the river beds and swampy areas located in valleys. Open cast mining is on the other hand commonly practiced in some parts of Karamoja, Busia and Buhweju largely due to the alluvial nature of gold ores. Open cast is a surface mining technique and unlike the shafts and adits, causes great environmental damage due to the large pits dug up in order to extract gold ore.

### 3.5.1.2 Ore extraction quantities

Ore is extracted from open adits using pick axes, hoes and spades. The NBO study of 2019 indicates that the national average daily extraction of ore per miner is 0.2T ore/shift; with Karamoja and central regions having the highest daily extraction rate of 0.3T ore/shift and the Eastern Region having the lowest extraction rate of 0.1 T ore/shift as indicated in table 5. On average, the Central Region has the highest number of ASGM miners per unit (116); followed by the Eastern Region with 65 ASGM per unit and Kigezi Region has the least miners per unit (4). In this study, the ASGM included all people working or benefiting directly from the mining operations at the unit or a pit. Data also indicates that each unit conducts one (1) shift per day and each shift in at least eight hours across all regions; and the activities are conducted almost throughout the year in Karamoja region. The activities are operated for almost nine months in a year.

Table 5: Gold extraction by region

Extraction Type 1	Karamoja	Central	Eastern	Ankole	Kigezi	National Average
Daily extraction per miner (T ore/shift)	0.3	0.3	0.1	0.2	0.195	0.2
Average active miners per unit	10	116	65	7	4	40
Shift length (hr)	8.1	8.0	8.0	8.1	8	8.0
Shifts per day	1	1.3	1.1	1.1	1	1.1
Days active per year (d/y)	316	256	269	291	322	290.8
Daily ore extraction per unit (T ore/d/unit)	1	3.3	3.4	1.0	0.90625	2.0

Source: The NBO study of 2019

**Daily extraction per miner (T ore/shift) Step 1:**

$$\frac{\text{Total amount of ore extracted per system (kgs ore/d/unit)}}{\text{Number of workers per system}}$$

**Step 2: Result obtained from step 1 1000 (tonnes)**

**Daily earnings per miner (g 24k Au) =**

$$\frac{\text{Total amount of gold extracted by miners on a site in a day (g 24k Au/site/day)}}{\text{Number of workers on site}}$$

The active average miners per unit in Kigezi Region have the highest value at UGX12m (USD3243.2) of

gold produced as indicated in figure 4. This is due to the fact that there are few active workers per unit (4) as indicated in table 5, when compared with other regions. In the Eastern Region, the numbers of units are many and this influences the value shared amongst active workers, hence, the value of UGX 2.2m (USD594.6) indicated in figure 4. With the exception of Kigezi Region, the value produced per active workers under extraction in other sites is below the national average of UGX 4.7m (USD1270.3) as indicated in figure 4.

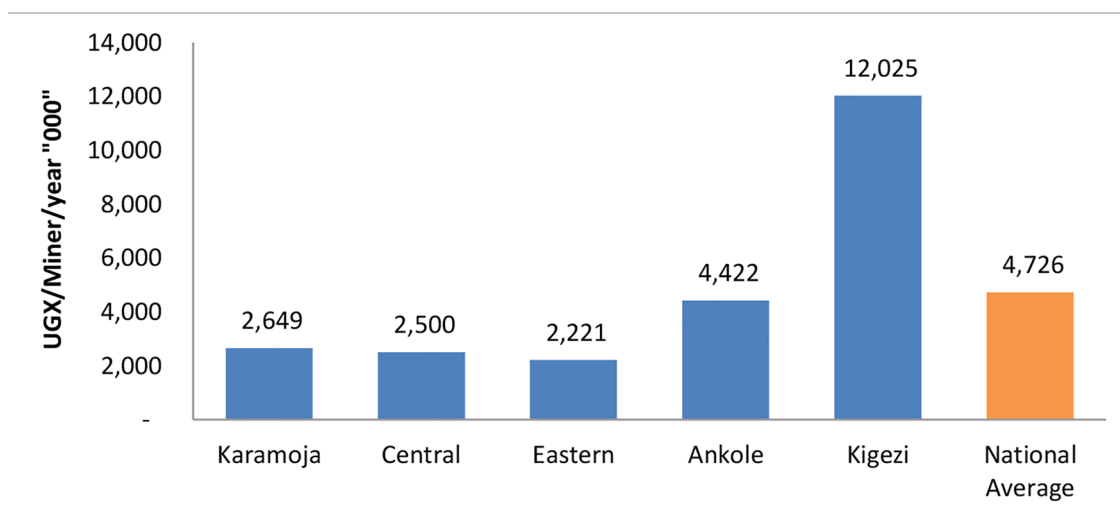


Figure 4: Value produced per miner under extraction/yr. Source: The NBO study of 2019

### 3.5.1.3 Ore transportation

Gold processing requires that gold rich ore/rocks are transported from where they are excavated to where they are processed to get gold. The ore is transported through various modes of transport depending on affordability of the miner. Wheel barrows are usually used to transport ore from the extraction point to the processing point. At times hardrock ore is packed in sacks which are hauled to the surface by casual labourers and to the milling sites. Haulage is done manually and the ore is carried along the ladders that are located in the pits.

Some times, 2.5-3 tonne trucks, motorcycles, bicycles, or even manually by carrying ore in basins and pans is undertaken. The different forms of transportation have different capacities.

This study considered the average ore transported per site irrespective of the form of transport used. On average, 0.5 tonnes of ore are transported on a daily basis, with the highest in the central region (0.79 tons) and the lowest in Ankole and Kigezi with 0.33 tonnes as indicated in table 6.

Table 6: Ore transportation by region

Transport Type 1	Karamoja	Central	Eastern	Ankole	Kigezi	National Average
Capacity of unit (T ore)	0.67	0.79	0.42	0.33	0.03	0.448
Average number of workers per unit	9	28	23	5	5.0	14
Days active per unit (d/yr)	311	270	268	316	339.3	300.86
Daily earning per worker (g 24k Au)	0.06	0.09	0.08	0.11	0.4	0.148
Annual earning per worker 9g 24k Au)	19.0	23.9	20.3	34.2	147.0	48.88
Daily ore transported per unit (T ore/day/unit)	2.9	2.7	2.1	2.6	2.3	2.52

Source: The NBO study of 2019

$$\text{Capacity of unit (T ore)} = \frac{\text{Type of unit (kg/g/shift)}}{\text{Tonne (1000)}}$$

$$\text{Daily earnings per worker (g 24k Au)} = \frac{\text{Amount of gold produced on site per day (g 24k Au/site/day)}}{\text{Number of workers on site}}$$

$$\text{Annual earnings per worker (g 24k Au)} = \text{Amount of gold produced on site per worker per month (g 24k Au/site/mo)} \times \text{Number of days active in a year}$$

$$\text{Daily ore transported per unit (T ore/day/unit)} = \text{Capacity of unit (T ore)} \times \text{Number of units on site active during a shift} \times \text{shifts per day}$$

### 3.5.2 Gold processing information

Mineral processing is a form of value addition where the valuable mineral is separated from the waste-rock that existed with it. Various kinds of processing of gold were identified at the mining sites. The suitability of the methods depends on the nature of ore and on the skills and resources available to the miners. Mining companies operating at a medium scale can afford alternatives to mercury and use of expertise unlike the small scale miners who do not have resources and expertise for proper processing.

#### 3.5.2.1 Ore crushing and drying of hard rock ore

The mined ore is crushed using hammers. It is dried under the sun on tarpaulins in open space close to the milling areas. These areas also serve as open stores or collection points where all extracted ore is dried and heaped ready for milling. Drying is undertaken by the person(s) going to pan the milled ore.

#### 3.5.2.2 Milling and whole ore amalgamation of hard rock ore

The dried ore is milled. Two types of mills are predominantly used: the hammer mills and ball mills. Water is added in some ball mills which operate as a wet mill. Whole ore amalgamation is optionally used by ASGMs. With whole ore amalgamation, mercury is added to the ball mill containing the gold ore. There may not be need to mill the ore if it originates from alluvial soils.

#### 3.5.2.3 Testing of hard rock ore grade

From the mill, panning commences with a grinded sample to gauge the grade of the ore. Testing of the ore grade with mercury is usually done when the source of ore is hard rock. Mercury is introduced at this stage to gauge the grade of gold ore. This is determined by washing of the sample gold ore concentrate with a magnetic blanket hence miners have overtime been able to experiment and determine the grade of gold ore. There may not be need to mill the ore if it originates from alluvial soils. With alluvial ore, panning is usually undertaken without testing the grade of ore with mercury.

#### 3.5.2.4 Gold concentration

##### Panning

Panning of the ore concentrate commences after determining the ore grade. Skilled panners use less mercury compared to the less skilled ones.

##### Sluicing

Processors commonly use Zig-Zag sluice boxes (also known as Z) which enables heavy particles to sink to the bottom of a stream of water while lighter particles tend to be carried downstream and discharged. A rough surface, typically carpets, can trap the gold and other heavy particles. For most sites, panning is done just beneath the zig-zag sluice boxes. Buckets are used to deliver sediment and water onto sluices. The Z- operators usually ferry the water in tanks that are loaded on Lorries and drained in water dams at the panning sites. One tank can hold up to 1,000 litres of water.

Additional gold concentration and purification methods are detailed in Annex I of this NAP on ASGM.

### 3.5.2.5 Gold extraction without mercury

With alluvial ore, mercury is usually absent in the entire process of gold processing. The gold particles are quickly liberated during panning and are handpicked by miners. Using 'COWI ASGM site investigation reporting tool' developed for the estimation of mercury use (World Bank, 2016); Under the MIA using 'COWI ASGM site investigation reporting system' developed for the estimation of mercury use (World Bank, 2016); NEMA estimated that 10% of the gold produced is obtained by use of methods other than mercury amalgamation. The rest of the gold produced by mercury amalgamation was extracted by concentrate method where 95% of them use concentrate.

### 3.5.2.6 Gold extraction with mercury

Mercury is introduced to the basin where the ore concentrate was panned. Mercury amalgamation is commonly applied when the source of ore is hard rock. This is undertaken in earthen or concrete pond. The amount of mercury used is determined by the quality/richness of the ore in gold. Mercury amalgamation method to recover gold from concentrates is used by most small scale miners because it is simple to use and cheap to acquire. Mercury is predominantly applied during final concentration from panning or after sluicing, with an estimated mercury-gold ratio of 1:1 to 2:1, though one informant mentioned that some recent operations engage in whole ore amalgamation, where the ratio may be 4:1 or higher.

### 3.5.2.7 Gold separation from mercury

The amalgam is heated on a metallic spoon, using gas, to free pure gold from the mercury; a worst practice identified at most mining sites in eastern, central and western Uganda where mines are in close proximity to residential areas. The gold is weighed and sold to buyers on-site. This entire process takes place in dealers' tents. The use of retorts is limited and there is evidence that some NGOs have provided some mining groups with retorts to reduce their exposure to mercury vapour in the burning process but those few pieces have since worn out and the miners are not willing to buy others. The miners thus seem comfortable with burning the amalgams in open air.

The NBO study of 2019 also confirmed existence of the worst practices stated in the Minamata Convention, Annex C (1b) across all the mine sites visited. These include whole ore amalgamation, open burning of amalgam or processed amalgam and burning of amalgam in residential areas. A significant percentage of miners say they are aware of using retorts as mercury capture tools. However, due to the negligence about the dangers of mercury use and inhalation, they do not see the need to spend money purchasing the tools. Under the MIA using 'COWI ASGM site investigation reporting system' developed for the estimation of mercury use (World Bank, 2016, nearly 5% of the artisanal miners who apply the concentrate technique use retorts.

## 3.5.2.8 Gold leaching methods

### 3.5.2.8.1 Cyanide leaching

There are four major methods of cyanide leaching in basic small scale operations and include vat leaching, agitated tank leaching or Carbon-in-Pulp (CIP) leaching, percolation leaching and heap leaching<sup>52</sup>. Carbon in Column (CIC) and CIP cyanidation were introduced to ASM in Uganda around 2014 as the ASGM got infiltrated by miners from Tanzania but also by a number of returning Tanzanian trained mining engineers and geologists.

### Vat leaching

The easiest of the cyanide leaching methods is vat leaching, which is the most suitable for ASMs because it is cheap, fast and easy. Ground ore is mixed with lime and put into a vat (large tank). After a certain period has elapsed the leaching tank is checked to determine whether the gold is being extracted or not. The testing is done in parts per metre (ppm), the colour tests and estimated grammes expected vis-a-vis what

<sup>52</sup> Small Scale Mining Handbook, SMMRP, Ministry of Energy and Mineral Development

is being collected in the next stage of processing. A clear leachate solution is withdrawn through a filter tube and taken for further processing.

### Agitated tank leaching or Carbon-in-Pulp

This study revealed several CIC and a few CIP plants were in use by the ASGM to extract gold in Busia, Namayingo, Kassanda and Buhweju districts. The agitated tank leaching or CIP leaching has the highest gold recovery rates of up to 90%. However, it is expensive and requires more equipment than the vat method.

Sodium cyanide is applied to tailings from gravity concentration. The residues from 'Z'-Processing Unit (the zig-zag sluice boxes) are fed into a cyanide leaching tank to which a combination of chemicals (cyanide) is introduced. These chemicals are mixed in what the site manager refers to as the barren tank. The barren tank and the leaching tank are fed with water from the tanks which are erected close by. The water tanks are also fed with water from the nearby streams which are extracted using pipes and water pumps. When cyanide solution is added to crushed or milled gold ore, it leaches or dissolves the gold to form a 'pregnant' solution. This solution is then passed through activated carbon which attracts the gold to stick to the carbon surface. The processes in columns are detailed in table 7. The carbon is finally processed to recover gold using elution machines.

### Percolation leaching and heap leaching methods

These leaching methods are not in use in Uganda.

Table 7: Five columns based chambers

Steps	Process
Column I	The first column called the head, has corks that are closed and opened at the time of measuring whether the expected gold from the leaching tank has all been collected
Column II	In this section, carbon is introduced to further trap the gold
Column III	Section for colour testing to determine the amount of gold being extracted at a given time
Column IV	More carbon is introduced into this chamber
Column V	Final chamber of testing and the last chamber where gold is finally extracted

Source: The NBO study of 2019

#### 3.5.2.8.2 Releasing Gold from Carbon at Elution Machines

The gold loaded carbon from cyanidation plants is removed and undertaken through 'elution' or desorption of gold cyanide at high temperatures and high pH. The elute solution, normally consisting of caustic soda/sodium hydroxide (the electrolyte), cyanide and water, circulates through the loaded carbon extracting gold and other metals. The loaded solution passes through an electro winning cell where the gold and other metals are attached to cathodes, made up of wire wool (steel wire), by electrolysis. The solution then passes back through the loaded carbon extracting more gold and other metals. This process continues until the carbon has been stripped.

Elution can be at high pressure (takes only 24 hours, recovers most gold, but damages the carbon so much that it is not re-used much). Or, elution can be at low pressure (the process lasts 48 - 72 hours, safer on carbon so this can be re-used for about four times). The elution chambers are usually padlocked and guarded by the activated carbon owners. The solution should be adequate enough to immensely cover all the carbon. In low pressure machines, the gold-laden carbons are left for a period of three days before the hot solution (maintained at 800°C) is drained out. In high pressure machines, higher temperatures up to 1,000°C and more are used. In short, the charcoal and solution containing high concentrate of gold goes through electro-winning to recover the gold now attached to the steel-wire mesh on the cathodes. The cathodes (wire wool now plated with gold and other metals) are removed and placed in acid. The acid burns off the wire wool and other metals such as copper and leaves sediment of gold and solution of acid and dissolved silver. The waste water is deposited into a waste water tank which when filled up are

emptied by cesspool emptier.

In a fume chamber, this concentrated nitric-HNO<sub>3</sub> and sulphuric-H<sub>2</sub>SO<sub>4</sub> acids are used to attack and digest the impurities such as the steel wire, copper and nickel, among others, ending up with a sludge rich in gold. The acid and silver are drained off after which the gold sediment is numerously washed with water. After the water washes are complete the slurry solids are sediment and squeezed in fine cloth. This gold sludge is then dried mixed with borax and smelted. The sludge is heated in a furnace (enamel bowels with ethylene burners) to temperatures of up to 1,700°C. Borax is often added to lower melting points of the impurities. These are creamed off. The final golden molten slug is poured into a waxed smeared in shaped steel pot/moulds. The gold settles at the bottom while other impurities settle on top. This last phase pushes the purity of the gold to over 90%.

Most ASGM and cyanidation plants leave further purification processes to Indian gold buyers. We can see that they are just practical to leave the refining stage to the gold buyers, after all gold buyers will just pay 80% to 90% spot price regardless of its a 99.9%. According to Mubende District Natural Resources reports, by end of April 2017, there were three active elution machines that were operating in Mubende. These reported handling eight pregnant activated charcoal bags of 50kg each and this happened at least once every week when business was good. The elution machine operators reported harvests ranging from 20 grammes to 1200 grammes in each burn.

### 3.5.3 Gold refining

After gold has been got, it can be taken to the buying centre at the mine site by hand since it is not bulky and is highly treasured. From the gold dealers at the mine site, gold is then transported mainly by private cars and public transport since it cannot be noticed. The dealer just puts it in their bag and moves with it to wherever they are taking it. Research indicates that there is complete absence of military intervention along the transport routes and thus people quietly transport gold without anyone noticing. Information from the mining sites indicates that the gold traders are independent private buyers who are not known to be connected to government or security organs.

There are four registered refineries in Uganda. The biggest is the Africa Gold Refinery (AGR) and the others are: Simba Gold Refinery, Bullion Gold Refinery and Victoria Gold Star Refinery. The refineries do not buy gold from miners. Their role is to offer the service of refining the gold. The MEMD has tried to encourage the refineries to buy gold from ASGMs but the companies claim that they cannot buy small quantities of gold from the miners. For example, AGR can only accept refining batches of at least 50kg. This cannot be achieved by individual ASGMs or even ASGM associations. This leads them to instead sell to middlemen who accept quantities of as low as 10 grammes.

Furthermore, the ASGM feel that it does not make financial sense for them to transport gold from their mines to Kampala or Entebbe where the refineries are based when they can sell the gold to the buyers that are stationed in their areas of operation with little to no costs incurred. The refineries seem to deal with the middlemen who buy gold from the ASGM and not directly with the miners themselves. This encourages cheating as the middlemen buy the gold from the miners at low prices. They also claim lower purity which the miners cannot contradict as they do not have the equipment to measure it themselves or the financial means to test each sample at a laboratory before it is sold.

Because these refineries accept gold from just about any one, it raises the risk of smuggled gold being traded as Ugandan gold. A 2018 Report of the UN Group of Experts on DRC submitted to the UN Security Council accused AGR and Bullion of profiting from gold smuggled from conflict affected areas in DRC. The report accused the refineries of not being transparent and refusing to disclose identities of their clients and origin of the gold. Uganda is yet to start implementing the Regional Certification Mechanism, so it is easy for smugglers to trade in foreign gold claiming it is from Ugandan mines given that there is no requirement for Certificate of Origin.

### 3.5.3 Gold processing by region

The study revealed that Kigezi Region has the highest ore throughput per unit shift (T Ore/Shift/Unit) whereas Central Region has the least as indicated in Table 8. This may be attributed to the fact that the source of gold ore in Karamoja Region is majorly alluvial hence requires less extraction effort and results in more ore/gold yields compared to the Central Region which requires a significant number of active workers who generate much less ore as indicated in Table 8. Karamoja Region has more active days compared to the rest of the regions as indicated in Table 8. This is probably attributed to the ease of ore extraction hence reducing resting periods in addition to the less diversity in livelihood options in Karamoja. Mercury bought from system per month (kg Hg/mo) is higher in the Central Region given among others the need to liberate fine gold from hard rock concentrates.

Table 8: Gold processing by region

	Karamoja	Central	Eastern	Ankole	Kigezi	National Average
Ore throughput per unit shift (T ore/shift/unit)	1.1	0.3	0.5	0.8	1.8	0.91
Average active workers per unit	4	69	29	4	4	22
Shift length (hr)	8.0	7.5	7.9	8.0	8	7.88
Shifts per day	1	1	1	1	1	1
Days active per year (d/y)	308	270	267	298	322	293
Daily earning per worker (g 24k Au)	0.1	0.1	0.08	0.1	0.4	0.156
Annual earning per worker (g 24k Au)	23.5	28.7	22.5	33.9	120.5	45.82
Pure gold sold from unit per month (g 24k Au)	174.9	156.6	113.5	160.4	29	126.88
Mercury bought from system per month (kg Hg/mo)	2.9	17.2	5.0	0.5	-	6.4
Hg:Au ratio (estimated by miners)	1.5	1.66	2.17	2.00	-	1.83
Hg:Au ratio (physically measured)	4.3	4.2	3.3	0.9	-	3.18
Daily ore throughput per unit (T ore/d/unit)	1.1	0.5	0.5	0.8	1.8	0.94

**Ore throughput per unit shift (T ore/shift/unit) =**  

$$\frac{\text{Type of unit (Kg/g/shift)}}{\text{Tonne (1,000)}}$$

**Daily earning per worker (g 24k Au) =**  

$$\frac{\text{Amount of gold produced on site per day (g 24k Au/site/day)}}{\text{Number of workers on site}}$$

**Annual earning per worker (g 24k Au) =**  

$$\text{Amount of gold produced on site per worker per month (g 24k Au/site/mo)} \times \text{Number of days active in a month}$$

**Pure gold sold from unit per month (g 24k Au) =**  

$$\text{Number of units on site} \times \text{Amount of gold produced per day} \times \text{Number of days in a month}$$

**Mercury bought from system per month (kg Hg/mo) =**  

$$\text{Amount of gold produced from system per month} \times \text{Hg:Ag ratio of the system}$$

**Hg:Au ratio (physically measured) =**  
**1st Step: Amount of Hg added to mix (g/Hg) – Amount of Hg recovered after squeezing**  
**2nd Step: Weight of amalgam – Weight of pure gold after burning**

Source: The NBO study of 2019

### 3.5.5 ASGM workforce

At the time of the NBO study of 2019, the highest number of miners recorded was in Karamoja Region with over 14,000 miners followed by the Central Region with over 8,600 miners. As shown in Figure 5,



Karamoja Region was found to have the highest percentage of ASGMs in the country, taking up 44% of the entire workforce. It was followed by the Central Region with 27%, the Eastern Region with 22% and Ankole and Kigezi consisting of 6% and 1% respectively. Due to the evictions, some of the miners from Mubende relocated to mines in Karamoja particularly in Amudat District which could be one of the reasons the number of miners in Karamoja is higher than the rest of the regions.

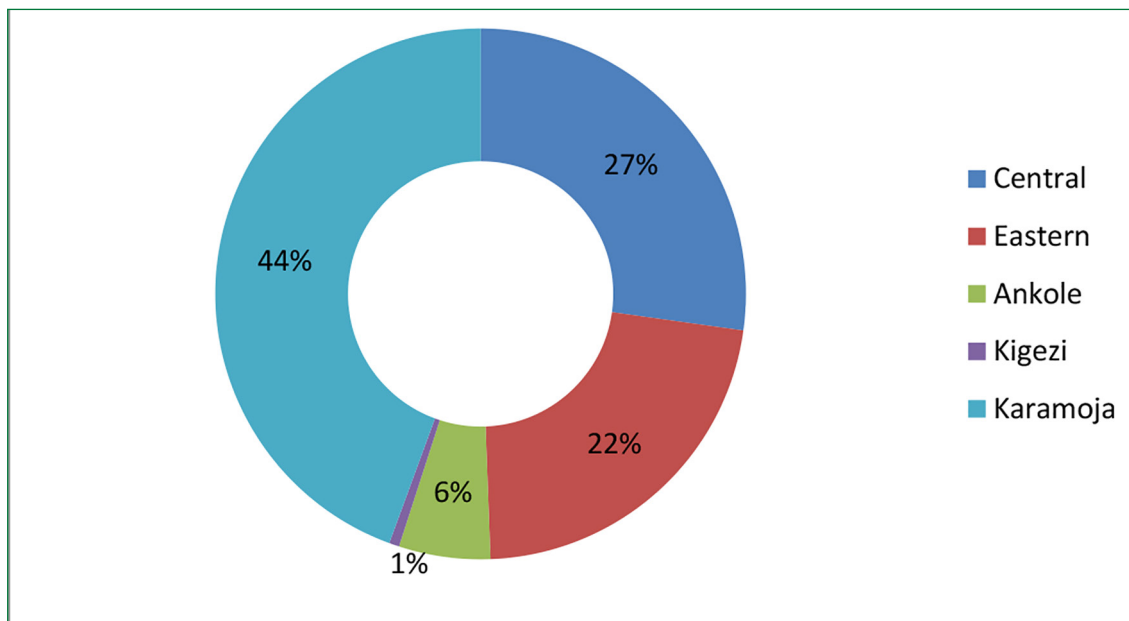


Figure 5: Percentage of ASGM workforce per region.

Source: The NBO study of 2019

Four per cent of the total ASGM workforce in Uganda are non-Ugandans, from Rwanda, Tanzania, Kenya, Zimbabwe, DRC, Burundi and South Sudan as indicated in table 9. Some of these foreigners, particularly Kenyans and Tanzanians, have had a significant influence on Ugandan ASMs' adoption of mercury in Amudat, Busia, Namayingo and Mubende/Kassanda districts.

Table 9 Total ASGM Workforce per Region

	Central	Eastern	Ankole	Kigezi	Karamoja	National
Local ASGM Workforce	8,148	6,700	1,742	193	13,636	30,419
Foreign ASGM Workforce	453	323	22	0	405	1203
%age of foreigners to total Workforce	5%	5%	1%	0%	3%	4%
Total ASGM Workforce	8,601	7,023	1,764	193	14,041	31,622

Source: The NBO study of 2019

### 3.5.6 ASGM value chain

There are several actors along the ASGM value chain, from extraction to market. At a mine site, there are three main types of workers: the extraction miner, the transport worker and the processing worker. In addition to the three, there is the land/mine owner and gold dealers who are at most times the same persons that sell mercury at the mine sites. The entire ASGM value chain population is about 391,347 people with the Eastern Region having the highest population of approximately 166,082; Central with 97,246; Karamoja has 78,539; Ankole with 27,783; and Kigezi hosting 21,697 people<sup>53</sup>. These numbers include those that are directly involved in gold mining, those that supply the gold miners, and those that feed off the ASGM operations.

## 3.6 Baseline estimates of quantities of the amount of mercury used at the ASGM sites

### 3.6.1 Commencement of mercury use in Uganda

<sup>53</sup>NEMA, 2019, The National Overview of the Artisanal and Small Scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices

Consultations with key stakeholders during the NBO study of 2019, revealed that mercury was first used by the British in 1932 who discovered gold in Tiira Sub County which lies in Busia District. Local artisans then took over the mining practices still using mercury when former President, Idi Amin Dada ordered the foreigners to leave the country in 1971.

Evidence from Busia, however, indicated that use of mercury was very limited up to 2005 when it dramatically increased, fuelled by inflows from neighbouring Kenya. Since 2005, Mercury has continued to be used in gold extraction processes not only in Busia but also the neighbouring districts of Namayingo and Bugiri. In Ankole mining region, significant quantities of mercury were found to be used in Buhweju.

### **3.6.2 Estimates of quantities of mercury used at the ASGM sites**

Using the United Nations Environment Programme (UNEP) toolkit for quantification of mercury emissions and releases, the National MIA results revealed total mercury releases in Uganda to be 31,087kg per year. The major source of the mercury emissions and releases was found to be primary metal production (gold extraction with mercury amalgamation processes) which contributed 18,492kg of mercury per year.

The MIA used the UNEP Toolkit Calculation Spreadsheet/Inventory Level 2 spreadsheet of UNEP's Toolkit for the identification and quantification of mercury releases. The toolkit provides for details on the different sources of mercury releases, the mercury input into society by each source, and the mercury output from each source into the air, water, land, by products and impurities, general waste and sector specific treatment or disposal.

The NBO study of 2019 which also included the baseline estimates for mercury use in ASGM found that the mercury used in the ASGM sector was 15,233kg per year. The lower value is attributed to the sensitisations that had been carried out by different NGOs on mercury use, for example, UNACOH which was conducting trainings of miners on the use of borax. Furthermore, the major ASGM mines in Kitumbi Sub-county, Kassanda District had been shut down when the miners were evicted in August 2017.

The National Overview did not carry out measurements of mercury releases in the air which can be one of the causes to the discrepancies between the mercury emissions and releases in the two studies.

## **3.7 Legal and regulatory status**

### **3.7.1 Summary of laws and policies surrounding the ASGM**

The ASGM sector is currently governed by the Constitution of Uganda, 1995 as amended, the Mining Act, 2003, the Mining Regulations, 2004 and the Mining and Mineral Policy, 2018. There are also other laws that are applicable to the mining sector since mining involves access to land, soil and water resources. It also generates various social and environment impacts. These laws include the National Environmental Act No.5 of 2019, the Water Act (Cap 157) of 1997, the Wildlife Act (Cap 200) of 2019, the Land Act (Cap 227) of 1998, the Registration of Titles Act of 1924, The Employment Act of 2006, the Local Government Act (Cap 243) of 1997, the Income Tax Act (Cap 340) of 1997, among others.

The Mineral Policy of 2001 was approved with an aim to develop the mineral sector, for it to contribute significantly to sustainable national economic and social growth by creating gainful employment and providing an alternative source of income particularly for the rural population in Uganda. The key strategic areas included stimulating investment, ensuring that mineral wealth supports national and social development, regularise and improve ASM, minimise and mitigate adverse social and economic impacts, strengthen local capacity for mineral development, improve mineral value addition and optimise the mineral trade.

However, overtime, the Policy was revised. The Mining and Mineral Policy, 2018 indeed addresses the challenges mentioned earlier and lays the foundation for the review of the Mining Act, 2003 majorly to align it with the Constitution of Uganda 1995 as amended, the Mining Vision 2009 and Vision of 2040. The

review of the Mining and Mineral Bill 2019 is ongoing.

The Mining and Mineral Policy 2018 which recognises the contribution of ASGM to the economy of Uganda, proposes increasing the capital investment ceiling beyond the current UGX 10m (USD 2702.7) for Small-scale miners and allowing them to use improved technology. The Policy further proposes work permits and minimal rents for ASMs.

ASM operations highlight the downside of an unregulated mining sector. Dire occupational and community risks, poor environmental practices, gender inequalities, corruption, human rights abuses, a poor culture of savings, limited skills and rampant illegal operations characterise the ASM sub-sector in Uganda. To address some of these socio-economic and environmental issues in the ASM sector, the Ugandan Government put in place a National Strategy for the Advancement of ASM with support from the World Bank's funded SMRRP project which, inter alia, sought to harness ASM's remarkable development potential while recognising the dangers faced by the people involved in ASM operations.

### **3.7.2 Current status of formalisation or regulation of the ASGM sector**

To further facilitate the formalisation and regulation of the ASM sector, DGSM is undertaking the biometric registration, formalisation and management of ASM which will, in effect, reactivate the ASM Strategy for the advancement of ASM in Uganda. The Strategy recognises that formalisation is very important for a country's full realisation of ASM's potential to reduce poverty. It also recognises the importance of formalisation in the protection of human rights, reducing barriers to legalisation and creation of clear socio-economic benefits from ASMs' participation in a formally regulated system.

Ultimately, this biometric registration, formalisation and management of ASMs is the government's response to countless requests by the miners to be legalised and supported. This is also government's means of addressing the numerous conflicts that had erupted between medium to large scale mining companies and ASMs. The biometric registration will also cater for the mapping and demarcation of ASM areas. Mineral rich areas will be mapped and gazetted for exclusive use by ASMs only.

Uganda is an active member of the OECD Due Diligence Guidance on Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas in the Great Lakes Region and also a member of the ICGLR.

The main drivers to formalisation of ASM in the ICGLR include: the desire to control the illicit trade of minerals; the need to comply with international regulations and guidelines such as the Dodd Frank Act and OECD guidelines; eliminating security instability in the region; enforcement of the six tools of the RINR protocol under the ICGLR; and the need for traceability of the 3TGs (Tin, Tantalum, Tungsten and Gold).

The Government of Uganda seeks to encourage the ASM sector participation in supply chain initiatives as a means to improve the sector's contribution to economic development, environmental protection and peace within the ICGLR member states of the Great Lakes Region. This objective is re-emphasised by government's recent domestication of the ICGLR Act which eliminates barriers to participation in the supply chains of the 3TGs. These strategies will enable efficient monitoring of the ASGM sector by DGSM, their regional mines inspectors and the responsible District Local Government Officers. This will support the achievement of the NAP objective for the elimination of mercury use in ASGM.

## **3.8 Leadership and organisation of ASGM at national and local levels**

### **3.8.1 Miner associations**

There are several ASGM associations at regional and local levels that are active in mobilising miners at the local level. They are registered at the local government level as CBOs and include the following:

- 1. Eastern Region:** Busia United Miners Association, Syanyonja Artisanal Miners Alliance, Busitema Mining Association, Bude Artisanal and Small Scale Miners Association, Buteba Artisanal and Small-scale Mining Association, Angariama Mining Association and Tiira Small Scale Miners Association.

1. **Karamoja Region:** Moururem Gold Mining Group, Amudat Artisanal and Small scale Gold Miners Association, Bahati Gold Miners and Farmers Group, Chepkarat Ukuzoleta Mining Association, and Nakapiripirit Ututu Gold Miners Group.
2. **Ankole Region:** Buhweju Artisanal and Small scale Miners Association and Western Region Artisanal and Small scale Miners Assembly.
3. **Central Region:** Ssinga Artisanal and Small scale Miners Association Ltd, Expendables Miners Group, Standard Gold Miners and Processors Uganda Ltd, Mubende Gold Trust Buyers and Traders Sacco, Mubende Kitumbi Land Owners and Miners Cooperative Society, Bukuya Kagaba Miners Association, Luginji-Kitumbi Bakibuka Small scale Miners, Processors and Traders Cooperative, Mubende Women Gold Miners Association, Luginji Small scale Miners Association, Rahim Miners and Gold Dealers, Mubende United Miners Association, Kitumbi-Kayonza Miners Association Ltd, Namulanda Artisanal Miners' Association, and Bukuya Traders Mining Group.

### 3.8.2 Initiatives towards integrating miners

The SMMRP spearheaded the formation of a National Association of Artisanal of Small-scale Gold Miners and put in place some form of leadership structure, which facilitated the training of ASGMs across the country. Unfortunately, this government effort could not be sustained due to lack of funding. This created a leadership gap in the governance of the ASGMs.

To fill this gap, ACEMP, with funding from DGF, implemented a project on formalising the ASM sector in Uganda under which a new national association was formed, with regional structures of Central, Western, Eastern, Northern and Karamoja regions.

### 3.8.3 Distribution of power in the ASGM community

Majority of ASGM is done informally with leadership roles undertaken by land or pit owners. Some miners create their own leadership at the mining sites for purposes of order. In some areas like Karamoja, leadership of ASGM is spearheaded by community elders or local council leaders. The NBO study of 2019 showed that most miners' associations endeavour to have at least one woman on their executives. This concept of gender representation was mainly introduced to them by NGOs.

The main actors at ASGM sites include:

**Licence holders:** These are the owners of the various Location and Exploration Licences under which the artisanal miners are operating.

**Landlord:** The landlord is the owner of the land under which mining is taking place. He gives permission for the group to operate on his land and charges a fee depending on the type of activity that one intends to carry out. For example, one could either carry out mining or alternatively set up a cyanide processing unit on the land. The charges are dependent on the stretch of land that one intends to use.

**Mineral dealers:** These are persons who buy the gold produced in camps. Some of them are Ugandans but others come from Tanzania, Kenya and the United Arab Emirates.

**Miners:** These participate in extraction which is mainly done by the young energetic men and processing which is mainly carried out by women.

**Casual labourers:** These are people who offer labour for conducting various activities from extraction to milling, especially hauling the ore from the pits to the drying area and extracting ore.

**Service providers:** These include the ball and hammer mill operators and panners.

## 3.9 Mercury trade and demand

### 3.9.1 Mercury supply/trade

The consultations revealed that mercury, which is typically smuggled into the country, is distributed in 1kg

plastic bottles and portioned into smaller plastic bags or soda bottle caps further down the supply chain, selling for UGX 1000-2000/USD 0.27-0.53 per gramme depending on the location of the ASGM site. The key informant interviews revealed that the price of mercury per kilogramme in Uganda ranges from UGX 500,000 -700,000 (USD 135-189/kg). According to the study, the national average price for a kilogramme of Mercury is approximately UGX 750,000/USD 200.

### 3.9.2 Mercury demand

The method used to produce gold is dependent on a number of factors such as the ore grade and the nature of deposits in a particular area. The amount of mercury used is largely attributed to the type and quality of the ore being washed/processed, including the size of particles after the grinding process. However, miners rely on guesswork to make such conclusions. Below are some justifications that inform the miners' decisions on the quantity of mercury they use for particular ores.

#### 3.9.2.1 Ore type

**Karamoja Region:** This region is hosted by the reworked Archaean basement rocks and/or in the upper amphibolite–lower granulite facies rocks of the Neoproterozoic Mozambique fold belt. While the miners in Karamoja generally use less mercury than other regions, the ore is mainly exploited in shallow alluvial pits and river/stream beds and more mercury is needed in order to process the gold hence higher Mercury to Gold ratios.

**Central Region:** The gold mines in the Central Region of Uganda are hosted by the Paleoproterozoic Rwenzori fold belt. The main type of extraction that takes place is underground mining of hard rock ore which is then crushed so as to aid the processing. In some mines, the mercury is introduced into a concentrate while other mines apply whole ore amalgamation, leading to more mercury being needed for the gold in the ore to be recovered.

**Eastern Region:** The gold mining communities in Eastern Uganda are hosted by the Neoproterozoic Busia-Kakamega granite–greenstone belt in the South Eastern part of the country. The semi-hard rock ore is extracted from pits and shafts and crushed using ball mills and hummer mills so as to liberate the gold. The ASGM in the Eastern part of the country, spiral concentrators are a new technology being embraced by miners hence liberating the gold with in the ore, leading to use of less mercury while processing.

**Ankole and Kigezi regions:** Hosted by the platform sedimentary rocks of the post Rwenzori fold belt and the Mesoproterozoic North Kibaran fold belt respectively, the ore in these regions of Western Uganda contains nuggets of Gold which makes it easier to process hence less mercury is used. The gold is easily recovered by use of gravimetric methods which minimise the total mercury.

#### 3.9.2.2 Ore grade

As illustrated in figure 6, the NBO study of 2019, identified Mubende District as having a high ore grade. It is because of this that the mercury use is high. In order to extract all gold, miners tend to increase the amount of mercury added. In Amudat District where the most mercury is used; gold appears in rocks which are crushed to fine ore before processing is done. It is because of this fine nature of the ore that more mercury is used to form an amalgam. Due to this same reason, mercury is used on alluvial ores as miners claim it easily attracts the alluvial gold forming an amalgam from which they can burn off the excess mercury.

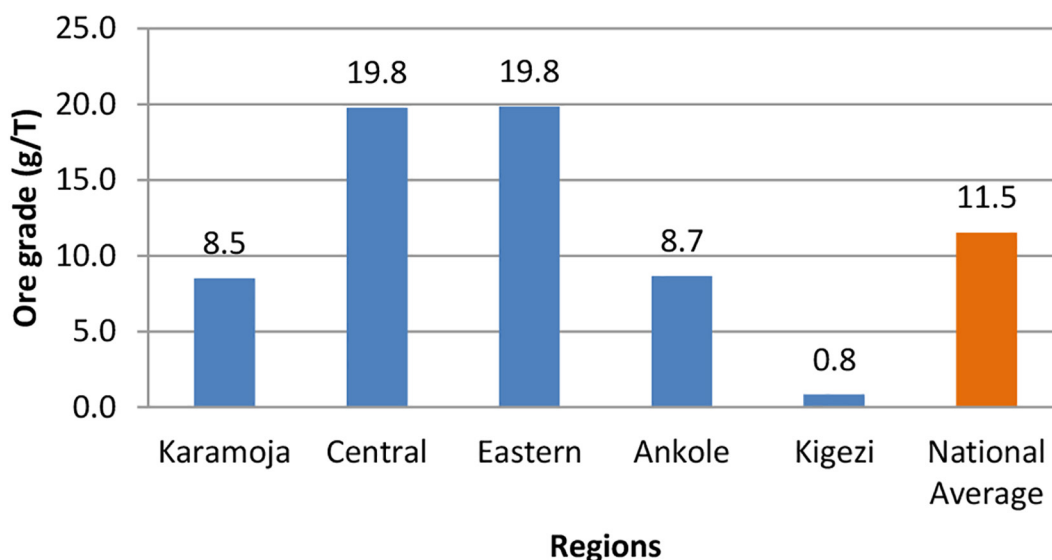


Figure 6: Estimated average ore grade per region.

Source: The NBO study of 2019

$$\text{Ore grade (g/T)} = \frac{\text{Ore grade (grams/basin)} \times \text{grams per unit of gold weight}}{\text{Tonnes per unit of ore weight}}$$

### 3.9.2.3 ASGM sites' proximity to trade routes

The NBO study of 2019 revealed mercury use to be highest in the districts of Kassanda and Mubende in the Central Region and Busia and Namayingo in the Eastern Region. In addition to the ore grade that would require mercury use, the Eastern Region districts' proximity to the Kenyan boarder where smuggling of mercury is conducted gives the miners easy access to the chemical.

### 3.9.2.4 Cost and supply of alternatives to mercury

#### Gold recovery with cyanide use and associated costs for raw material

Cyanide is one of the few chemicals that dissolves gold and is used in a fairly complex process to recover gold. Most cyanide plants purchase the mercury containing tailings from ASM operated mines at an average of UGX70,000 (USD 18.91) per truck. Despite the fact that Uganda has only 16 active cyanide plants, the country produces 5,615kg/y of gold with cyanide. This is because cyanide has an 85%-95% recovery rate compared to mercury which has a 35% recovery rate. According to the cyanide plant owners and operators interviewed, sodium cyanide recovers 80-85% of gold left in mercury tailing as indicated in figure 7.

Cyanide has an 85% - 95% recovery rate compared to the 35% recovery rate of mercury. Many cyanide operations buy their tailings from ASGM sites around the cyanide plants. Some cyanide plants on the other hand have mercury operations from which they capture the 35% and use cyanide plants to capture the 85%. The figures above were got by finding 100% production from ASGM sites that sell their tailings to cyanide plants, deducting the amount of gold produced from the 100% value and computing 85% - 95% based on the nature of the ore.

Central region which produces 100% of its gold using mercury also produces the highest amount of gold using cyanide. Ankole Region particularly Buhweju District produces 1,362kg/y of gold using cyanide. The Eastern Region which has only one active cyanide plant produces about 714kg/y of gold using cyanide.

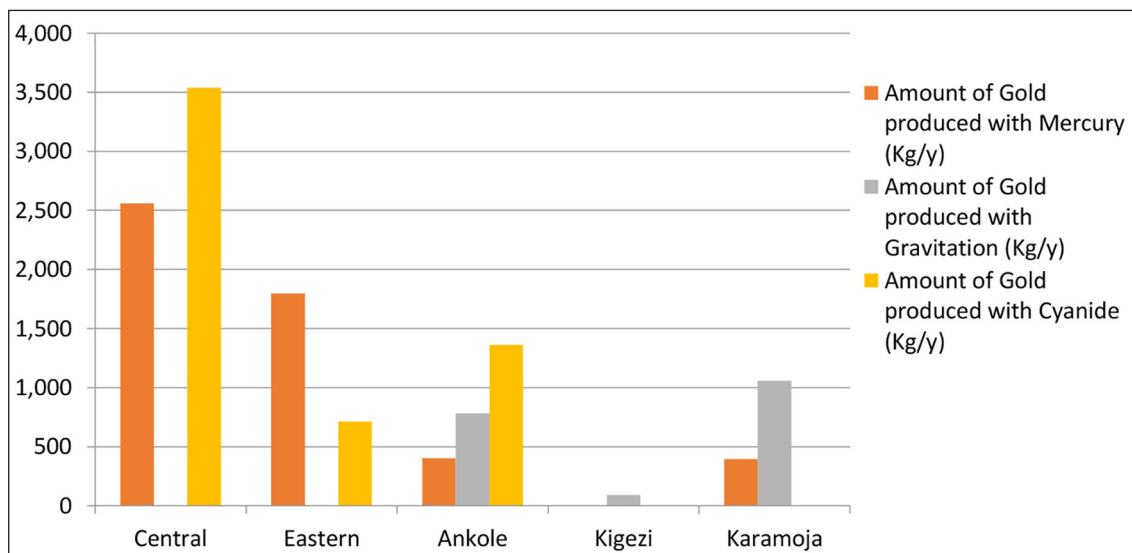


Figure 7: Amount of gold produced using mercury, gravimetric methods and cyanidation. Source: The NBO study of 2019

### Operational costs of cyanide plants at ASGM sites

Many operators are abandoning their cyanide plants due to the high operating costs while others do not operate at full capacity. However, there is a possibility of the abandoned plants being re-activated depending on future ore production and expectation. In Busia, out of the 10 cyanide plants that were visited, nine had been abandoned in the past one year and were found inactive as indicated in table 10.

Table 10: Carbon in Column and Carbon in Pulp gold leaching plants

District	CIP plant	CIC plant
Amudat	None	1 abandoned
Busia	None	1 active
		9 abandoned
		3 upcoming
Bugiri	None	1 abandoned 1 upcoming
Buhweju	None	5 active 1 abandoned
Mubende/Kassanda	2 active	8 active
Namayingo	1 under maintenance	1 abandoned
		1 upcoming

Source: NBO study of 2019

All proprietors mentioned high operating costs as the major reason for abandoning this technology. Besides construction, the major costs driver is the price of cyanide and other reagents needed for the cyanidation process. A tonne of cyanide costs approximately UGX20 million (USD 5,405.4), which lasts only two months at average production level given that an average plant can consume about 500kg per month. In Bugiri, one cyanide plant that was initially operated by Tanzanians in Budde Village, Budhaya Sub-county was found abandoned. Another plant in the same area is still under construction. In Buyanda Island on Lake Victoria in Sigulu Sub-county, one cyanide plant was found abandoned while another was under construction.

An interview with an operator of a CIP plant in Kassanda reveals on average one needs around UGX6.7 million daily to sustain a commercial CIP. Average ore grade of 3g/tonne would cost approximately UGX160m to produce 1.5kg of gold valued at approximately UGX200m leaving a meagre profit margin

of UGX40 million in month. However, close to mother lode (principal vein or zone of gold) ore grades of five to 55 grammes per tonne could cost less than UGX40 million to produce between 1-5 kilogrammes in a week. However, the operator said that these ore grades are a rare occurrence. This largely explains the struggle by majority of ASMs to sustain such a capital intensive technology. The high costs of operating cyanide plants may not be affordable to majority of ASGMs hence resorting to mercury use.

### Gold recovery with gravimetric method and associated costs for raw material

A total of 1,930 kg/y are produced using the gravimetric method. Besides the Central and Eastern region which produce 100% of their gold using mercury, Karamoja (1,057kg/y), Ankole (780 kg/y) and Kigezi (91kg/y) regions all have mercury-free sites where gold is processed using sluices and troughs. At the national level, 44% of the gold produced in Uganda is by cyanide, 41% by mercury and only 15% through gravimetric method. Majority of miners pan in water sources or close to water sources. Where need arises a gerrycan of water is purchased at UGX 1000 (USD0.270) which is relatively affordable.

### Gold recovery with mercury and associated costs for raw material

On the contrary mercury recovers only 40% of gold from primary gold ores. Because of the low recovery rate of gold from the use of mercury which is used by the ASMs, these tailings, still contain gold. This implies that cyanide plant owners recover more gold from the mercury containing tailings left by mercury users. Mercury is more readily available, easy to use and not very costly. The price of mercury is UGX800,000 (USD216.2) per kg and can be distributed in much smaller amounts.

#### 3.9.2.5 Limitation to use of mercury-free alternatives

The study identified several limitations to the adoption of mercury-free technologies which can have a bearing on future strategies to eliminate mercury from ASGM. These include:

- i. Lack of security of land tenure especially in areas where land is communally owned
- ii. Limited supply of piped water in ASGM areas
- iii. Limited technical capacity to implement alternatives
- iv. High cost of Liquid Petroleum Gas and other equipment in the use of borax
- v. Limited knowledge of existence, source and supply of alternatives
- vi. Inadequate finances to purchase alternatives
- vii. High cost of inputs like electricity (both generators and hydro power) to operate gold kachas, centrifuges and ball mills

### 3.9.3 Mercury use

The MIA study of 2018, revealed total mercury releases from all the different sources to be 31,038kg/y as shown in Table 11. The mercury released into the air, water and land was found to be 19,926, 3,719, 4,770kg/y respectively. Of the total mercury released, ASGM was responsible for 18,495kg/y.

Table 11 Total Mercury Output

Source category	Calculated Hg output, kg/y							
	Air	Water	Land	By-products	General waste	Sector specific	Total releases	%
<b>Primary (virgin) metal production</b>	12,138	3,333	3,027	-	-	0.1	18,498	<b>60</b>
<b>Waste incineration and burning</b>	5,308	-	-	-	-	13.7	5,322	<b>17</b>
<b>Production of recycled metals ("secondary metal production")</b>	12	-	13	-	12	-	37	<b>0</b>
<b>Intentional use of Consumer products</b>	1,192	105	1,241	-	2,220	-	4,758	<b>15</b>
<b>Waste deposition</b>	114	300	939	-	58	57.8	1,469	<b>1</b>



<b>Extraction and use of fuels/energy sources</b>	952	-	-	-	-	0.3	952	<b>3</b>
<b>Other intentional product/processes</b>	44	173	51	8.6	146	85.8	508	<b>2</b>
<b>Crematoria and cemeteries</b>	1	-	362	-	-	-	363	<b>1</b>
<b>Production of other minerals</b>	165	-	-	70.7	-	-	236	<b>1</b>
<b>SUM OF QUANTIFIED RELEASES</b>	<b>19,926</b>	<b>3,719</b>	<b>4,770</b>	<b>79</b>	<b>2,436</b>	<b>158</b>	<b>31,087</b>	<b>100</b>

Source: National Minamata Initial Assessment, 2018

The NBO study of 2019, included estimates on mercury use per region and found that over 15,000kg of mercury are used per year. The Central Region uses the highest amount of all mercury in gold production with over 7,800kg Hg/y (51%); followed by the Eastern Region with over 5,000kg Hg/y (33%). Karamoja Region uses over 1,200kg Hg/y (8%) as shown in table 12.

The NBO study of 2019 showed that in Karamoja Region mining takes place along sand banks without the use of mercury. Mercury is mainly used in Amudat District where open pits are mined. Amudat District also experienced a gold rush that attracted miners from Mubende who introduced mercury. In places where gold occurs in nuggets, for example, Bisya in Buhweju, no mercury is used because the particles are large and do not need amalgamation.

Table 12 Quantities of mercury used and gold produced per region

	<b>Central</b>	<b>Eastern</b>	<b>Ankole</b>	<b>Kigezi</b>	<b>Karamoja</b>	<b>National Total</b>
<b>ASGM Gold production (kg/y)</b>	2,559	1,796	1,183	91	1,452	7,081
<b>ASGM Mercury Use (kg/y)</b>	7,822	5,023	1,129	0	1,259	15,233
<b>Amount of Gold produced with Mercury Use(kg/y)</b>	2,559	1,796	401	0	395	5,151
<b>Amount of ASM gold produced without mercury (kg/y)</b>	-	-	782	91	1,057	1,930
<b>Amount of gold produced from ASM &amp; medium scale gold mining with Cyanide (kg/y)</b>	3,538	714	1,362	-	-	5,614
<b>Total National Gold Production (Kg/y)</b>						12,695

Source: The NBO study of 2019

Note:

- i.  $ASGM\ Mercury\ Use\ Per\ Region\ (kg/y) = Mercury\ ratio\ per\ region \times amount\ of\ gold\ produced\ from\ sites\ that\ use\ Hg$
- ii.  $Amount\ of\ Gold\ produced\ with\ Mercury\ Use = Total\ amount\ of\ gold\ produced - amount\ of\ gold\ from\ sites\ that\ do\ not\ use\ Hg$

The NBO study of 2019<sup>54</sup> revealed that ASGM mercury use and hotspots are concentrated within the Eastern districts of Busia and Namayingo as indicated in figure 8.

<sup>54</sup> NEMA, 2019, The National Overview of the Artisanal and Small-scale Gold Mining (ASGM) Sector, Including Baseline Estimates of Mercury Use and Practices

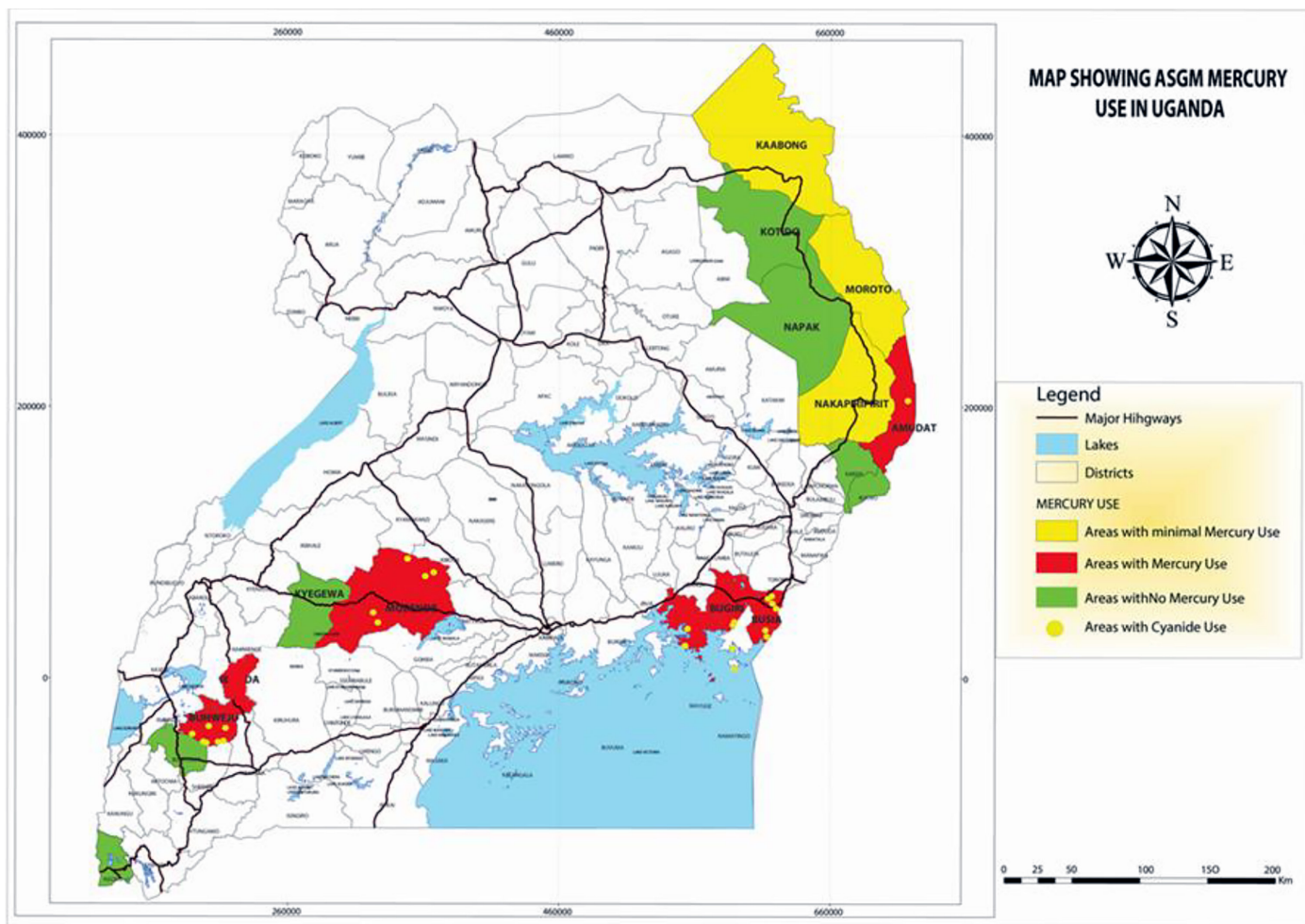


Figure 8 Map showing Gold Mining and mercury use hot spot Districts visited during the National Baseline Overview study of 2019  
**Source:** The NBO study of 2019

Their proximity to the Kenyan boarder makes the smuggling of mercury easy. Its availability and the alluvial nature of the ore have made mercury use rampant in the region. The central region districts of Kassanda and Mubende; and Western region district of Buhweju are mercury hotspots. In the Karamoja Region, the mercury hotspots are only in Moroto, Amudat and Nakapiripirit districts. However, according to the MIA<sup>55</sup> conducted by NEMA, Ibanda District in Western Uganda and Kaabong in Karamoja Region are also mercury use hotspots.

The ASGM sensitivity map from the National Baseline Study shown in Figure 6 revealed that ASGM mercury use hotspots are concentrated within the Eastern districts of Busia and Namayingo, the Central district of Kassanda (formerly Mubende), Buhweju District in Ankole Region and Amudat District in Karamoja Region. There were districts in the different regions that were found to be mercury-free. These included Kotido, Napak, Bukwo, Kyegegwa and Bushenyi along with the entire Kigezi Region.

The large particle size in some mining sites such as Bisya in Buhweju District – Western Uganda and knowledge on the dangers of mercury in some sites in Karamoja explains why mercury is not used in some mining sites. However, some sites have extremely low gold occurrences which make them unviable for gold dealers who are the biggest mercury suppliers at mining sites in the country. Further, because of the low deposits, the miners see no reason to invest in purchase of mercury because they make so little. Kigezi Region was the only region identified as mercury-free. This is due to the fact that there has not been a gold rush in the region which is the common cause of attraction for mercury users. Furthermore, Kisoro District Local Government in Kigezi Region is firm against illegal gold mining, which limits the use of mercury in gold production.

<sup>55</sup> NEMA, 2018, National Minamata Initial Assessment Report

The NBO study of 2019 also indicates that Karamoja Region, despite producing over 1400kgs Au/y, uses 1,259kgs Hg/y as highlighted in figure 9. The mercury quantities were calculated using the tool kit “Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM) Methods and Tools, Version 1.0, developed by UN Environment<sup>56</sup>. The mercury use calculated in Karamoja was so because mercury is mainly used in Amudat District following the infiltration of miners from areas where mercury is used such as Mubende District. Ankole Region uses over 1,100kg Hg/y (8%) and this is mainly in the sites located at Katenga in Buhweju District. Katenga ASGM sites, unlike many other sites in Buhweju, have a diversity of communities from different parts of the country whose sole intention is to mine for money without caring about environmental sustainability.

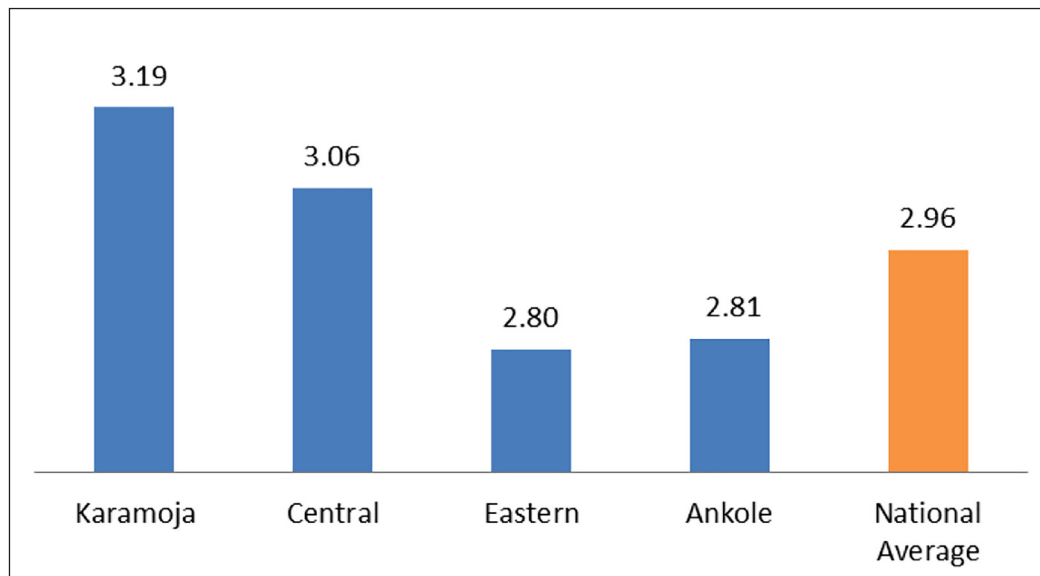


Figure 9: Mercury to Gold ratios (Hg: Au) Source: The NBO study of 2019

$$Hg:Au = \frac{Hg \text{ lost to land in mix phase} + Hg \text{ lost to air in the heating phase}}{\text{Mass of Sponge gold in 100\% Purity (g)} (=0 \times \%Purity)}$$

### 3.9.4 Mercury trade routes

In view of the information obtained during the NBO study of 2019, interviews on the informal trade of mercury were conducted. This included establishing the origin and routes of mercury traded in Uganda. A number of semi-structured consultations were convened with a range of stakeholders within the national ASGM sector. According to officials from MEMD/DGSM, there is a high level of certainty as to the smuggling although the tracing of these trading channels has proven difficult.

A study undertaken by COWI in 2016 found mercury trade statistics indicating that South Africa and Kenya are the principal source countries, although Malaysia appears to be a new player in the official import of mercury<sup>57</sup>. According to URA, eight consignments totalling 615kg entered the country between January 2013 and February 2016, mostly from Kenya. A representative of the URA emphasised that smuggling is likely to be rampant given the apparent lack of logistical and regulatory support. Nonetheless, most of the respondents indicated that the Malaba border post on Uganda’s Eastern border with Kenya is one of the major entry points for smuggled mercury. Other known conduits included the border towns of Busia in Eastern Uganda and Mutukula on the Southern border with Tanzania.

The chairperson of the Uganda National Artisanal and Small-Scale Miners Association asserted that while some mercury is traded in from Tanzania, more of it is sourced from Kenya and transported by both private and public vehicles across several border posts along the Kenya – Uganda border. Most traders (often Kenyan) deliver the mercury directly to mine sites, although the resource is as readily available in Kampala, where it is sold under-the-counter, among others, in jewellery stores. Whereas the ports of Mombasa and Nairobi are closer to Uganda than the Port of Dar es Salaam, Tanzania’s northern goldfields are proximately

<sup>56</sup>O’Neill, J.D. and Telmer, K. (2017). Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM). Geneva, Switzerland: UN Environment. ISBN 978-0-9939459-8-4

<sup>57</sup>COWI, 2016, Mercury Trade and Use for Artisanal and Small-scale Gold Mining in Sub-Saharan Africa

situated around Lake Victoria, prompting Tanzanian dealers to supply mercury to Ugandan markets for good profits. Uganda has also been reported to be a transit country for a mercury trade route feeding DRC.

### 3.9.5 Actors in mercury supply and trade

The NBO study of 2019, revealed that Uganda’s mercury supply chains are comprised of the following actors:

- \* Foreign traders – specialised dealers of Kenyan, Tanzanian and Congolese origins who bring in and sell mercury to other mercury traders, gold buyers, and ASGM operators;
- \* Local traders who sell mercury in the ASGM sites. These are predominantly gold buyers who also engage in mercury supply in order to attract gold selling customers;
- \* Jewellery shops in Kampala, allegedly owned by people of Asian origin;
- \* Mining companies.

Response from local interviews conducted during the NBO study of 2019 indicated that the suppliers of mercury are the gold buyers – of Indian origin – who, in some instances, trade mercury in exchange for gold. Chinese mining companies too allegedly smuggle mercury into the country by concealing it in imported mining equipment.

### 3.9.6 Gold and mercury trade and export

As shown in Figure 10, the field data from the NBO study of 2019 indicates that the national average price of pure gold is UGX 105,476 (USD 28.13)/g 24kAu. Pure gold from Karamoja fetches the highest price of UGX 108,919(USD 29.05)/g 24kAu because it is known to have the highest purity in the country.

The field data from the NBO study of 2019 also indicates that the national average price for mercury is UGX 722,396 (USD 192.64)/kg Hg, with Karamoja Region reporting the highest price at UGX 762,500 (USD 203.33)/kg Hg and Ankole region the lowest at UGX 700,000 (USD 189)/kg Hg. Kigezi region doesn’t use mercury and, therefore, no prices were recorded.

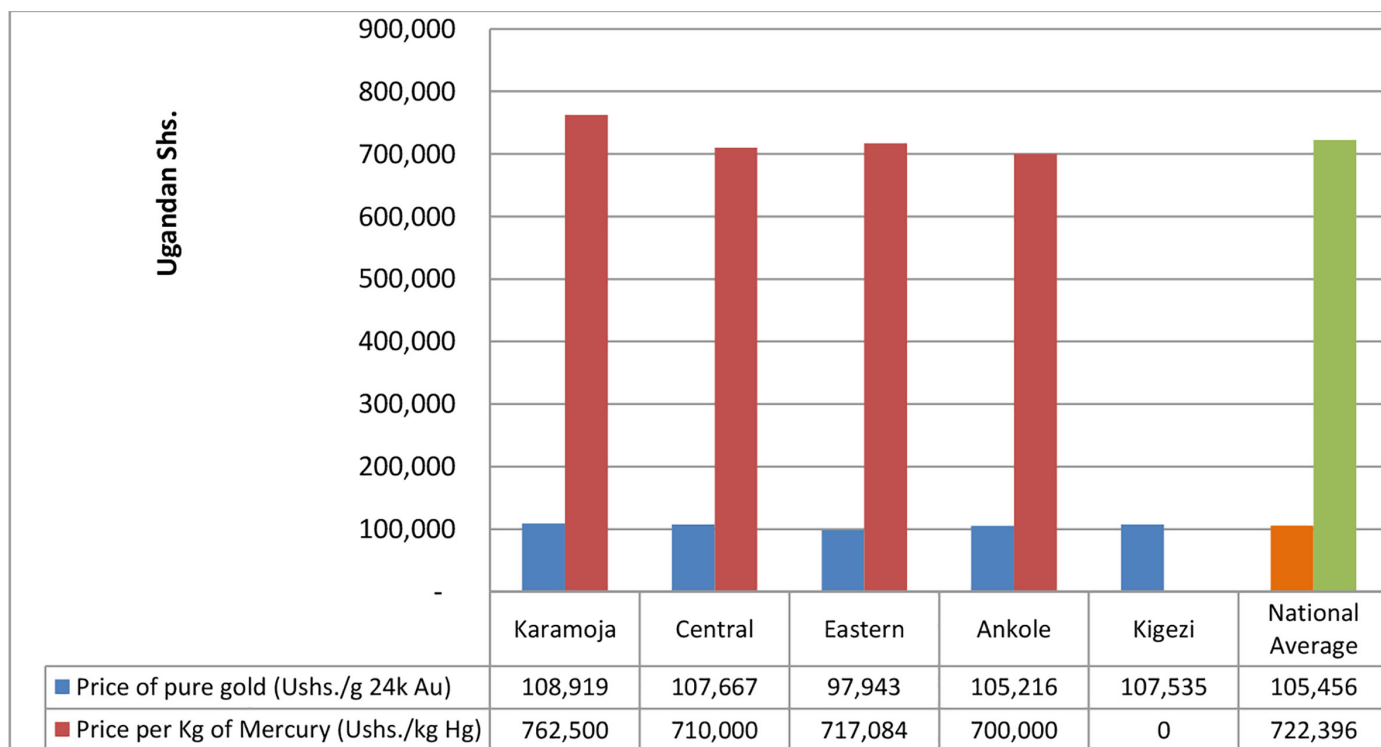


Figure 10 Average price of pure gold and mercury by region

Source: The NBO study of 2019

## 3.10 Economic aspects in the ASGM sector

### 3.10.1 Earnings per capita

#### 3.10.1.1 Extractors, transporter, processors

As shown in table 13, the workers at a mine site earn different wages depending on their specialisation along the gold value chain (extraction, transport, processing, land/mine owner, gold dealer and mercury seller) and location. The earnings also vary from region to region. Extraction workers earn 0.09, 0.08, 0.15, 0.33 and 0.07 g24kAu in Central, Eastern, Ankole, Kigezi and Karamoja regions respectively. Transport workers earn 0.09, 0.08, 0.11, 0.4, 0.06 g24kAu in Central, Eastern, Ankole, Kigezi and Karamoja regions respectively and the processing workers 0.1, 0.08, 0.1, 0.4, 0.1, 0.15 g24kAu in Central, Eastern, Ankole, Kigezi and Karamoja regions respectively. All in all it was noted that the ASGMs in Kigezi Region earn more than the other areas because they are few at the sites. As seen earlier, they have the least numbers per region meaning the income is not split up among many miners like it is in the other regions. Details of specialised earnings for are given in Table 14.

Table 13: Earnings made by ASGM

	Central	Eastern	Ankole	Kigezi	Karamoja	National Total
<b>ASGM Gold production (kg/yr)</b>	2,559	1,796	1,183	91	1,452	7,081
<b>Daily earnings per extraction miner (g 24k Au)</b>	0.09	0.08	0.15	0.33	0.07	0.14
<b>Annual earnings per extraction miner (g 24k Au)</b>	23.2	22.7	42.0	111.825	24.3	44.8
<b>Daily earning per transport worker (g 24k Au)</b>	0.09	0.08	0.11	0.4	0.06	0.08
<b>Annual earning per transport worker (g 24k Au)</b>	23.9	20.3	34.2	147.0	19.0	24.36
<b>Daily earning per processing worker (g 24k Au)</b>	0.1	0.08	0.1	0.4	0.1	0.15
<b>Annual earning per processing worker (g 24k Au)</b>	28.7	22.5	33.9	120.5	23.5	45.82
<b>Pure Gold sold from Unit per month (g 24k Au)</b>	156.6	113.5	160.4	29	174.9	126.87

Source: The NBO study of 2019

Figure 11 shows the average earnings of miners per year, indicating that processors earn more than the extraction and transport workers. This is because they are at the last point of gold production and hence interact with the gold buyers.

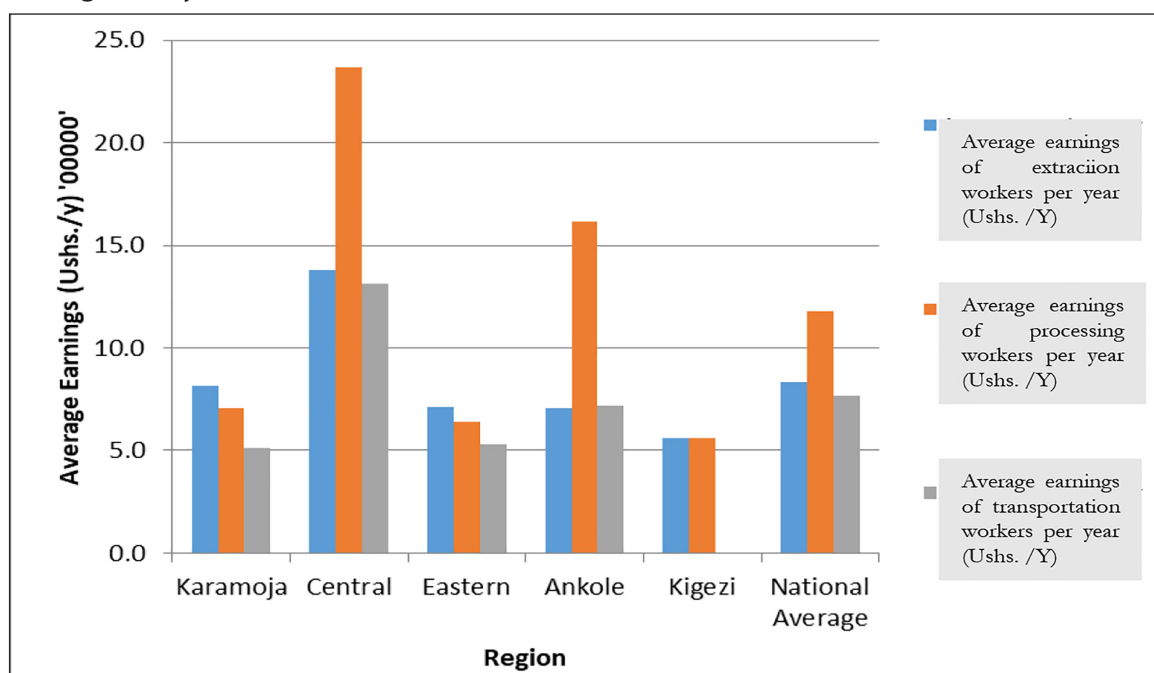


Figure 11 Average Earnings per year for workers. Source: The NBO study of 2019

### 3.10.1.2 Details of specialised earnings

Extraction workers (drill operators and diggers) and the ball mill or hammer mill operators earn the highest wages ranging from UGX 10,000 to 30,000 (USD 2.6 - 8.0). This work however, is done by the men.

#### Extractors

Extraction workers (drill operators and diggers) earn between UGX 10,000 and UGX 30,000 (USD 2.6 – 8.0) per day as indicated in table 14.

#### Transporters

Truck drivers, who are entirely men, earn higher than the rest of the transporters, earning between UGX 15,000 to 80,000 (USD 4.0 -21.3) per trip.

#### Processors

The processors' wages are earned either per ore processed or per quantity of gold recovered. The wages range from UGX 2,000 to 3,000 (USD 0.53 – 0.8) per gramme recovered, UGX 5,000 to 7,000 (USD 1.33 – 1.86) per sack; and those that are paid per day earn UGX 10,000 to 15,000 (USD 2.66 – 4.0).

#### Mill operators

The mill operators charge per round of milling and earn between UGX 10,000 to 30,000 (USD 2.66 – 8.0) per round. Milling can cost up to UGX50, 000 (USD 13.5) per sack although it can drop to as low as UGX20, 000 (USD 5.4) per sack in some seasons. It may also range from UGX 10,000/USD 2.67 to UGX 30,000/USD 8 per round of ore milled for the different mining regions. In the Central and Ankole regions, the average price for milling was UGX 20,000/USD 5.33; in the Eastern Region it ranged from UGX 10,000/USD 2.67 to UGX 25,000/USD 4.67 and in Karamoja, the price for milling was UGX 30,000<sup>58</sup> /USD 8. This is all dependant on the ore grade point. The price is not fixed and can be negotiated between the mill operator and the owner of the ore.

#### Earnings by women

The women who mainly engage in crushing stone, panning/slucing and transporting, earn between UGX 2,000 to 15,000 (USD 0.53 – 4.0) per day.

#### Panners

The panners charge a fee which is calculated as a very small percentage of the gold recovered (this varies from mine site to mine site) and thereafter sell the tailings for an additional income. An average of UGX 3,000/USD 0.8 is paid for every gramme recovered from the panning process<sup>59</sup> . On average, a sack of powder is panned at UGX6, 000 (USD1.6) using four grammes of mercury. Each mercury gramme is sold at UGX1, 000 (USD 0.3).

#### Worker earnings at cyanide plants

Workers live on the ASGM site in make shift houses mainly made of strong tarpaulin. These workers are paid UGX300, 000 (USD81.1) per month for extraction of the ore, minus food and accommodation which is offered by the plant owners.

#### Gold dealer

The current ASGM value chain is informal and to a large extent illegal. Local traders buy gold at very low prices using uncalibrated scales to exploit the miners. Majority of these buyers also represent illegal semi-processors and refiners in Kampala. Some of the miners that manage to access the refiners in Kampala receive relatively competitive prices for their gold.

<sup>58</sup>NEMA, 2019, The National Overview of the Artisanal and Small-scale Gold Mining (ASGM) Sector, Including, Baseline Estimates of Mercury Use and Practices

<sup>59</sup>NEMA, 2019, The National Overview of the Artisanal and Small-scale Gold Mining (ASGM) Sector, Including, Baseline Estimates of Mercury Use and Practices

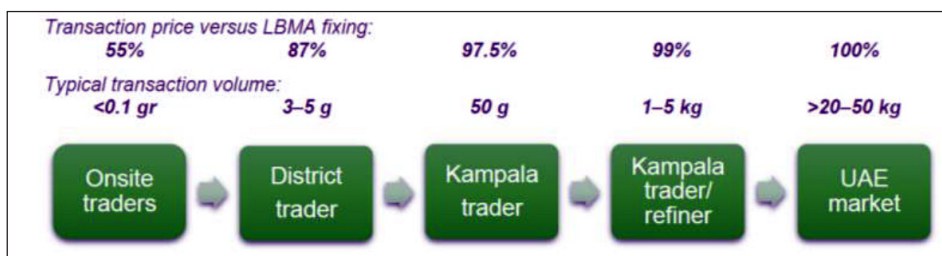


Figure 12: Distribution of value along the supply chain. Source: Pact Global UK (2018)

Table 14: Daily Earnings of ASGM site Workers (Uganda Shillings)

Job Type	Central Region	Eastern Region	Ankole Region	Eastern Region	Karamoja Region
<b>Extraction</b>					
<b>Drill operators</b>	20,000 (USD 5.4)	20,000 (USD 5.4)	20,000 (USD 5.4)	n/a	30,000 (USD 8.1)
<b>Diggers (hoes, spades, pick axes)</b>	10,000 (USD 2.7) per shift (day, night)	10,000 (USD 2.7)	20,000 (USD 5.4)	10,000 (USD 2.7)	10,000 (USD 2.7)
<b>Processing</b>					
<b>Ball mill or hammer mill operators</b>	20,000 (USD 5.4)	20,000 (USD 5.4) - 25,000 (USD 6.8)	20,000 (USD 5.4)	10,000 (USD 2.7) per rounda	30,000 (USD 8.1)
<b>Manual stone crushers</b>	10,000 (USD 2.7)	5,000 (USD 1.4) per sack	10,000 (USD 2.7)	7,000 (USD 1.9) per sack	10,000 (USD 2.7)
<b>Panning/slucing</b>	15,000 (USD 4.1) per day or 3,000 (USD 0.8) per gram recovered*	2,000 (USD 0.5) per gram	15,000 (USD 4.1)	2,000 (USD 0.5) per basin	4,000 (USD 1.1) per basin
<b>Transport (this changes with distance to be covered)</b>					
<b>Loaders</b>	10,000 (USD 2.7)	10,000 (USD 2.7)	10,000 (USD 2.7)	10,000 (USD 2.7)	10,000 (USD 2.7)
<b>Basin/wheelbarrows</b>	2,000 (USD 0.5) per sacka	2,000 (USD 0.5) per sack	3,000 (USD 0.8) per sack	6,000 (USD 1.6) per sack	4,000 (USD 1.1) per sacka
<b>Bicycle</b>	2,000 (USD 0.5)-5,000 (USD 1.4) per sack	2,000 (USD 0.5) per sack	3,000 (USD 0.8) per sack	6,000 (USD 1.6) per sack	5,000 (USD 1.4) per sack
<b>Truck</b>	15,000 (USD 4.1)	20,000 (USD 5.4)	15,000 (USD 4.1) – 20,000 (USD)	20,000 (USD 5.4)	80,000 (USD 21.6)

Source: The NBO study of 2019

*The mill operators charge per round of ore milled.*

*The processors are paid per day, per how many sacks/basins of ore are processed or negotiate to be paid per output i.e. per every gramme recovered from the ore processed.*

*The transporters are paid per how much ore they transport or per day. Those that transport ore in trucks are paid per full truck of ore transported.*

### 3.10.2 Cost of living

The cost of living around the mines is relatively high because of the general lack of public services or utilities. Most ASGM sites are found in very remote areas with poor road networks. Enterprising individuals, therefore, step in and provide basic services like water which is fetched off site, generators for electricity, sanitary services, medical facilities and other services, all at a significantly higher price compared to other urban centres with no mining activity.

For example, while a twenty-litre jerrycan of piped water costs UGX 500/USD 0.13 in Kampala and other urban centres, the same quantity of water costs UGX 1,000/USD 0.27 in the ASGM camps. For electricity, each bulb is charged UGX 1,000/USD 0.27, a fridge UGX 5,000/USD 1.33 and a television UGX 5,000/USD

1.33 per day. Use of toilets facilities costs between UGX 500 – 1,000 (USD 0.13-USD 0.26), while shower rooms cost UGX 1000/USD 0.26. A plate of food costs an average of UGX 7,000/USD 1.86 which is slightly more than the average cost of food in Kampala and other urban centres.

### 3.10.3 Alternative sources of livelihoods in ASGM regions

Besides ASGM, communities in the mining regions also engage in other livelihood activities as indicated in table 15. This study established that scale of involvement in other livelihood activities is inversely proportional to the intensity of mining that occurs in a region. For example, in Karamoja Region, which is predominantly semi-arid, mining is more dominant than agriculture compared to the Western Region where mining is carried out at a much smaller scale.

Table 15: Alternative livelihoods in different regions

ASGM Region	Alternative Livelihood	
Karamoja	Agriculture	Food crops: sorghum, maize, simsim, millet
	Livestock/pastoralism	Cattle, sheep, goats
Central		Food crops: cassava, maize
	Livestock	Cattle, goats, chicken, pigs
Eastern	Agriculture	Food crops: maize, beans, rice, cassava, sorghum, groundnuts, millet, sweet potato
	Livestock	Cattle, goats, sheep, chicken, pigs
	Fishing	Carried out in Lake Victoria
Ankole	Agriculture	Food crops: bananas, matooke, tea, millet, sorghum, maize
	Livestock	Cattle, goats, sheep
Kigezi	Agriculture	Food Crops: Irish potato, sorghum, beans, matooke, bananas, cassava, millet, groundnuts, sweet potato
	Livestock	Goats, sheep, cattle
	Fishing	Carried out in Lake Bunyonyi

Source: The NBO study of 2019

### 3.10.4 Access to financial credit

According to the NBO study of 2019, there were no formal financing systems within the ASGM camps, and the miners do not have access to cheap financing for their operations. The micro-financing options available in the rural areas are costly for the miners who do not have the collateral security required to secure the loans. The micro-finance institutions also have no incentive to lend to the miners because they are considered risky due to the uncertainty of gold yields, and the high migratory nature of their lifestyle<sup>60</sup>. Culturally gold business is also considered mythical, highly uncertain, littered with tales of theft, death and witchcraft. This becomes a further disincentive for the micro finance institutions.

Uganda's formal micro-finance and commercial banking sector has not taken steps to deliberately understand the mining sector and explore ways in which they can be supported with affordable financing. For example, the financial institutions do not treat Location and Exploration Licences or even Mining Leases as assets good enough to be used as collateral security by the miners to acquire loans. On the other hand, ASGM operations have remained too informal that they cannot provide basic documents like business plans, audited books of accounts or production models that demonstrate the viability of their operations.

The miners are, therefore, forced to turn to middlemen for financing either in cash or in mercury under the arrangement that they will sell all the gold they get to the middlemen. It is thus not surprising that most of the miners interviewed identified gold buyers as their main source of mercury supply and source for credit facilities.

<sup>60</sup> NEMA, 2019, The National Overview of the Artisanal and Small Scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices



Middlemen usually pre-finance the mining activity by advancing money to cater for wages of the casual labourers, fees for the ball mill and panning or sluicing if need be and for purchase of mercury as well. Upon getting the final product, in the presence of all group members, the dealer deducts that pre-finance capital and gives the group the balance that is shared according to their agreed upon mode of sharing. Having pre-financed the activities, the middleman automatically becomes the buyer of the group's gold.

The lack of mining equipment such as pumps, generators or access to electricity, processing equipment and other tools of the trade keep the required operational expenses (OPEX) high, making it hard for the ASGMs to have meaningful production and growth of their business. It is, therefore, common to find majority of ASGMs heavily indebted to the middlemen, gold buyers and refiners in Kampala who advance the required equipment and resource in exchange for the gold produced. Some of these refiners have been sanctioned by the UN Security Council for illicit trade in gold in neighbouring DRC. This intense scrutiny of these players considered as contributors of the conflict within the region has forced them to operate underground through agents to avoid detection. It is through these same agents that mercury is accessed by the ASGMs in the gold fields.

### 3.10.5 Food security

Food security is an important motivator of ASGM operations which are frequently poverty-driven. Many miners already find it difficult to secure adequate food for their families. Nutritional deficits can be exacerbated in ASGM camps where foodstuffs may be hard to access, for example because of rising costs of local goods and/or deterioration in quality of agricultural lands. Changes in availability of disposable income among ASGM communities may also have an impact on quality of diets and therefore on nutritional status thus leading to nutritional deficit among the mining communities.

### 3.11 Demographic and social information

The ASGM sector in Uganda remains highly informal, with an intricate chain of stakeholders. These include landowners, tenants, miners, gold and mercury traders and family members. In some cases, the landlords will lease land out to miners in return for a share of the proceeds while in other places like Karamoja, the land is communally owned. It is a normal occurrence to find several members of the same family working on the same mine site. The NBO study of 2019 revealed that majority of workers at mine sites are self-employed with no specific chain of leadership, save where they operate under an umbrella association. The NBO study of 2019 revealed that there is a relatively even distribution of men, women, youth, the elderly as well as children across the value chain of any given ASGM site. The distribution differs depending on how physically demanding the mining activities at a particular site are.

#### 3.11.1 Social hierarchy

##### 3.11.1.1 Roles of men

In the districts of Amudat, Busia, Buhweju, Mubende, Nakapiripirit, and Namayingo where the mining is underground, young men are usually involved in the more labour-intensive operations of the value chain like breaking rocks and hauling them from underground to the surface.

##### 3.11.1.2 Role of women

When the gold ore has been extracted and brought onto the surface, the elderly men, the women and the girls take over by drying, sorting and crushing the ore as well as panning the concentrate. In areas where the source of ore is alluvial and hence soft to excavate, elderly men, women and the girls carry out the extraction of ore.

On the gender perspective, national statistics show that women involved in ASM range between 40-60%. The NBO study of 2019 established that at least 45% of the miners engaged in ASGM are women, with the numbers being higher in the Karamoja Region which has about 6,300 women miners. This is because the gold is largely alluvial and the mining takes place in shallow pits and along river banks. In other areas like Ankole, Central and Eastern regions, the number of women engaged in ASGM is approximately 800, 3,800 and 3,100 respectively. These numbers are low because the mining operations are largely underground

and highly physical.

In all the three regions above, the NBO study of 2019 established that women are in fact prohibited from entering mining shafts because of a long-standing belief that they will “chase the gold away.” As such, women are restricted to the less physical roles like panning, haulage, mineral selection and processing. This inevitably relegates them to ‘employees’ of their male counterparts who do the actual extraction of the ore. The study also discovered disparities in wages paid to women compared to those paid to men who were involved in similar work. Women reported earning less than their male counterparts. For example in Central Region, where a woman is paid UGX 2,000/USD 0.53 for transporting a sack of ore from the extraction site to the processing site, a man will be paid UGX 5,000/USD 1.33.

The women make the bulk of workers in the panning process and hence are the ones who handle mercury the most. They do not use any protective gear while working in the water ponds.

### 3.11.1.3 Child labour

The children and young boys also take part in the crushing and panning activities as well as physical transportation of lighter ore sacks. According to the MIAs study of 2018, the percentage of young people (<18 years) among miners ranges from 0 to 5%, of whom children (<14 years) comprise 0 to 2%. About 98% of the mining sites that were visited during the baseline study had under age children<sup>61</sup> actively engaged in mining activities. It was observed that children between 4 to 16 years accompany their parents to the mine site and are also actively involved in the drying and crushing of rocks, as well as panning with the use of mercury.

The NBO study of 2019 did not establish the approximate number of children engaged in gold mining but earlier reports by UBOS (2014)<sup>62</sup> and Stop Child Labour (2015)<sup>63</sup> estimate 10,000 to 15,000 children are working in artisanal gold mining.

Children are usually involved in panning, crushing, and carrying ore. Boys and girls are equally affected. The girls normally do the lighter work of cooking, looking after infants at the sites, panning and crushing smaller rocks; while the boys do the heavy lifting, like transporting ore from the pit to the processing areas.

### 3.11.2 Nationalities

Local Ugandans from across the country have been operating these ‘Z’ sites for a while. However, currently Indians and Tanzanians have joined the business in most of the sites and they are buying off most of the tailings at a higher rate causing the locals to the vulnerability of falling out of business and loss of livelihoods.

### 3.11.3 Conflicts

In the eastern region, particularly Busia District, land in the entire district is believed to contain gold. However, under the Constitution, land belongs to the people; while all the minerals are vested in government to hold in trust for Ugandans<sup>64</sup>. For this reason, government through the ministry of Energy and Mineral Development issues out licences to applicants as long as there is no existing licence. However, nearly every homestead in the district engages in mining with or without a licence from the government. Many times, mining on a licence belonging to someone else often takes place unknown to the communities. This has caused a number of disputes and death threats by landowners who assume no one has the right over anything on their land more so concession holders who do not hail from the district.

### 3.11.4 ASGM by Minority Groups

The study identified two main minority groups that are involved in ASGM in the Karamoja Region namely the Ik and Dodoth who are majorly in Kaabong and Kotido districts. Interviews with community

<sup>61</sup> Children below the age of 16 as is restricted by Section 8 of The Children’s Act, 2016

<sup>62</sup> UBOS, 2014, Education: A means for Population Transformation; based on the National Population and Housing Census

<sup>63</sup> SOMO, Stop Child Labour (2015). Gold from Children’s Hands.

<sup>64</sup> Article 244 of the Constitution of the Republic of Uganda, 1995.

members revealed a normal working relationship with miners from other tribes with no particular cases of discrimination or marginalisation.

Nevertheless, some challenges were identified that were somewhat unique to these two minority groups as listed below:

- \* Lack of security of land tenure because their land is communally owned and they do not have individual certificates of ownership. This has occasioned land grabs orchestrated by ASMs, mining companies or their agents
- \* Lack of political representation at the district and national level which excludes them from decision making processes
- \* Loss of livelihood from mining and hunting caused by the creation of conservation or protected areas on communally owned land, for example; Places inhabited by indigenous peoples have led to loss of potential sources of livelihood from mining. For example, the Ik and Dodoth are no longer able to freely mine in Kidepo National Park and surrounding buffer zones that are known to have gold deposits
- \* Insecurity caused by pastoral tribes from neighbouring areas in Kenya and Southern Sudan who cross into Uganda to raid livestock

Distant locations of social services like health centres and schools which hinders free access and utilisation

### 3.11.5 Education status and access to health care and other social services

According to the MIAs study of 2018, the increase in child labour in the mines has had a significant negative effect on education levels as a growing number of children leave school and join the informal labour force in the mines. The NBO study of 2019, revealed that education levels in ASGM areas were noted to be very low given that the children prefer to engage in mining than go to school. Another reason for this was that the schools are very far from the mining communities. The same goes for health facilities and social services not being readily available or within short distance of the mines.

### 3.11.6 Culture and ASGM

The search for gold normally comes with adverse repercussions for the environment in gold mining areas. The miners will raze chunks of forest land and any vegetation in their pursuit of that elusive gold vein. Unfortunately, even sites and objects of historical or cultural significance are not spared by the scavenging miners.

For example, in Lomermar Parish in Loyoro Sub-county, Kaabong District, the miners felled down a tree locally referred to as 'Edoi' in 2017. The tree is culturally recognised as a site where warring parties or any individuals in conflict go to perform rituals to resolve their conflicts. That same year, a miner was buried by the collapsing soils in one of the adits, an incident that the locals blamed on the demise of the tree and retribution from the angry gods.

In the same area, the locals reported an increase in sex workers who travel all the way from Kotido and Kaabong towns to ply their trade. The sex workers are lured to the area by the prospect that gold miners have some significant disposable income. Two new churches have cropped up in the area, in addition to the traditional Catholic and Anglican ones. The miners interviewed, revealed a mutually beneficial relationship between the churches and the miners. The miners make good members for the new churches because they can easily contribute some of their earnings. On the other hand, the miners claim many of the Church goers and their leaders buy gold from them.

In Katiliba, Kaicheri Sub-county Kotido District, elders reported a drought that was caused by the onset of mining activities along the abdomen of River Katiliba. There is a local belief that mining chases away the spirits that are responsible for rain. There were prolonged discussions between the youthful miners and the elders and it was agreed that a sacrifice is made to the gods to allow the rain to fall. To appease the gods, the miners contributed money to buy a black bull that was slaughtered and rituals performed. The

rain resumed and so did the mining.

### **3.11.7 Occurrence of criminal activities**

#### **Substance abuse**

Substance abuse is a common trend at ASGM sites and affects both adult and child miners. The harsh working conditions (especially in the shafts) and the migratory nature of many people who engage in ASGM is believed to contribute to drug and alcohol abuse which are seen as a way to cope with difficult circumstances. Adverse social behaviours associated with ASGM, such as substance abuse as well as stress, constitute further hazards to women's reproductive health. Exposure to these hazards and behaviours may result in reduced fertility or cause infertility, menstrual disorders and early menopause. For pregnant women, exposure to hazards such as substance abuse, sexual abuse and violence, can lead to miscarriage and childbirth defects.

### **3.12 Occupational Safety Health and environmental information**

The Environmental Assessment under the NBO study of 2019 covered the aspects of restoration, pollution and waste management, personal protective equipment and mining in protected areas.

#### **3.12.1 OSHE concerns at ASGM sites**

Actors in the ASGM sector have not been known to make OSH a priority in their work. This is because it is an informal low capital investment sector with most miners living hand-to-mouth therefore disregarding the need to invest in proper OSH standards at mine sites. The migratory nature and uncertainty associated with the mining business are also deterrents. All the ASGM sites that were visited during the NBO study of 2019 had glaring gaps in observing proper OSH standards at all levels of the value chain i.e. from extraction to processing.

##### **3.12.1.1 Inadequate shafts/pits**

Poorly constructed underground pits and poor insulation of underground power supply wires among others were observed. The ASGM miners are secretive about accidents on their operations especially those that involve fatalities because of fear of government prosecution. However, the NBO study of 2019 established through different sources that at least 19 miners had died in mine site accidents between 2017 and 2018 in the Karamoja Region alone. Most of these accidents involved collapsing mines which are a result of poor mine shaft construction techniques. In Lopedo, Kaabong District, a total of eight people were killed when pits collapsed on them in two separate accidents in June and July 2018. Six other miners died in similar circumstances in Kakuta Village, Loyoro Sub County, in Kaabong District. Other similar incidents were reported in Lokanoyona (also in Kaabong) where five people died.

##### **3.12.1.2 Lack of pit restoration**

The ASGM sites are characterized with open abandoned mining pits and where restoration has been attempted, it is not adequately done. In some areas, the abandoned pits were undergoing natural restoration-the vegetation was regenerating. There was however no deliberate effort or written procedure at the mine site to carry out active restoration as required by the Ugandan environmental laws and international best environmental practices.

##### **3.12.1.3 Tailings and effluent management**

There is poor disposal of tailings and wastewater. Stagnant water was very evident at ASGM sites.

##### **3.12.1.4 Solid waste management**

There were no designated places for collection of waste generated or waste disposal mechanisms in place, apart from open dumping.

##### **3.12.1.5 Labour and working conditions**

There was evidence of dust and noise pollution especially from the crushers. The men who were operating

the crushers were all covered with dust. Information from a few miners interviewed revealed that most of them are vulnerable to respiratory related diseases such as cough and other respiratory complications. Workers do not use Personal Protective Equipment. Women stand for long hours in water ponds where panning takes place. There was no evidence of any protective gear for feet and hands for panners. This water is contaminated which poses health risks to women. Women at the site involved in crushing of stones use bare hands. One can easily notice the scars and skin damage on their hands. They also do not wear any eye protective gear. There was also evidence of burning the amalgam increasing exposure through inhalation of mercury vapour.

### 3.12.1.6 Sanitation and hygiene

Inadequate WASH facilities, poor solid waste disposal.

### 3.12.1.7 Deforestation

The search for gold normally comes with adverse repercussions for the environment in gold mining areas. The miners will raze chunks of forest land and any vegetation in their pursuit of that elusive gold vein. Unfortunately, even sites and objects of historical or cultural significance are not spared by the scavenging miners. For example, in Lomermar Parish in Loyo Sub-county, Kaabong District, the miners felled down a tree locally referred to as 'Edoi' in 2017. The tree is culturally recognised as a site where warring parties or any individuals in conflict go to perform rituals to resolve their conflicts. That same year, a miner was buried by the collapsing soils in one of the adits, an incident that the locals blamed on the demise of the tree and hence retribution from the angry gods<sup>65</sup>.

### 3.12.2 Level of knowledge of the environmental and health risks

The NBO study of 2019, also found that out of 125 interviewees, a total of 56 (46%) did not know, at all, about the health risks related with the use of mercury. This was more marked in the district of Bushenyi with 22 (73%) having no knowledge of these health hazards. The respondents in Buhweju (60%), Busia (69%) and Namayingo (61%) could mention at least 2 mercury related health hazards.

Most of the respondents interviewed did not know the way through which mercury enters the body. None of the respondents in Busia mentioned inhalation, eating fish and ingestion as an entry of mercury into the body yet these are the common modes of entry. Most respondents mentioned skin, 49% (n=62) and eyes, 73% (n=93) as the modes of mercury entry into the body. Communities from Bushenyi District had the least knowledge related to entry of mercury into the body with none of the respondents mentioning eating fish as the mode of entry, and only 16% (n=5) and 13% (n=4) mentioning inhalation and ingestion respectively. Only 20% (n=6) mentioned skin contact of mercury. Buhweju respondents had the most knowledge compared to the rest of the districts with 78% (n=35) and 87% (n=39) mentioning inhalation and contact through the eyes respectively as the modes of mercury entry into the body.

When asked about measures of prevention of mercury exposure, most of the respondents mentioned washing hands 73% (n=93) and use of gloves 70% (n=85) as way of prevention of exposure to mercury. Respondents in Busia and Bushenyi had inadequate knowledge on preventive mechanisms beyond use of gloves and washing hands. None from Bushenyi and from Busia mentioned avoiding eating fish and burning the amalgam in the chimney as preventive mechanisms. Buhweju had most knowledge on preventive methods with over 89% mentioning use of gloves and washing hands as preventive methods while 77% (n=35) mentioned the use of nose masks.

The ASGMs further argued that putting health, safety and environment standards in place requires money they cannot afford. The research team observed poor disposal of tailings and waste water at mine sites, no use of Personal Protective Equipment, stagnant water, dust, inadequate WASH facilities, poor solid waste disposal and others.

### 3.12.3 Hindrances to good environment practices

<sup>65</sup> NEMA, 2018, The National Overview of the Artisanal and Small scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices

The Mining and Mineral Bill, 2019 proposes that before any Artisanal Mining Permit or Small Scale Mining permit is awarded, an Environmental Impact Assessment is to be carried out by the applicant. This will provide a remedy for the poor environment standards in the ASGM sector. However the main argument advanced by the miners is that putting OSH standards in place requires money which they cannot afford.

District environment officers at the local government level undertake periodic environmental inspections at the different mine sites in their districts as is their mandate. However they do not have a sector specific tool to guide inspections and monitoring related to ASGM activities. MDAs including NEMA use general inspection and monitoring guidelines that are not specific to OSHE standards in the ASGM sector. There is need to develop sector specific guidelines for monitoring and inspection of environmental as well as occupational, safety and health standards in the ASGM sector.

### 3.12.4 Mining in protected areas

Some operations are also located within wetlands, forest reserves and protected areas. The different MDAs charged with protecting these areas have faced challenges caused by lack of co-ordination and unsynchronised laws. Because of this, DGSM has on several occasions issued Exploration Licences to companies within protected areas without consent from UWA, MWE or NFA. There is limited to no monitoring of ASGM sites within protected areas given that they illegally mine there hence resulting in severe damage to the ecosystem. Currently, the mining cadastre has a number of exploration licence applications in Kidepo, Matheniko, Bwindi and many other protected areas waiting approval by DGSM despite the fact that the law does not allow for such activities within protected areas.

Licences awarded by DGSM to legal miners have been dormant because UWA does not permit entrance to protected areas for purposes of mining. DGSM's point of argument is that, the purpose of exploration is to estimate the ore grade so as to determine whether an area is commercially viable or not and if it is, companies will go ahead and apply for mining licences. However, the mining act Of 2003, does not clearly state the allowed quantities of ore to be extracted by licence holders whether in a protected area. For this reason, it is common to find people actually mining under the guise of exploration which would be a threat to protected areas including national parks. Despite the fact that an EIA is not a necessity for Exploration Licence holders, any activity within or around the boundaries of the national park should have ESIA's done to estimate the extent of harm the activity will cause and put in place mitigation strategies.

Penalties issued to illegal miners in protected areas especially national parks are too small. For example, first time offenders are charged between Ug.Shs.30, 000 (8.1)-1,000,000 (USD 270.3). The National Forestry Authority (NFA) reported that many investors obtain exploration licenses which they use to conduct fully fledged mining in forest reserves. In the process, they destroy the forest cover and pollute water bodies that are located within the forest catchment areas. NFA named River Nabakazi in Mubende, Kasowa-Kitomi water catchment, Greek River in the Karamoja Region as some of the water bodies facing a high risk of mercury contamination from ASGM activities. Further, the miners do not backfill their pits and hence more trees can be planted in former ASGM areas. They proposed that as custodians of the forests where ASGM occurs, NFA should be entitled to a percentage of the royalties which money can be used to restore damaged forest areas.

This study established the existence of operational gold mining and exploration licenses in protected areas and forest reserves as is shown in Figures 13, 14 and 15.

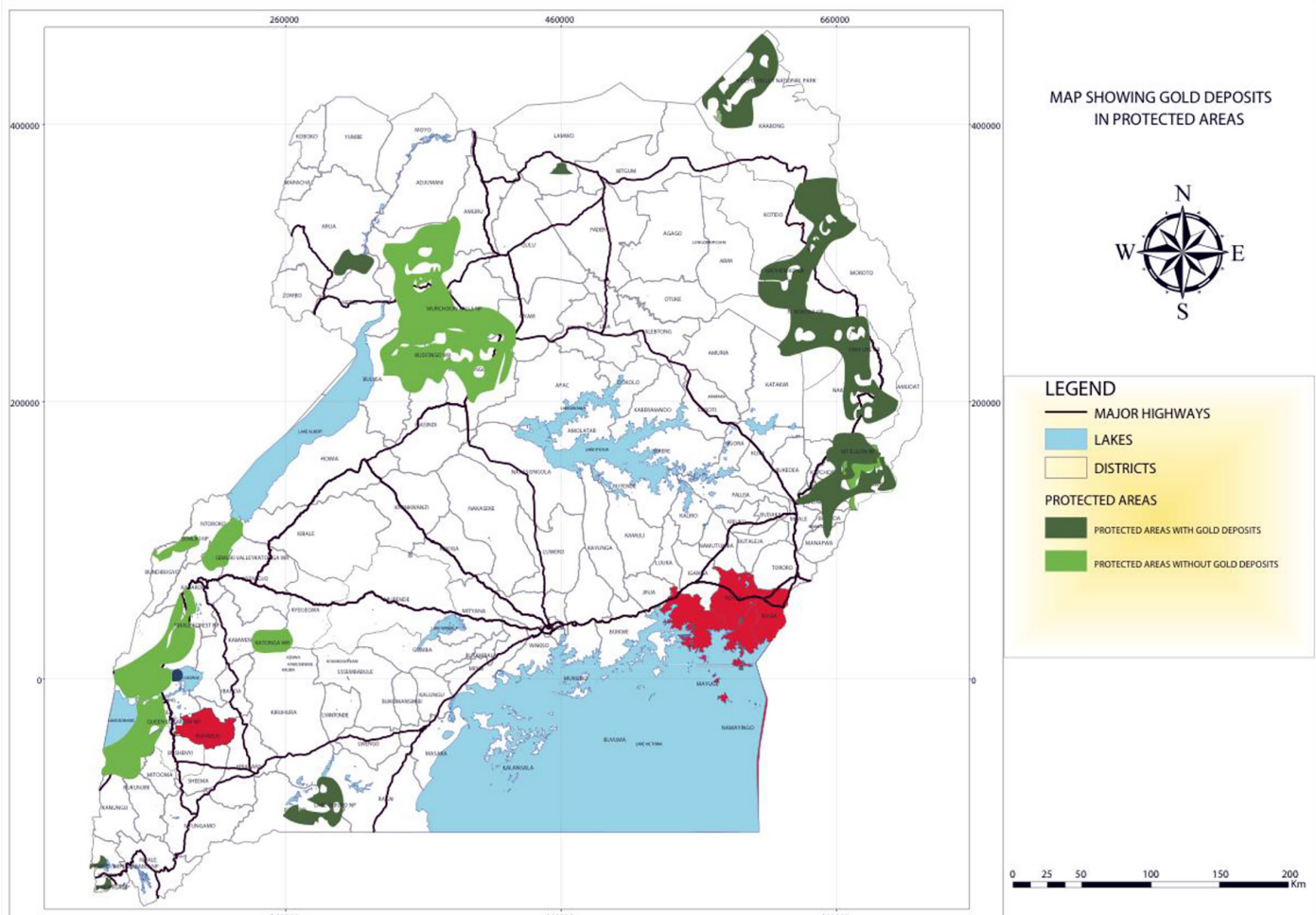


Figure 13 Map Showing Gold Deposits in Protected Areas. Source: The NBO study of 2019

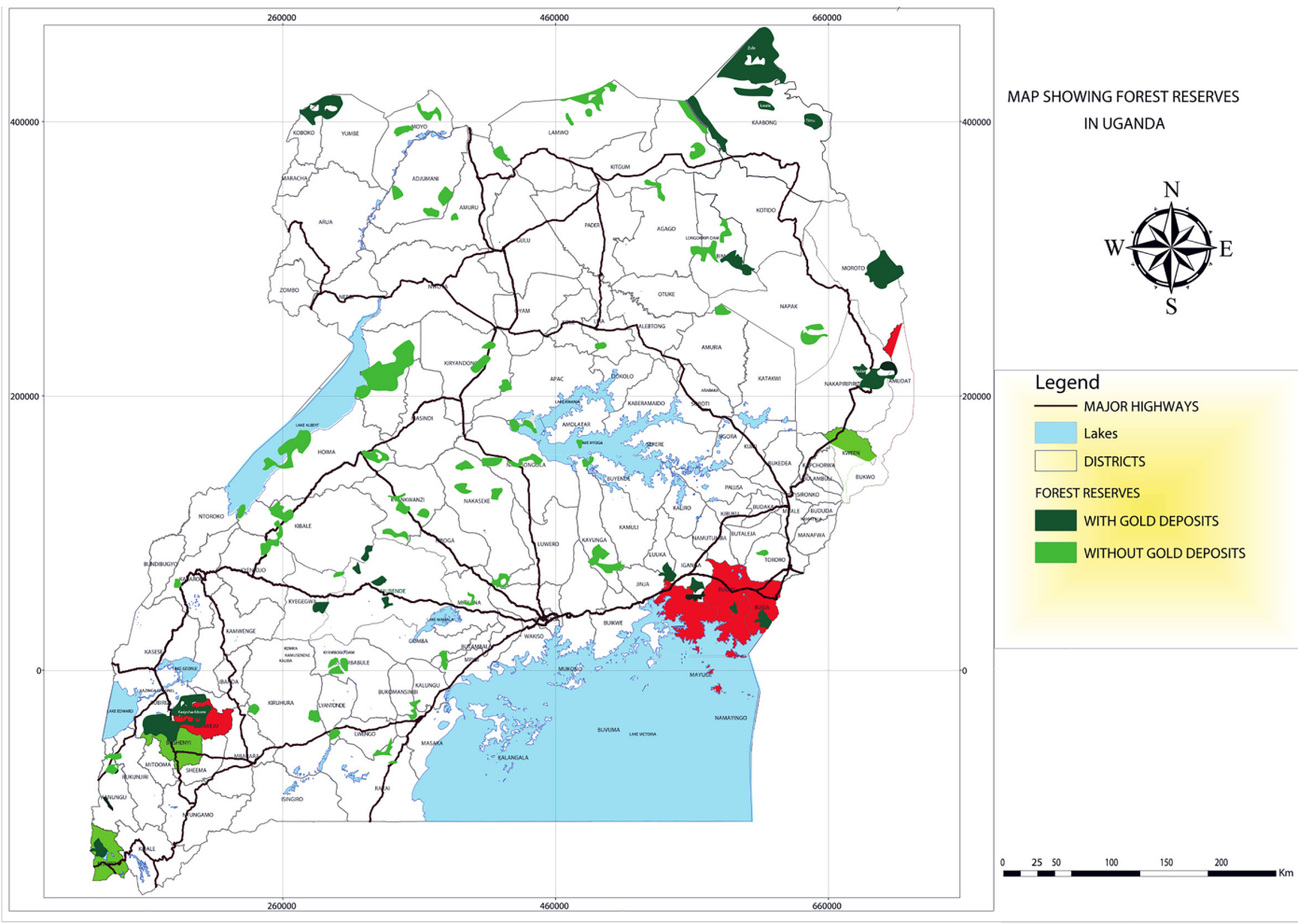


Figure 14 Gold Deposits in Forest Reserves. Source: The NBO study of 2019

The Kidepo Valley National Park hosts ASGM sites which among others include Kurao, Lopirpir and Nakagwo. Initial interviews conducted with Ik communities in Usake, Kaabong district, also revealed a general understanding by the locals in the area that the Ik are the only people allowed to mine within in the park. The Ik are a minority indigenous group of Karamojong. Both Ik and Karamojong interviewed at Usake trading centre which thrives on ASGM along the Usake River claimed that the Ik are allowed to mine in the park. This is because the Ik are known to be former inhabitants of these forests who were evicted before gazettement of the forests into national parks. All the Ik need to do is show the game rangers their national identity cards and they will be granted access to the mining sites in the park. The Ik were in fact more worried about Turkana warriors than the game rangers. Just a week before the research team visited the area, six Ik had been killed by the Turkana on the way to the mining sites in the park.

However, the UWA administration staff at the Kidepo Valley National Park dismissed the existence of an 'UWA-Ik' collaboration to mine in the park. The Uganda Wildlife Act, 2000 prohibits mining in protected areas and indeed the UWA staff said that they enforce that law with no exceptions. Not only were the UWA staff categorical in denying that there was any ASGM going on in the park, they denied knowledge of any special arrangement with the Ik people. UWA rangers have instructions to arrest any unauthorised people found in the park. The Uganda Wildlife Act, 2000 has several provisions under which trespassers can be arrested and charged with illegal entry and illegal destruction of resources. Further, anyone found moving with tools associated with ASGM (and poaching) like pangas and hoes is arrested on sight.

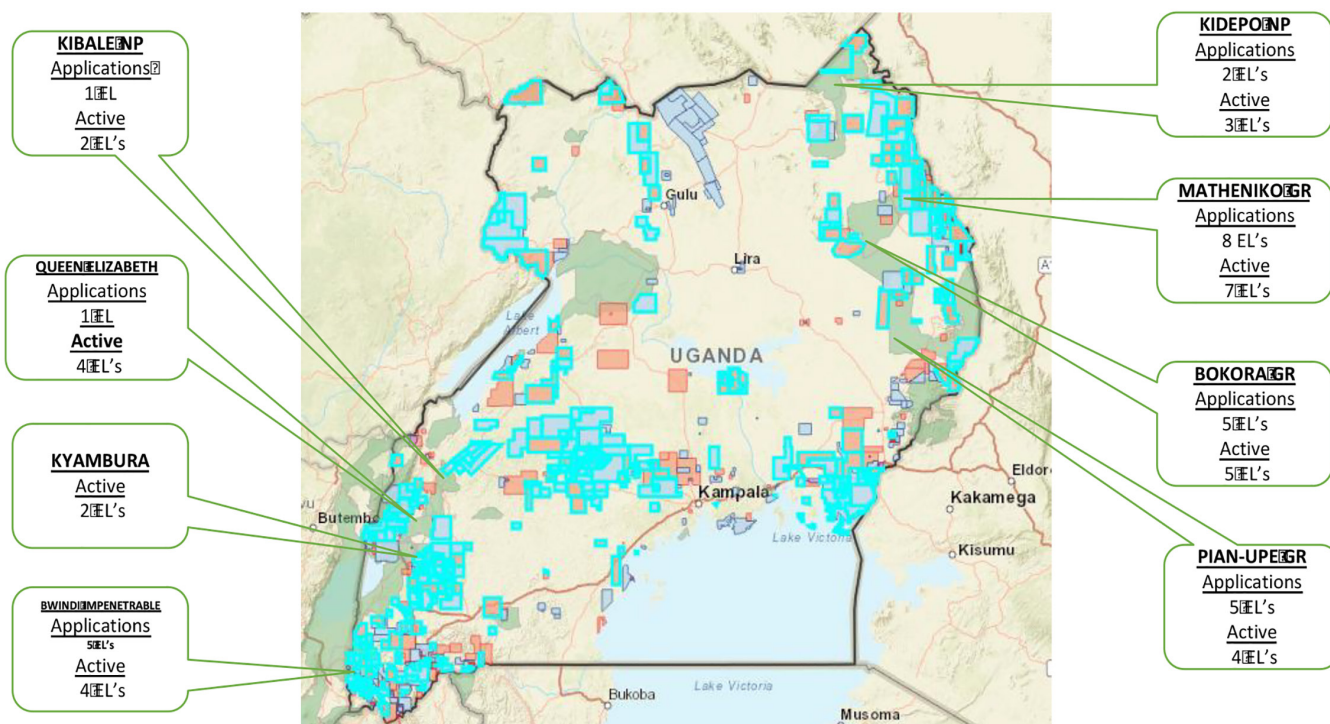


Figure 15: A map showing gold licences in protected areas. Source: MEMD 2018

### 3.12.5 Contaminated sites

Mining involving use of hazardous chemicals such as mercury and cyanide has caused water and soil contamination. The contamination results from heavy metal toxins including mercury and cyanide. Mercury is a pollutant that persists in the environment as it bio-accumulates in living organisms while moving up the food chain. The ASGM operations need significant quantities of water and as such many of the operations are located around water sources. The engagement in worst practices results in contamination of air, water and land.

#### 3.12.5.1 Assessment of environment contamination with mercury

During the NBO study of 2019, preliminary investigation of mercury contamination levels in the environmental media was undertaken. The main objective was to assess the extent of mercury use and environmental contamination/pollution, exposure among ASGMs in Uganda. The report constituted findings from a similar collaborative study by UNACOH titled, "Assessment of Occupational, Environment



and other Impacts from use of Mercury in Artisanal Small – Scale Gold Mining (ASGM) In Uganda<sup>66</sup>. Additional sampling was tailored to generating additional information from the potential contaminated sites hot spots and thus the sampling plan was varied.

### 3.12.5.1.1 The Assessment Methodology

The methodology followed the sites identification strategies, protocols and guidelines formulated based on the UNIDO 2010 POPs Contaminated Sites Management Toolkit and the IPEN, 2016: Guidance on the identification, Management, & Remediation of Mercury Contaminated Sites.

The Preliminary Site Investigation (PSI) generally consisted of a review of site history (desktop study), site inspections and interviews with stakeholders. This generally assessed the present and historical site use and management practices. Visual observation of manufacturing or other operations known to have used or emitted a particularly hazardous contaminant; observed adverse effects in humans, flora, or fauna presumably caused by the proximity to the site; physical or analytical results showing contaminant levels; and reports from the community to the authorities of suspected releases. It is also documented that suspected contaminated sites may be identified without specialised technical equipment (Basel convention 2012) by use of visual observation of the site conditions.

The tiered approach implies that Stage 2 of the preliminary site investigation was conducted only if Stage 1 indicated a likelihood of mercury contamination at the site or if there was insufficient information to conclude that there is no potential for mercury contamination. The objective of Stage 2 was to confirm the presence or absence of the suspected contaminants identified in Stage 1 and to obtain more information about them. This stage involved development of a sampling plan and sampling of relevant environmental media. The field sampling was followed by laboratory testing.

### 3.12.5.1.2 The Sampling Design Strategy

The sampling design strategies for conducting contaminated site assessment are recommended to factor in conditions unique to the sites being considered, including data gaps, exposure potential and the available resources among others<sup>67</sup>. The sampling strategy used combined both judgemental sampling and statistical cross-sectional approach

Judgmental sampling involves selection of sampling units (i.e., the number and location and/or timing of collecting samples) based on knowledge of the sites condition under investigation and on professional judgment. The judgemental sampling design was undertaken to cater for additional potential hotspots and enrich the earlier collaborative UNACOH study findings within the tight project schedule and budget. It targeted to meet the main study objective of screening sites for presence or absence of mercury contamination at levels of concern. It is easy to implement but with limitations especially on reliability to evaluate precision of estimates. If contamination is found, follow up comprehensive statistical designs should follow<sup>68</sup>.

The judgemental sampling was carried out following a sampling plan detailing the specific matrix. The sampling method used for the liquids and solids was both discrete and composite in some cases. The number of samples picked depended on the site characteristics, and professional judgement and using prior information on the site and ASGM process. The sampling targeted the direct (on-site) screening sampling (soil and water) at suspected contaminated sites and indirect sampling of nearby food sources such as crops and fish. These are reported to provide strong indicators of the presence of contaminated sites and the migration path of pollutants leaving the site. A total of 57 samples were collected from various districts with ASGM activities.

Under the statistical sampling plan, 64 samples (4 samples of each category of water, sediment, soil, plants, and fish) were selected from the four randomly selected districts with ASGM. The Environmental sample

<sup>66</sup>Assessment of Occupational, Environment and other Impacts from use of Mercury in Artisanal Small – Scale Gold Mining (ASGM) In Uganda by UNACOH, 2018

<sup>67</sup>EPA, 1998; Quality Assurance Guidance for Conducting Brownfields Site Assessment.

<sup>68</sup>EPA QA/G-55, 2002; Guidance on Choosing a Sampling Design for Environmental Data Collection.

assessment was undertaken in the districts of Busia in Eastern Region, Ibanda in Ankole, Mubende in Central and Amudat in Karamoja as shown in the table 16.

Table 16 Ecosystem sampling plan

No	Region	District	Water samples	Sediment samples	Fish	Crops
1	Western	Ibanda	4	4	4	4
2	Central	Mubende	4	4	4	4
3	Eastern	Busia	4	4	4	4
4	Karamoja	Amudat	4	4	4	4
	<b>Total</b>		<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>

Source: NBO study of 2019

The sampling procedures ensured that the proper type and quality was obtained for the laboratory analysis. The sample size and preservation procedures required were confirmed by the Laboratory prior to the commencement of the field sampling. New sample containers were used. These were further pre-cleaned with nitric acid solution and purified water. All the samples were chilled and transported in cool boxes. The safety of the personnel undertaking the assessment was of high priority and sensitisation and use of Personal Protective Equipment (PPE) was highly emphasised.

Samples from environment ecosystems were collected by the environmental chemist on the study team, stored and transported to DGAL in Wandegeya based on the designed ecosystem sampling plan.

### 3.12.5.1.3 Laboratory Analysis of Samples

Laboratory analysis was undertaken to determine the presence and levels of Total Mercury, Hg (Mean-Value Mercury level) in water, sediment, fish and crop samples as indicated in Table 9. Directorate of Government Analytical Laboratory was contracted to carry out all the sample analysis. The laboratory analysis was carried out with a standard laboratory analytical method (EPA Method 245.1), using Atomic Absorption Spectrophotometric method (AAS) with a Mercury Vapour Unit.

The analytical method<sup>69</sup> used was a wet digestion/cold vapour atomic absorption spectrometry (CVAAS). The digestion methodology was adapted from the Mercury Analysis Manual developed by the Ministry of the Environment, Japan<sup>70</sup>. This analytical method is applicable to the digestion of biological samples (fish, hair, blood, urine) as well as various solid samples such soils and sediments. About 0.5 g of finely pulverized sample was leached with 2 mL of nitric-perchloric acid (1+1). Then, 5 mL of sulphuric acid [concentrated (sp.gr. 1.84) - Sulfuric acid, 0.5 N] and 1 mL of water were added and heated to 230-250 °C on a hot plate for 20 minutes. After cooling, the digested sample is made up to 50 mL with mercury-free water.

The measurement of total mercury followed the USEPA method 245.1 with a Cold Vapour Atomic Absorption Spectrometry (CVAAS). The detection limit of the method is about 1 ppb (ng/g) for 0.5g of sample.

### 3.12.5.1.4 Analysis and Results

The laboratory analysis determined total mercury contamination levels in various environmental media (community water sources, soil, foodstuffs, tailings, sediments and fish) sampled from the ASGM sites which were statistically selected in districts of Busia, Ibanda, Mubende and Amudat. The results are presented in table 17.

The study findings of the environmental water samples of community portable water sources such as spring well, boreholes and ponds revealed highest mercury levels in Busia with mean value of 31 µg/L and lowest at non-detected levels in Amudat District. In the three districts of Busia, Ibanda and Mubende, all levels were above the WHO permissible levels for drinking water of 1 µg/L. All the mean values from the study districts of Busia, Ibanda and Mubende had less than detectable mercury levels and lower than average screening levels (countries have different values but range between 1 – 10 mg/kg) used in identification of contaminated sites which may trigger further investigations and possibly remediation.

<sup>69</sup>Veiga, M.M., Baker, R.F. (2004): Protocols for Environmental and Health Assessment of Mercury Released by Artisanal and Small -Scale Gold Miners, GEF/UNDP/UNIDO, Vienna, Austria.

<sup>70</sup>Mercury Analysis Manual developed by the Ministry of the Environment, Japan 2004.

The additional results under the NBO study of 2019 shown in table 18 were got from sampling of soil within the ASGM site and surrounding areas with varying land use activities like agriculture, animal grazing, and residential camps that could act as pathways to mercury exposure. A big variation was noted in the contamination levels from below detection levels (LOD= 1 ug/L) to those over two hundred-fold the permissible concentrations. In Namayingo, a mean value of 10 ug/L for borehole and lake water was found. The ponds or wells and some river water like River Akama in Busia had levels up to 230 ug/L. This could be attributed to the observed multiple ASGM activities (panning) along the river and siltation.

Table 17 Mercury levels in water and soil samples

District	Total Mercury (Mean- Value Mercury level)			
	Water		Soil	
	Result THg (µg/L) or ppb	Permissible levels	Result THg (µg /g) or ppb	Permissible levels
Busia	31	WHO Permissible limits of drinking water is 1 µg/L; US EPA, Maximum Contaminant Level in Drinking water is 2 µg/L	<1	IPEN Screening Value: 10 mg/kg elemental or methyl mercury
Ibanda	13		<1	
Mubende	11		<1	
Amudat	<1		<1	

Source: The NBO study of 2019

Table 18 Mercury levels in water sources, effluent, tailings, fish and crops selected by the judgmental plan

Sn	Sample category	No. of samples	Results Total Hg [ppb] Mean Results	Reference Guideline Values
1	Community drinking water sources - wells, boreholes	10	Range <1 – 11	WHO Permissible levels, 1 ug/L THg
2	Surface water - river water down stream of ASGM activities	8	Range <1 – 230	
3	Wastewater/process effluents/panning ponds	8	Range <1 – 297.0	Uganda Nat. Effl. Stds: 10 ug/L
4	Mining tailings on site where Cyanide is used or camps	8	Range <1 – 304	IPEN Screening Value: 10 mg/kg
5	Soil/sediments	11	Range <1 – 1.960	
6	Fish (Nile Perch, Tilapia, Mud fish, Silver fish)	7	Range <1 – 297.5	FAO/WHO 0.5 ug/g MeHg
7	Other Foods-	7		FAO/WHO 0.5 ug/g MeHg
	Yams	2	Mean: 1.790	
	Potatoes	2	Range <1 – 400	
	Cassava	3	Range: 195.5– 306.9	
	Dried Tea Leaves - Buhweju farms	3	Mean: 1	
	<b>Total</b>	<b>57</b>		

Source: The NBO study of 2019

### 3.12.5.1.5 Mercury contamination levels of process effluents and tailings

An assessment of potential mercury contamination levels in the washing ponds and process effluents from the panning areas was done. The findings revealed non-detectable levels in samples from Buhweju and Bushenyi. In general, high concentrations above the National Effluent Standard of 10 ug/L THg were detected in most of the washing areas of suspected use of mercury sampled to the magnitude of 257 ug/g at Tiira Site in Busia and an isolated high concentration of 829 ug/g in Kaabong. The presence of such a concentration in Kaabong could be considered a contradiction to the reported non-use of mercury. Indeed, use of mercury in some of these areas cannot be ruled out.

### 3.12.5.1.6 Cyanide leaching of mercury contaminated tailings

An investigation into the ASGM practices of cyanide leaching of mercury contaminated materials which is one of the listed worst practices targeted for elimination was done. Samples of the raw material found at Katenga I site in Buhweju using cyanide were analysed and mercury concentration were found below detectable levels. It was also observed that the scale of operations differ. The plants using cyanide are

mechanised with use of excavator tractors and trucks to ferry the materials. Therefore, this could make a mix of the raw materials and that could account for the non-detectable mercury levels.

### 3.12.5.1.7 Mercury contamination of the food chain

The findings of the mercury contamination levels for all the food crop samples of yams, cassava, potatoes, collard greens (sukuma wiki), and bananas sampled in or around ASGM areas were found to be at trace levels. In some districts like Busia and Namayingo where mercury is used in ASGM, cassava and fish are some of the staple foods. The level of mercury in these food crops was below detection levels. However, studies done in Ghana on the soil and cassava crop from farms located within goldmines suggest serious mercury pollution<sup>71</sup>.

A limited number of fish samples analysed included Nile Perch and Silver fish from Namayingo at the Lake Victoria shores and mudfish from River Giriki in Amudat. The level of contamination was found less than the average FAO/WHO or Codex guideline values of about 0.5mk/kg. Fish consumption is reported to dominate the pathway for exposure to methyl mercury for most of human populations.

Tea leaves also attracted probing following the site visit observations in the hilly western parts of the country where some tea plantations were found to share boundaries and downstream of some ASGM sites with suspected mercury use. However, the limited sampled dried tea grown from Buhweju and Bushenyi tested below detection levels. In related studies outside Uganda, the Canadian Food Inspection Agency (2011) surveyed mercury in tea and the results revealed 47% dried tea had detected residues of mercury<sup>72</sup>.

## Conclusions

There is a general disregard for observance of environmental standards in the ASGM sector. This could partly be brought about by the low levels of awareness on sustainable mining and inadequate inspection and monitoring of ASGM sites by authorities in charge.

## Recommendations

- i. There is need to harmonise and create synergies among the different MDAs, laws and regulations regarding mining in protected areas among all responsible government institutions.
- ii. In addition to harmonising the laws, environmental inspection and monitoring guidelines should be developed. These will guide the mines inspectors, environment inspectors and district local government officials on the standards that should be upheld by ASGMs and other actors in the sector.
- iii. ASGMs should be trained on environmental protection and sustainable mining practices such as mining by the use of shafts and not pits and restoration of abandoned mines.
- iv. Create and promote alternative livelihoods to reduce the severity of mining on the environment and in protected areas.

### 3.12.6 Human health information

During the NBO Study of 2019, it was observed that ASGM sites in Uganda have glaring gaps in observing health standards at all levels of the value chain i.e. from extraction to processing. The miners claim they cannot keep up the health standards due to the lack of funds to implement and maintain these standards.

The baseline study also found the following:

- i. The toilets were far from reach, and some miners would end up using the nearby bush.
- ii. There was no evidence of access to safe water in many sites visited. The response from interviews conducted in Buhweju District showed that the water was collected from the open water sources downhill.
- iii. The miners have no personal protective gear. The women for example, who participate in crushing of stones and others panning, use their bare hands to hold the rough hammers and stand for long hours in water that they use for panning. This water is contaminated which poses health risks to

<sup>71</sup>Adjorlolo Gasokpoh et al, 2012; Mercury in the surface soil and cassava, near Goldmines at Bogoso & Pretea Bhana; Environ Contam Toxicol (2012) 89: 1106- 1110.

<sup>72</sup>Sandra Watrak et al, The Content of Toxic Metals in Different Types of Tea and their Impact on Consumers Health, Kosmos Vol.65,4, 563-571, 2016.

- i. women. It was observed that they had a lot of injuries, including scars, on their hands and other body parts. The eyes were also not protected.
- ii. There were only a few private drug shops near the sites. Medicines sold in mining camps were, however, more expensive than in other urban centres. The nearest health centres lie within a distance of approximately three kilometres. There was also no evidence of First Aid tools and kits, as well as emergency response in case of an occupational accident.
- iii. The pits or shafts were covered with rainproof canvas to avoid wetting and flooding. The same were found to be very deep with minimal lighting, and ventilation. There were reports of miners suffocating from insufficient oxygen during activities. The deep tunnels are risky, because the ore is physically and manually carried from the pits. There were reports of deaths from suffocation and collapse of the mine, although this information was not easily verified.

### 3.12.6.1 Human Sample Assessment

In order to build synergies with the health assessment studies in the ASGM sector, a collaborative partnership between NEMA and UNACOH was formed under the NBO study of 2019. The human biomonitoring had to address the technical requirements of ethical considerations for which approval was to be acquired first.

The study protocol was presented to the Makerere University School of Health Sciences Research Ethical Committee who approved it following incorporation of information according to their critique. Letters of consent translated in local languages of the selected mining districts were made. The protocol was then presented and later approved by UNCST. DHOs in selected districts were aware about the study and they nominated officers to participate in health assessment and collect samples from respondents. The DHOs would later be responsible for following up and treatment of respondents with high mercury levels in their bodies.

### 3.12.6.2. Sampling Plan

A cross-sectional study employing quantitative methods was used. The Kisch and Leslie sample size determination formula was used to determine the sample size (160) of study participants assuming a prevalence of 5% (Paruchri et al, 2010),  $\alpha=5\%$  and 10% non-response rate. Multi-stage sampling was used to select the final sample size of study participants. Cluster sampling was then used to randomly select one district within each region. Two mining sites were then randomly selected from each of the selected districts.

The final sample of study participants was drawn from these mining sites using stratified sampling [strata included extractors (diggers, ore carriers, driers, stone crushers)], processors (including panners) and burners/buyers and others. Tools were pre-tested in mining sites not selected for the study. Research assistants were trained on ensuring ethical consideration in handling human subjects as well as biosafety measures of handling human samples.

### 3.12.6.3 Sample Size

The study was conducted in six districts with active ASGM in the four regions where gold deposits are found for example Kicuzi and Rukiri mining sites in Ibanda and Katanga I and II in Buhweju (Western Region), at Lubaali and Kitumbi mining sites in Mubende (Central Region), at Chepkararat and Cheptakol mining sites in Amudat (Karamoja Region), at Tiira, Syanyonja mining sites in Busia and Buheere and Nakudi in Namayingo (Eastern Region). Study participants were selected from ASGMs found working at two mining sites in the four and additional two making it six mining districts in Uganda.

With regard to the sampling plan and sampling procedure for biomarker data, participants were randomly selected and included in the health assessment. A target of 10 samples of blood and 10 samples of urine was planned to be collected from each selected ASGM site and included male and female persons. Sample collection, packaging, storage, transportation, and so on were based on the WHO/UNEP Protocols for Sample Collection Procedures for Urine and Blood.

### 3.12.6.4 Laboratory analysis and procedures

The laboratory analysis was conducted by DGAL in Wandegaya, Kampala. It focused on the presence and levels of Total Mercury, Hg (Mean- Value Mercury level). It was carried out with a standard laboratory analytical method (EPA Method 245.1), using AAS with a Mercury Vapour Unit.

### 3.12.6.5 Data analysis

Quantitative data was coded, entered using Epi data version 3.1 and imported into STATA version 12 for data cleaning and analysis. Data analysis was done using STATA version 12.0. Descriptive analysis was used to generate information on the use of mercury, average level of mercury in human samples (urine and blood). Categorical data i.e. gender, marital status, level of income was summarised using frequencies and percentages. Numerical data i.e. mercury level assessment was summarised using means and standard deviations for normally distributed data, and median and inter-quartile range for data that is not normally distributed. Odds ratios were used to analyse the relationship between mercury-related symptoms and mercury exposure. A logistic regression model was used to adjust for potential confounders. A backward stepwise method was used to eliminate variables with  $p > 0.05$  in the process to adjust for potential confounders. The findings were reported as odds ratios, confidence interval and independent variables found to have  $p$  value  $\leq 0.05$  at 95% confidence interval were considered statistically significant in the final model. Non-parametric tests including Kruskal Wallis test and Wilcoxon signed rank test were used to compare mercury levels in urine and blood among different categories of ASGMs.

### 3.12.6.6 Results and discussions

Human biomonitoring is defined as the assessment of human exposure to environmental chemicals by measuring the chemicals or their metabolites in human blood, urine, saliva, hair or some tissue. In this study, total mercury concentration levels were determined in blood and urine.

As shown in Table 19, Mubende District had the highest median blood levels of mercury ( $136\mu\text{g/l}$ ) relative to Busia ( $60\mu\text{g/l}$ ), Ibanda ( $43\mu\text{g/l}$ ) and Amudat (less than  $0.001\mu\text{g/l}$ ). A statistically significant difference in median mercury blood levels in the different regions was observed. The Kruskal-Wallis equality-of-populations rank test indicated a statistically significant difference in median mercury blood levels in the different regions (chi square value  $\chi^2 = 15.147$ ,  $df=2$  and  $p$  value  $=0.0005$ ). Similarly, Mubende had the highest median blood levels of mercury ( $105.5\mu\text{g/l}$ ) relative to Busia ( $70.6\mu\text{g/l}$ ), Ibanda ( $58\mu\text{g/l}$ ) and Amudat (less than  $0.001\mu\text{g/l}$ ).

Using the Kruskal Wallis test there was a statistically significant difference in the median mercury urine levels in the different regions (chi square value  $\chi^2 = 11.664$ ,  $df=2$  and  $p$  value  $=0.0029$ ). This was largely attributed to the practice of mercury use, where for example, is a major practice in Busia District.

Table 19 Human Biomonitoring Results

District sampled	Total Mercury (Mean-Value Mercury level)	
	Blood Hg ( $\mu\text{g/l}$ )	Urine Hg ( $\mu\text{g/l}$ )
Mubende	136	105.5
Busia	60	70.6
Ibanda	43	58
Amudat	< 1	< 1
Buhweju	< 1	< 1
Namayingo	69.48	68.78

Source: The NBO study of 2019

Although the results indicated that most miners in all districts had been exposed to mercury, the results for Amudat District indicated insignificant results for mercury in blood and urine. This could be due to the fact that mercury has only been recently introduced to Amudat (about two years before this assessment was made) and mercury use has not spread in all the mining sites. Another explanation could be that the

samples were affected by the extremely hot temperatures in Karamoja Region combined with the long distance to and from Karamoja to DGAL in Kampala.

Table 20 shows the acceptable threshold levels<sup>73</sup> according to the UNEP human biomonitoring standards.

Table 20 Toxicologically established threshold limits for mercury in blood and urine

Agency	Hg-blood (µg/L)	Hg-urine (µg/L)
<b>Human biomonitoring</b>	5	7
<b>HBM II</b>	15	25
<b>BAT for metallic and inorganic Hg</b>	25	100
<b>BAT for organic Hg</b>	100	
<b>BEI (Biological exposure index)</b>	(after working) 15	

Source: UNEP/WHO, 2008

**Note:**

- \* HBM = Human Biomonitoring;
- \* BAT = Biologischer Arbeitsstoff-Toleranzwert;  
The BAT value is the maximum allowable concentration of a substance or its metabolites in body fluids. It should guarantee that the health of healthy people is not affected when being exposed eight hours a day or 40 hours a week.
- \* BEI = Biological Exposure Indices

Various symptoms associated with mercury exposure and poisoning were recorded during health assessment of 160 respondents in four districts (Busia, Ibanda, Mubende and Amudat). Shown in table 21, the symptoms which were statistically significant following adjusting of known confounding factors included trembling of hands (Odds Ratio 24.09,95% Confidence Interval 1.71 to 338.74); eye problems (10.97,1.97 to 62.48), chest pain (9.02,3.31 to 24.60), numbness (8.51,2.11 to 34.36), back pain (6.21,2.20 to 17.50), fatigue and stress (5.38,1.94 to 14.88), headache (4.67,1.93 to 11.28), dizziness (3.84,1.52 to 9.74) joint pain (3.23, 1.26 to 8.33) and respiratory problems ( 3.18,1.01 to 10.12).

Table 21 Symptoms associated with exposure to mercury

Symptoms	Odds Ratio (adjusted of known confounding factors)	95% Confidence Interval
<b>Shaking of hands and head*</b>	24.09	1.71 to 338.74
<b>Eye problems*</b>	10.97	1.97 to 62.48
<b>Chest pain*</b>	9.02	3.31 to 24.60
<b>Numbness*</b>	8.51	2.11 to 34.36
<b>Back pain*</b>	6.21	2.20 to 17.50
<b>Fatigue and stress*</b>	5.38	1.94 to 14.88
<b>Headache*</b>	4.67	1.93 to 11.28
<b>Dizziness*</b>	3.84	1.52 to 9.74
<b>Joint pain*</b>	3.23	1.26 to 8.33
<b>Respiratory problems*</b>	3.18	1.01 to 10.12

Source: The NBO study of 2019

\*Statistically significant association means that p values are less than 0.05 and 95% Confidence Interval not including zero. Adjusted OR obtained from a logistic regression model following adjustment of potential confounders (including neurological disorders, malaria, handling kerosene, smoking, alcohol use, pesticide use, use of whitening soap, hepatitis and tuberculosis)

### 3.12.6.7 Knowledge of health hazards related to mercury

A total of 56 (46%) did not know about the health hazards of mercury at all. This was more marked in the district of Bushenyi with 22 (73%) having no knowledge of health hazards of mercury use as shown in

<sup>73</sup>UNEP/WHO, 2008, Guidance for Identifying Populations at Risk from Mercury Exposure. Annex B, No 9: Decision for the Diagnosis of Possible Exceedance of Chronic Mercury Threshold Limits for Mercury

table 22. The respondents in Buhweju (60%), Busia (69%) and Namayingo (61%) could mention at least two mercury related health hazards.

Table 22 Knowledge of Hazards related to Mercury

	Yes	No
<b>Busia</b>	18 (69%)	08 (31%)
<b>Namayingo</b>	16 (61%)	10 (39%)
<b>Buhweju</b>	27 (60%)	16 (40%)
<b>Bushenyi</b>	08 (27%)	22 (73%)
<b>TOTAL</b>	<b>69 (54%)</b>	<b>56 (46%)</b>

Source: The NBO study of 2019

From table 23, most of the respondents did not know the way through which mercury could enter the human body. None of the respondents in Busia mentioned inhalation, eating fish and ingestion as an entry of mercury into the body yet these are the common modes of entry.

Table 23 Knowledge of Sources of Mercury Poisoning

Districts	Inhalation	Ingestion	Skin	Eating Fish	Eyes
<b>Busia</b>	0	0	14	0	21
<b>Namayingo</b>	16	5	13	5	20
<b>Buhweju</b>	<b>35</b>	15	29	4	39
<b>Bushenyi</b>	<b>5</b>	4	6	0	13
<b>Total</b>	<b>56</b>	24	62	9	93

Source: The NBO study of 2019

Most respondents mentioned skin, 49% (n=62) and eyes, 73% (n=93) as the modes of mercury entry into the body. As shown in chart 3 below, communities from Bushenyi had the worst knowledge related to entry of mercury into the body with none of the respondents mentioning eating fish as the mode of entry. Only 16% (n=5) and 13% (n=4) mentioned inhalation and ingestion respectively with only 20% (n=6) mentioning skin contact of mercury. Buhweju respondents had the most knowledge compared to the rest of the districts with 78% (n=35) and 87% (n=39) mentioning inhalation and contact through the eyes respectively as the modes of mercury entry into the body.

### 3.12.6.8 Knowledge on mode of prevention from exposure to mercury

Most of the respondents mentioned washing hands 73% (n=93) and use of gloves 70% (n=85) respectively as ways of prevention of exposure to mercury. As shown in table 24 below, respondents in Busia and Bushenyi had inadequate knowledge on preventive mechanisms beyond use of gloves and washing hands. None from Bushenyi and Busia mentioned avoiding eating fish and burning the amalgam in the chimney as preventive mechanisms.

Buhweju had most knowledge on preventive methods with over 89% mentioned use of gloves and washing hands as preventive methods while 77% (n=35) mentioned the use of masks.

Table 24 Knowledge on mode of Prevention of Mercury Exposure

Districts	Use of Filter Masks	Burning Amalgam in Chimney	Washing Hands	Use of Face/ Nose Masks	Stop eating Fish	Use of Gloves
<b>Busia</b>	0	0	18	5	3	10
<b>Namayingo</b>	0	5	20	10	5	15
<b>Buhweju</b>	5	33	40	35	10	40
<b>Bushenyi</b>	0	0	15	15	0	20
<b>TOTAL</b>	<b>5</b>	<b>38</b>	<b>93</b>	<b>65</b>	<b>18</b>	<b>85</b>

Source: The NBO study of 2019



### 3.12.7 Conclusions and recommendations

The National Baseline Overview study confirmed the existence of bad practices such as mercury use in gold production; open air burning of amalgam in residential areas, mining camps; and, cyanide leaching of mercury containing tailings. These ultimately account for the mercury contamination levels in both human beings (biomonitoring) and in the environment.

Furthermore, health care professionals in the districts under study did not have a high index of suspicion for Hg related health needs and, therefore, did not diagnose and treat mercury poisoning. No potential mercury-related health effects could be investigated in all these districts. In Kaabong it was mentioned that mercury poisoning was not one of the common topics discussed at district level.

The Health Management Information System (HMIS) tools which are for data collection and reporting to the health system do not have items to capture Hg related diseases. Therefore it is never reported on because information is never collected.

There was no protocol, guidance or policy to facilitate diagnosis and management of Hg health effects. In Kabale, respiratory illnesses were reported as the first burden of diseases and reference was made to 30 cases of acute respiratory cases which occurred in Rukiga during the same period and were filed as unclear diagnosis after following the protocol for common respiratory diseases. In Buhweju it was emphasised that mercury protocols should be developed and mastered just like tobacco smoking.

As proven by the results, mercury poisoning affects miners and communities around the mines. However, this is ignored mainly due to ignorance and the inability of the health care workers to diagnose mercury poisoning.

- a) There is need to integrate the mercury levels contamination as parameter in the routine testing plans for water and other baseline data assessment studies in these ASGM areas.
- b) A plan and budget should be incorporated into the relevant authorities' programmes so as to enable periodic national monitoring programmes to evaluate the effectiveness of the different interventions until mercury use is phased out.
- c). Deliberate interventions to have the laboratory services at national level accredited for mercury analysis especially for the human samples should ne undertaken.

### 3.13 Summary of challenges documented under the National Baseline Overview study

The NBO study of 2019 revealed challenges faced by the ASGM sector. These challenges are listed in table 25.

Table 25 Summary of challenges faced by the ASGM sector

SNo.	Challenge	Summary
1	Inadequate policy and regulatory framework governing the management of mercury	The findings from the National Overview of mercury use in ASGM in Uganda indicated that there are weaknesses in the regulatory framework managing mercury in Uganda. There is no specific law for management of not only mercury but also chemicals of utmost concern. There is need to update and align the existing regulations to incorporate mercury use in ASGM.
2	Delayed formalisation of ASGM which would enable miners' registration, undertake awareness raising among priority groups and build capacity through training on mercury management	The ASGM runs informally and is disorganised. There is not much awareness on mercury issues among risk groups, the population at large or even government agencies and institutions having responsibilities pertaining to mercury and mercury containing wastes. There are a number of studies that have been conducted and these reports provide a good overview of the situations pertaining to hazardous waste management, but the issue related to mercury is only slightly addressed.

3	Inadequate monitoring and reporting capacity on mercury levels in food, soil, water and air	Several laboratories have the capacity/equipment to analyse mercury levels in soil, water and biological samples (e.g. fish). There is some capacity for the analysis of bio-monitoring (e.g. blood and urine for humans) but no capacity yet for monitoring air levels. Monitoring of a few environmental media is conducted (e.g. landfill leachate, priority water bodies), fish for export to the EU among others)
4	Poor regulation of ASGM activities in protected areas	The study identified a discord between MEMD, NEMA and NFA in the manner in which licences are granted over protected areas. The lack of co-ordination and unsynchronised laws has led to the issuance of licences within protected areas. More to this, DGSM equally lacks the capacity to monitor ASGM activities in protected areas. Mining involving use of hazardous chemicals such as mercury and cyanide has also caused water and soil contamination. ASGM operations need significant quantities of water and as such many of the operations are located around water sources. Some operations are also located within wetlands, forest reserves and protected areas.
5	Cross-cutting issues: Child Labour, Women, Minority Groups and OHSE issues	At least 45% of miners in ASGM are women with the highest number in the Karamoja Region. Nevertheless, ASGM remains typically patriarchal, deliberately preventing women from attaining their full potential. Karamoja Region also leads in child labour in mining and terrible OSHE conditions at mine sites although none of the mining regions is fully OSHE compliant. Generally, women are involved in the processing phase of the value chain and are hence more exposed to mercury in the panning and burning processes. Children involved in mining are missing school while the two minority groups i.e. Ik and Dodoth lack adequate political representation at local and national level.
6	Unfavourable macro and micro economic conditions for miners in ASGM	ASGM actors have no access to affordable credit to finance their operations because they are informal, highly mobile and unpredictable. This also affects their ability to form localised saving groups. As a result, they are permanently under the control of middlemen who provide them with start-up capital and inputs such as mining equipment and mercury. At national level, the contribution of the ASGM sector to the country's GDP remains far below its actual potential mainly due to laissez faire fiscal regime and a free black gold market.

### 3.14 Limitations of the National Overview Study

The National Overview set out to cover 86 artisanal and small-scale gold mining sites within 14 districts in Uganda. However, in the course of data collection, it was discovered that some of the originally mapped sites in Kassanda District and the Karamoja Region had been abandoned. New sites that were not originally in place were also discovered. This is not surprising because gold tends to lure miners to hot spots during gold rushes.

In Central Uganda particularly Kassanda District, the majority of the originally mapped ASM sites were abandoned in September 2017 after a presidential directive was issued, to evict all the illegal ASM. These were operating in an Exploration Licence area belonging to AUC Mining Co. Limited and the area is highly restricted.

Because of these changing patterns of ASGM, the detailed assessment was therefore not able to identify and cover all the 86 sites as earlier planned but did cover 82 sites.

The NBO study of 2019 did not establish the approximate number of children engaged in gold mining.

## 4.0 National Objectives And Reduction Targets

### 4.1. Problem Statement

The National Baseline Overview Study of the ASGM sector, including the baseline estimates of mercury use and practices which was conducted in 2018, found that 15,000kg of mercury is used in ASGM practices every year. In Addition to this, the MIA which was undertaken in 2017 found the total mercury emissions and releases in Uganda to be 31,087kg/yr with 19,926kg, 3,719 kg, and 4,770kg being released to air, water and land respectively<sup>74</sup>. Of the total emissions and releases, ASGM was found to be responsible for 18,495kg. The discrepancy in quantities of mercury used in ASGM as revealed by the NBO study of 2019 and mercury emissions and releases from the ASGM sector that were revealed by the MIAs assessment in 2018 may be brought out by the different methodologies used.

The study further discovered prevalence of worst forms of practices in the ASGM sector such as whole ore amalgamation, open burning of amalgam or processed amalgam, burning of amalgam in residential areas/mining camps, settlements and dwellings within the ASGM mining camps and cyanide leaching in mercury contaminated sediments, ore or tailings without removing mercury.

There is lack of national accredited laboratories to adequately diagnose mercury related complications with the only available uncertified national laboratory located in the capital city of Kampala which is about 200 to 400km away from majority of the ASGM areas. Health practitioners and doctors in the national health centres, grade 1 to 3 which are near the ASGM areas also lack training and knowledge on early detection of mercury contamination/poisoning and a clear understanding of mercury and its impact to human health and the environment.

The complimentary study undertaken by NEMA on MAPs in 2018 further revealed that customs entry points and ports through which these MAPs are imported into the country lack the capacity to test and determine the mercury levels in those products. It was also discovered that there is no concerted regional effort to control cross border movement of MAPs which end up in the hands of ASGM middle men. The informal nature of the ASGM sub sector which is not adequately monitored by the responsible government agencies makes it easy for middlemen most especially gold buyers and smelters interacting with ASGM to easily supply mercury to them in the absence of government oversight.

The study revealed the disorganisation of the ASGM sector due to lack of the definition of who qualifies to be an artisanal or small-scale gold miner. The regulatory framework for ASGM operations is inadequate. There is need to promote more sustainable activities in this sector, and to reduce and eventually eliminate mercury use in the ASGM sector.

It was observed that there is unrestricted mercury use by the ASGMs who are not properly regulated and this aids the illegal supply and trade of mercury and does not deter the miners from engaging in worst practices in gold processing by the use of mercury.

There is a gross lack of awareness of miners on mercury effects on human health and environment which leads them to continue using the chemical, poorly disposing of it after gold processing and not attempting to adopt safer gold processing methods. Strategies to bridge the existing communication gap between ASGM and key institutions will be implemented including addressing the inadequate legal framework on the management of mercury.

<sup>74</sup> NEMA, 2017, The National Minamata Initial Assessment (MIA) Report

Environment and health issues in the ASGM sector stood out as well during the NBO study of 2019. There is disregard for environmental protection leading to air, water and land degradation in and around the mines. The health sector also suffers due to the poor capacity of health workers in detecting, diagnosing and treating mercury poisoning. In addition to this there is no accredited laboratory in Uganda at which to carry out the testing of mercury contaminated samples.

These and many other issues lead to the spreading practice of mercury use in gold processing which in turn affects the miners and mining communities.

## 4.2. Goal

The goal of the National Action Plan for Artisanal and Small scale Gold Mining in Uganda is to **eliminate mercury access and use, as well as the releases and emissions of mercury to the environment by ASGM so as to protect human health and the environment.**

Both the MIAs study of 2018 and the NBO study of 2019 revealed that, the quantity of mercury emissions and releases from Artisanal and Small scale Gold Mining in Uganda is very high and contributes the most to the overall country emissions and releases of mercury. This NAP seeks to take actions that will phase out and eventually eliminate the use of mercury in Uganda's ASGM sector.

The NAP during its implementation will contribute to strategies under different national and international agendas. These include Uganda's NDP III as well as national SDG targets.

The NDP III recognises the minerals sector as being responsible for promoting and ensuring national development and utilisation of mineral resources in a safe and sustainable environment for socio-economic development. This NAP will contribute to the achievement of the strategies and interventions on the minerals sector. Specifically, Objective 2 of the NDP: **Increase monitoring and regulation in the mining sector** outlines the following interventions:

- i. Complete the review of mining policy and legislation.
- ii. Inspect and monitor exploration and mining activities and ensure existence of health and safety standards including eliminating child involvement.
- iii. Conduct due diligence on potential investors in the sector.
- iv. Implement the strategy for restoration of derelict and abandoned mines.
- v. Mainstream and monitor operations of ASM.
- vi. Update and maintain the Mining Cadastre and Registry System.
- vii. Develop local government capacity to monitor and regulate mining activities.

The interventions under the NAP capture the above interventions that are provided for under the NDP III.

On an international level, this NAP contributes to Goal 3 of the SDGs which aims to ensure healthy lives and promote well-being for all at all ages. The NAP will specifically contribute to SDG 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

## 4.3. National objectives and reduction targets

Given that the actors in Uganda's ASGM sector use over 15,000kg of mercury per year, the following reduction targets were developed with the aim of reducing mercury access, use and release in the sector by 70% by 2024 and by 2030, completely eliminate mercury (100% elimination) in the ASGM sector.

1. To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024 through the elimination of worst practices in ASGM (these include whole ore amalgamation, open burning of amalgam, burning of amalgam in residential areas and cyanide leaching of mercury contaminated tailings), the promotion of mercury capture technologies, and the adoption of mercury-free gold processing techniques.

1. To facilitate the formalisation of the ASGM sector by 2024 through facilitating the development of a legal and regulatory framework that provides for the formalisation and regulation of ASGM, building the capacity of ASGMs and extension staff to manage the ASGM sector, establishing and defining ASGM associations, companies and cooperatives, and facilitating miners to access financial credit.
2. To strengthen stakeholder engagement in the implementation of the NAP by establishing a multi-stakeholders' working group which will be responsible for the implementation of the NAP and enhancing information sharing among key stakeholders.
3. To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024 through the development of a mercury trade tracking system, strengthening institutional capacity in detecting and analyzing samples for mercury as well as boosting regional cooperation and cross-border inter-agency collaboration on the tracking of mercury.
4. To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024 through conducting a situational analysis of public health concerns in the ASGM sector which will facilitate building the capacity of health care workers and village health teams on the health effects of mercury, diagnosis and treatment of the same and equipping health facilities with diagnostic tools.
5. To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024 through undertaking community outreach programmes to emphasise the risks vulnerable populations face in and around mine sites, introducing alternative income generating activities to vulnerable groups to reduce their exposure to mercury, facilitating the formulation of policies that protect vulnerable populations from exposure to mercury emissions and releases and implementing labour and mining regulations prohibiting child labour in ASGM.
6. To develop market-based mechanisms for the promotion of reduced mercury use by 70% by 2024 through the establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations as well as market standards to determine mercury-free gold.
7. To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030 through sensitising miners on mercury-free gold mining practices and technologies, and supporting their adoption of the same.
8. To develop, sensitise and enforce OSH standards in the ASGM sector by 2030 through the establishment of OSH standards and practices at ASGM mine sites and enhancing the capacity of institutions to carry out their duties in ensuring proper OSH practices in the sector.
9. To develop and enforce an ASGM Environment Management Strategy by 2030 through facilitating ASGMs' adherence to environmentally friendly mining practices, strengthening the conservation of protected areas and improving institutional environmental planning.
10. To continuously raise awareness and sensitisation on mercury use and its dangers in the ASGM sector through the development of a Communication Strategy and an information sharing platform under which information on mercury use and its dangers will be documented and disseminated.

Table 26 shows the challenges that will be addressed by each of the objectives above. These are challenges that were mainly observed during the National Baseline Overview study.

Table 26 Challenges to be addressed by each objective

Sn	Objective	Challenge to be addressed
1	To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70%	<ul style="list-style-type: none"> <li><input type="radio"/> Unrestricted mercury use</li> <li><input type="radio"/> The practice of processing gold with mercury</li> <li><input type="radio"/> Engaging in worst practices in relation to gold processing with mercury in ASGM sector</li> <li><input type="radio"/> Use of mercury containing tailings from ASGM by medium scale gold processors</li> </ul>
2	To facilitate the formalisation of the ASGM sector by 2024	Informal operations of the ASGM sector

3	To strengthen stakeholder engagement in the implementation of the NAP	Existing communication gap between ASGM and key institutions
4	To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024	<input type="radio"/> Illegal mercury supply/trade <input type="radio"/> Lack of a government accredited laboratory for mercury testing <input type="radio"/> Inadequate legal framework to address the poor management of mercury
5	To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024	None to low capacity of health workers in detecting mercury poisoning
6	To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024	Exposure of vulnerable populations in and around mine sites to mercury emissions and releases
7	To develop market-based mechanisms for the promotion of reduced mercury use by 70% by 2024	<input type="radio"/> No incentives provided to miners to transition to mercury-free technologies <input type="radio"/> None to low adoption of mercury-free gold processing technologies
8	To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030	None to low adoption of safer gold processing methods
9	To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030	Poor occupational, safety and health standards at ASGM sites
10	To develop and enforce an ASGM environment management strategy by 2030	Environmental (air, water, land) degradation
11	To continuously raise awareness and sensitisation on mercury use and its dangers in the ASGM sector.	Low levels of awareness of miners on mercury effects on human health and environment

#### 4.4. Schedule for the implementation of the National Action Plan

In recognition of the importance of a phased realistic implementation of the NAP, strategies and actions by the respective MDAs, and in lieu of the financial implication of this NAP, the strategies, interventions and actions have been prioritised and categorised as follows:

- \* **Short Term Intervention Strategies (ST) (by 2024):** Implementation to have commenced within one year of the endorsement of the NAP with the availability of sufficient resources allocated to undertake these activities in the first instance. The strategies and actions envisaged under this category are those deemed crucial to a phased reduction of mercury use in gold extraction and these should be executed by the year 2024 or within the first five years after the coming into force of this NAP.
- \* **Medium to Long Term (MLT) Intervention Strategies:** Implementation of these strategies and actions under this category covers those strategies that are long-term in nature and designed to eliminate the use of mercury in the ASGM sector. These actions may commence within one year of the endorsement of this NAP or within five years after the commencement of the NAP and achievement of the targets set for 2024. Some should be achieved by 2030 which is the stipulated period for complete elimination of mercury use in Uganda's ASGM sector whereas others like continuous awareness raising on the dangers of mercury and sharing information on the same will go beyond this NAP implementation period to ensure sustainability of the outcomes.

It should be noted that these strategies may overlap and NEMA and other government implementing agencies may continue to implement the short-term strategies and activities beyond the set target of

2024. Similarly, implementation of the medium to long term strategies need not wait for the completion of the short-term strategies to commence. Although achievement of some of the medium to long term strategies may be set for 2030, commencement of the underlying strategic interventions and activities may be, where necessary, executed alongside the short-term strategies right from the endorsement of this NAP.

In addition to prioritising them into two phases, the interventions will be executed according the different regions in Uganda, starting with those that produce more gold using mercury as indicated in figure 16 and table 12. Implementation of planned actions and activities will commence with the Central and Eastern regions which produce more gold using mercury.

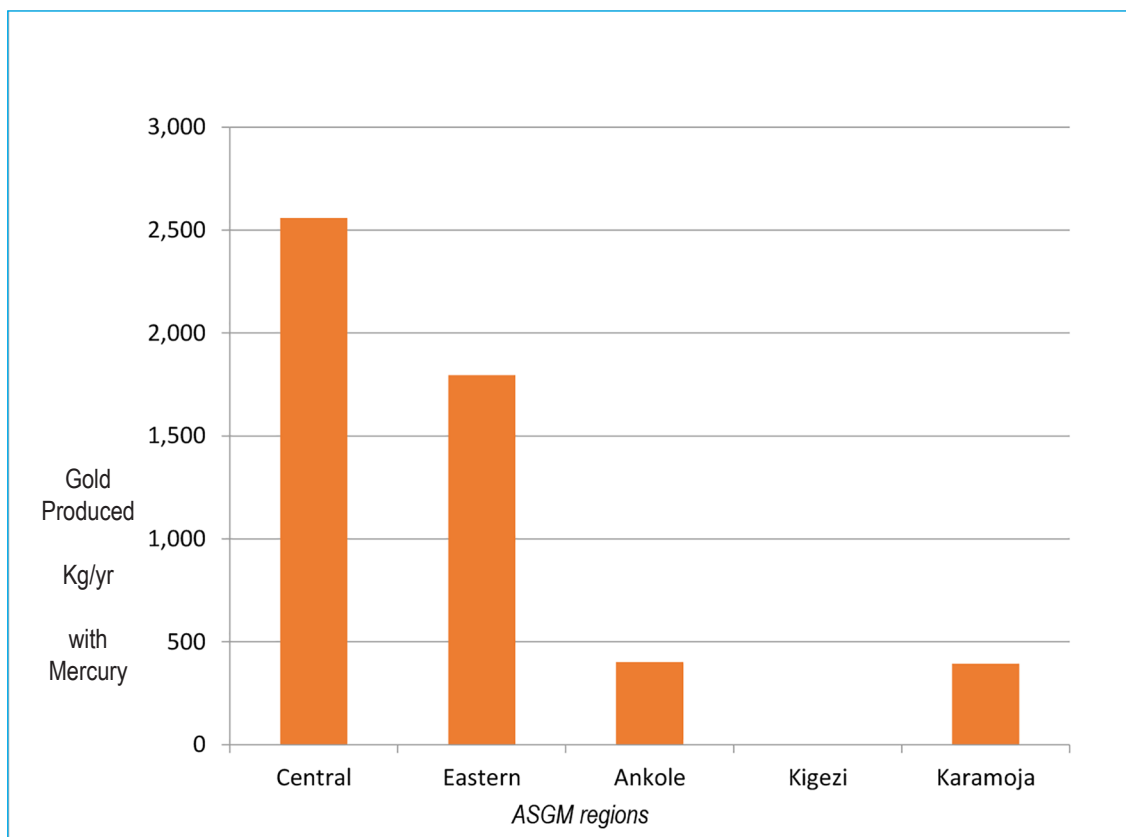


Figure 16 Amount of Gold produced using Mercury per region. Source: NBO study of 2019

The detailed and summarised implementation strategy covering the respective objectives, strategies, interventions, actions, implementation level, responsible leading government ministries and agencies and potential implementing partners is shown in Chapter 5.

## 5. Implementation Strategy

### 5.1 Introduction

This chapter identifies and summarises the different strategies and areas of intervention to be undertaken under each objective of the NAP on ASGM. The NAP on ASGM also identifies responsible MDAs and other stakeholders and allocates them roles and responsibilities in the execution of the proposed intervention, strategies and activities within the stipulated period.

### 5.2 Strategies for implementing the NAP on ASGM

The objectives of the NAP on ASGM will be implemented through the following strategies:

- a). Eliminating worst practices
- b). Promoting the reduction of emissions, releases, and risks of exposure to mercury
- c). Facilitating formalisation or regulation of the ASGM sector Involving stakeholders in the implementation and continued development of the NAP on ASGM
- d). Managing trade and preventing diversion of mercury and mercury compounds:
- e). Implementing the public health strategy on the exposure of ASGMs and their communities to mercury
- f). Preventing the exposure of vulnerable populations, particularly children, women of child bearing age, pregnant mothers and nursing mothers to mercury used in ASGM
- g). Instituting market-based mechanisms for promoting reduced mercury use
- h). Providing alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use
- i). Facilitating OSH observance at ASGM sites
- j). An environment management strategy for ASGM related operations
- k). Providing information to ASGM miners and affected communities

Table 27 summarises the implementation strategy for the NAP on ASGM. Detailed strategies and interventions are highlighted in Chapter 6 of of this NAP on ASGM.

The intergovernmental organisations, civil society organisations and private sector organisations anticipated to be implementing partners of the NAP include, among others, Private Sector Foundation (PSF), Trademark East Africa (TMEA); Africa Centre for Energy and Mineral Policy (ACEMP); Action Aid Uganda (AAU); National Association of Professional Environmentalists (NAPE), Uganda National Association of Community and Occupational Health (UNACOH); Pro-biodiversity Conservationists in Uganda (PROBICOUG); Environmental Women in Action for Development (EWAD); Kampala City Traders Association (KACITA); and Women Global Rights. Others are: United Nations Children's Fund (UNICEF); World Health Organisation (WHO); United States Agency for International Development (USAID); United Nations Industrial Development Organisation (UNIDO); Common Market for Eastern and Southern Africa (COMESA); United Nations Environment; National Banking institutions; Advocates Coalition for Development and Environment (ACODE); World Bank; Somero Uganda; Uganda Cleaner Production; World customs organisation; German Geographical Survey; United Nations Development Programme (UNDP); Academia; Dialogos; Danish Government; International Labour Organisation (ILO); Uganda Manufacturers Association (UMA); Uganda Bankers' Association, and Rotary Club of Uganda.

It is recommended that implementation of this NAP takes into consideration regions with the highest concentration of mercury use as priority areas. Focus will also be in engaging ASGM mining communities with more organised associations and leadership. NAP implementation teams and responsible MDAs are also encouraged to ensure that special attention is given to biodiversity sensitive and protected areas as well as groups and individuals at most risk, such as women and children people abled differently in ASGM value chains exposed to high risks of contamination.



Table 27: A summary of the implementation strategy for the NAP on ASGM

Objective	Strategy	Intervention Actions/ Activities	Anticipated Outcome	Implementation Level	Responsible Authority	Implementing Partner
<b>1. To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024</b>	<b>1.1 Actions to eliminate worst practices (As required by point 1(b) of the Annex C of the Minamata Convention)</b>	<b>1.1.1 Elimination of whole ore amalgamation</b>				
		1.1.1.1 Holding sensitisation campaigns on mercury use and its dangers	<ul style="list-style-type: none"> <li>- Increased knowledge on the dangers of mercury on human health and the environment</li> <li>- Increased ASGM adoption of safer gold processing method</li> <li>- Increased adoption of safety and health measures when using mercury</li> </ul>	Local Government	NEMA	DGSM, MWE, LGs, MoLG, Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)
		1.1.1.2 Developing and producing communication materials to illustrate the disadvantages of whole ore amalgamation and other worst practices and solutions	<ul style="list-style-type: none"> <li>- Reduced mercury emissions and releases from ASGM activities</li> <li>- Increased knowledge on efficient gold concentration methods</li> <li>- Reduced exposure of ASG miners to mercury emissions and releases</li> <li>- Reduced environmental contamination with mercury</li> </ul>	Local Government	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)
		1.1.1.3 Conducting demonstrations on alternative methods to mercury use for example by use of gravitational methods and cyanide technologies	<ul style="list-style-type: none"> <li>- Increased adoption of mercury free technologies</li> </ul>	Local Government	NEMA	DGSM, LGs, Development Partners, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)
		1.1.1.4 Instituting a collaborative mechanism between ASG miners and suppliers including technicians of equipment that require little to no mercury use in gold processing	<ul style="list-style-type: none"> <li>- Increased adoption of mercury free technologies</li> <li>- Enhanced ASGM skills in operating mercury free technologies</li> <li>- Increased ASGM skills in operating and maintaining equipment</li> <li>- Increased ASGM knowledge on local fabricators/sources of mineral processing equipment</li> </ul>	National and Local Government	NEMA	Private sector, Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE), UMA

	1.1.1.5 Developing Bye-law and Ordinances against ASG miner engagement in worst practices	<ul style="list-style-type: none"> <li>- Reduction in the use of worst practices by the miners</li> <li>- Reduced emissions and releases of mercury from ASGM sector</li> <li>- Reduced ASGM engagement in worst practices including whole ore amalgamation</li> <li>- ASG miners violating the ordinance apprehended at a local level</li> </ul>	Local Government	MoJCA	LGs, NEMA, MoLG
	1.1.1.6 Developing ASGM popularised guidelines on sustainable gold mining and processing	<ul style="list-style-type: none"> <li>- Increased adoption of sustainable gold mining and processing standards</li> </ul>	National	DGSM	NEMA, LGs, MoLG
	<b>1.1.2 Elimination of open burning of amalgam or processed amalgam</b>				
	1.1.2.1 Demonstrating to miners existing mercury containment tools/ technologies including retorts and fume hoods	<ul style="list-style-type: none"> <li>- Reduced exposure of persons in and around the mines to mercury emissions and releases</li> <li>- Reduced mercury emissions and releases from ASGM sector</li> <li>- Increased recycling of mercury</li> </ul>	Local Government	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE)
	1.1.2.2 Incentivizing the acquisition of alternative methods to gold processing with mercury	<ul style="list-style-type: none"> <li>- Increased miners' acquisition of reduced use to mercury-free technologies</li> </ul>	National	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE)
	1.1.2.3 Distributing of mercury containment tools/technologies including mercury-free processing technologies to ASGMs	<ul style="list-style-type: none"> <li>- Reduced mercury emissions and releases from ASGM sector</li> <li>- Increased recycling of mercury</li> </ul>	National	NEMA	DGSM, Development Partners, Private sector, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), UMA
	<b>1.1.3 Elimination of burning of amalgam in residential areas</b>				
	1.1.3.1 Facilitating the establishment of designated gold processing units at each ASGM mine site	<ul style="list-style-type: none"> <li>- Reduced exposure of miner and miner work force to mercury emissions and releases</li> </ul>	National, Local Government	NEMA	DGSM, MGLSD, Development Partners, LGs, MoLG
	1.1.3.2 Updating environmental regulations to incorporate restrictions on open burning of amalgam in residential areas/ settlements/ dwellings/ mining camp sites	<ul style="list-style-type: none"> <li>- Reduced exposure of communities and miners to mercury emissions and releases</li> </ul>	National	MoJCA	MWE, NEMA, LGs, MoLG
	<b>1.1.4 Elimination of cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury</b>				

	1.1.4.1 Training small to medium scale gold miners on handling, storing and decontaminating mercury containing tailings	<ul style="list-style-type: none"> <li>- Reduced leaching of mercury contaminated tailings</li> <li>- Prior extraction of mercury from tailings prior to gold processing with cyanide</li> <li>- Adequate handling, storage and disposal of waste containing mercury</li> </ul>	Local Government	NEMA	Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), private sector, LGs, MoLG
	1.1.4.2 Developing a collaborative mechanism between medium to large scale mining companies and ASGMs as part of CSR to develop ASGM technical capacities	<ul style="list-style-type: none"> <li>- Decreased use of mercury contaminated tailings</li> <li>- Increased knowledge transfer from medium to large scale mining companies to ASGMs</li> </ul>	National	NEMA	Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), the private sector, MoLG
	1.1.4.3 Committing medium to large scale gold processors to adequately transport, handle, store mercury containing tailings and dispose of mercury containing waste after cyanidation processing with mercury containing tailings	<ul style="list-style-type: none"> <li>- Reduced leaching of mercury contaminated tailings</li> <li>- Prior extraction of mercury from tailings prior to gold processing with cyanide</li> <li>- Adequate handling, storage and disposal of waste containing mercury</li> </ul>	Local government	NEMA	MWE, DGSM, LGs, ACEMP, AAU, UNACOH, ACCC
<b>1.2 Strategies for promoting the reduction of emissions, releases, and risks of exposure to mercury (As required by point 1(e) of the Annex C of the Minamata Convention)</b>	<b>1.2.1 Assessing existing minimal mercury use to mercury-free technologies for gold processing by ASGMs</b>				
	1.2.1.1 Benchmarking mercury-free technologies including associated costs and benefits	<ul style="list-style-type: none"> <li>- Targeted acquisition of gold processing technologies/equipment by ASGMs</li> <li>- Lessons learnt adopted by benchmarking institutions</li> </ul>	National, Local Government	NEMA	DGSM, CSOs (ACEMP, UNACOH, NAPE), MoLG, LG, UNCST, UMA
	1.2.1.2 Training of local masons and fabricators in producing retorts, mercury capture hoods, construction of mercury effluent containment structures, among others	<ul style="list-style-type: none"> <li>- Increased production of mercury capture tools</li> <li>- Improved design of gold processing areas</li> <li>- Improved containment of mercury containing waste</li> </ul>	Local government	NEMA	Development Partners, LGs, the private sector, ACEMP, AAU, UNACOH, ACCC, UMA, MoLG
	<b>1.2.2 Supporting the use of mercury-free and mercury capture technologies</b>				
	1.2.2.1 Training ASG Miners on mercury effluent and emissions containment tools and technologies	<ul style="list-style-type: none"> <li>- Increased adoption of mercury effluent and emissions containment tools and technologies</li> <li>- Reduced mercury emissions and releases at ASGM sites</li> <li>- Reduced mercury pollution</li> </ul>	Local government	NEMA	MoLG, Development Partners, LGs, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), UNCST, UMA

		1.2.2.2 Integrating miner needs into Local and national government planning and budgeting programmes and projects	<ul style="list-style-type: none"> <li>- More miners accessing finance to afford the methods they currently consider expensive</li> <li>- ASGMs access to government inputs instituted</li> <li>- ASGM benefiting from government livelihood programmes like Operation Wealth Creation (OWC)</li> <li>- ASGMs benefiting from small grants programmes and revolving funds/ microfinance schemes</li> <li>- Increased acquisition of mercury-free technologies, tools and equipment by ASG miners</li> </ul>	National, Local government	NEMA	OWC, ADB, MSC, LGs, ACEMP, UNACOH, ACCC, the private sector, MoLG, DLGs
		1.2.2.3 Carrying out formal and informal education in institutions and mining communities in regard to mercury effects on human health and environment and mitigating such effects	<ul style="list-style-type: none"> <li>- Increased knowledge on dangers of mercury use and alternatives to mercury use</li> </ul>	National	MoES	NEMA, Schools, Universities vocational institutions, DGSM
		1.2.2.4 Updating the curriculum of public vocational institutions to cover ASM/ASGM trainings on sustainable gold extraction, processing and fabrication of tools/equipment	<ul style="list-style-type: none"> <li>- Public vocational institutes awarding certificates and diplomas to miners</li> </ul>	National	MoES	NEMA, Universities, vocational institutions, DGSM
		<b>1.2.3 Establishing a safe waste disposal programme in the ASGM sector</b>				
		1.2.3.1 Training ASGMs in safe waste disposal methods, waste/effluent treatment and recycling and mercury containing tailings containment	<ul style="list-style-type: none"> <li>- Safer waste disposal methods adopted by ASGMs</li> </ul>	National, Local government	NEMA	DGSM, MoLG, MWE, LGs, UNACOH, CSOs (ACEMP)
<b>2. To facilitate the formalisation of the ASGM sector by 2024</b>	<b>2.1 Steps to facilitate formalisation or regulation of the ASGM sector (As required by point 1(c) of the Annex C of the Minamata Convention)</b>	<b>2.1.1 Developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities</b>				
		2.1.1.1 Reviewing relevant laws/ regulations to incorporate provisions of ASGM/ASM formalisation strategies	<ul style="list-style-type: none"> <li>- National creating an enabling environment for ASGM/ASM to operate</li> <li>- Improved ASG miner organisation</li> <li>- Accessing of financial credit by ASG miners</li> <li>- Increased acquisition of mining licenses by ASMs/ASGMs</li> <li>- Reduced ASM/ASGM and Medium to large scale miner conflicts</li> </ul>	National level	NEMA, DGSM	MoLG, Development Partners, LGs, CSOs (ACEMP, AAU, UNACOH, NAPE), MoTC, MGLSD

		2.1.1.2 Formulating ordinances and bye-laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations	<ul style="list-style-type: none"> <li>- Increased adherence of ASG miners to environment and natural resources laws/regulations</li> <li>- Environmental certification for ASGM operations</li> <li>- Sustainable processing of gold by ASGM</li> </ul>	Local Government	MoJCA	DGSM, NEMA, LGs, DGSM, MoLG, Development Partners, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), MoTC, MGLSD
		2.1.1.3 Developing monitoring guidelines for ASM/ASGM activities	<ul style="list-style-type: none"> <li>- Improved monitoring of ASGM activities by MDAs</li> </ul>	National	NEMA	LGs, MoLG, MGLSD, DGSM
		2.1.1.4 Reviewing and improving the efficiency of the licensing system to provide for categories of ASGM operations and ascertaining viability of dormant mineral licenses	<ul style="list-style-type: none"> <li>- Cancellation of dormant licenses</li> <li>- Online mineral license application system in place</li> </ul>	National	DGSM	NEMA, LGs, DGSM, MoLG, Development Partners, the private sector, UIA
<b>2.1.2 Building the capacity of ASGMs and extension staff to manage the ASGM sector</b>						
		2.1.2.1 Carrying out research on best ASGM practices and technologies in ASGM sector	<ul style="list-style-type: none"> <li>- Quick references to documented best ASGM practices and technologies in ASGM sector</li> <li>- Tailored/recommended best ASGM practices and technologies for different regions</li> <li>- Improved technology efficiencies</li> </ul>	National	Academia	DGSM, Development Partners, Academia, UNCST, UMA
		2.1.2.2 Carrying out Inspectors and ASG miner capacity needs assessment in regard to managing the ASGM sector	<ul style="list-style-type: none"> <li>- Inspectors' capacity needs to manage the ASGM sector identified</li> <li>- ASG miners needs to reduce and eliminate mercury use identified</li> </ul>	National, Local Government	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD
		2.1.2.3 Training of ASGM Trainers and youth miners on best ASGM practices and technologies	<ul style="list-style-type: none"> <li>- ASG miners' capacity to reduce and eliminate mercury use enhanced</li> <li>- Improved observance of OSHE standards at ASGM sites</li> <li>- Improved practices and acquisition of best technologies by ASGM</li> <li>- Reduced mercury use in the ASGM sector</li> <li>- Increased adoption of best available practices and technologies</li> <li>- Increased awareness of miners on best ASGM practices and alternative technologies</li> </ul>	National, Local Government	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE)

	2.1.2.4 Training of Inspectors on ASGM activity monitoring, ASGM protocols, standards and regulations	<ul style="list-style-type: none"> <li>- Improved monitoring and reporting of ASGMs activities by Inspectors</li> <li>- Efficient management of mercury use in the ASGM sector</li> <li>- Improved observance of OSHE standards at ASGM sites</li> <li>- Inspectors' capacity to managing the ASGM sector enhanced</li> <li>- Increased awareness of inspectors on best ASGM practices and alternative technologies</li> </ul>	National, Local Government	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE)
	2.1.2.5 Developing mobile applications for cell phones to enhance information sharing among miners and between miners and inspectors/MDAs and private sector	<ul style="list-style-type: none"> <li>- Efficiency in inquiries and feedback</li> </ul>	National	MICT	MoLG, MGLSD
	2.1.2.6 Train responsible officers in management of mercury	<ul style="list-style-type: none"> <li>- Efficient management of mercury use and trade in Uganda</li> </ul>	National	NEMA	URA, MoTIC, MWE, MGLSD, MoH, UNBS, UBOS
	<b>2.1.3 Forming, strengthening and defining ASGM associations, companies and cooperatives</b>				
	2.1.3.1 Training ASGMs on rules and procedures for forming associations, cooperatives and companies	<ul style="list-style-type: none"> <li>- ASGM fully knowledgeable about the procedures of registering associations and advantages of working in associations</li> <li>- Increased number of ASGM opting for associations</li> <li>- Membership and operations of existing ASGM associations strengthened</li> </ul>	National, Local government	MoTC	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD
	2.1.3.2 Registering of ASGM associations, cooperatives, companies	<ul style="list-style-type: none"> <li>- Increased fully registered and functioning ASGM associations, cooperatives and companies</li> <li>- Increase in ASGM associations, cooperatives and companies following association rules and procedures</li> <li>- Reduced migrations of ASGMs</li> <li>- Increase in ASGM mining capital investments</li> </ul>	National, Local government	DGSM	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC
	2.1.3.3 Establishing a national ASGM umbrella Association or network	<ul style="list-style-type: none"> <li>- Increased information sharing</li> </ul>	National	DGSM	LGs
	<b>2.1.4 Facilitating miners to access financial credit</b>				

		2.1.4.1 Reviewing financial regulations to provide for ASGM associations, cooperatives and companies access to credit schemes	<ul style="list-style-type: none"> <li>- Finance institutions legally committed to offering ASGM financial services</li> <li>- Banking institutions valuing ASGM investments</li> <li>- Banking institutions lending associations, cooperatives and companies</li> </ul>	National	MFPED	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC
		2.1.4.2 Holding engagements between ASGMs and financial institutions	<ul style="list-style-type: none"> <li>- ASGM knowledgeable about finance mechanisms for their activities</li> <li>- More miners and ASGM associations accessing finance and affordable alternative technologies</li> </ul>	National	MFPED	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC
		<b>2.1.5 Geo-prospecting and zoning of ASGM mining areas</b>				
		2.1.5.1 Collecting geological data and gazetted areas for ASGM operations	<ul style="list-style-type: none"> <li>- ASGMs made more aware of mineral spatial distribution</li> <li>- Reduced ASGM and medium to large scale miner conflict</li> <li>- Reduced migrating of ASGM</li> <li>- Sustainable ASGM associations, cooperatives and companies</li> <li>- Reduced environmental degradation</li> </ul>	National, Local Government	DGSM	NEMA , UWA, NFA, MoLHUD, MoLG
		2.1.5.2 Cancellation of dormant Licenses	<ul style="list-style-type: none"> <li>- Reduced dormancy of issued mineral/mining licences</li> <li>- Re-allocation of licences to ASGM operations</li> </ul>	National, Local Government	DGSM	NEMA , UWA, NFA, MoLHUD, MoLG
		<b>2.1.6 Undertaking a national biometric registration and mapping of all ASGM value chain key players</b>				
		2.1.6.1 Carrying out a baseline survey of ASG households, actors along the ASGM value chain and location of ASGM operations	<ul style="list-style-type: none"> <li>- ASGM sector specific data and information in place</li> </ul>	National, Local Government	DGSM	LGs, MoLG
		2.1.6.2 Undertaking the biometric registration of ASGMs (to commence in November 2019 and end by June 2020)	<ul style="list-style-type: none"> <li>- ASG miners and their operations easily tracked</li> </ul>	National	DGSM	LGs, MoLG
		2.1.6.3 Benchmarking of best practice in the formation of ASGM associations, companies and cooperatives	<ul style="list-style-type: none"> <li>- Adoption of best practices</li> </ul>	National	DGSM	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC, MFPED
		2.1.6.4 Establishing gazetted buying centres for gold	<ul style="list-style-type: none"> <li>- Processing methods for gold tracked</li> <li>- Improved prices for gold from ASGM using mercury-free methods</li> <li>- Reduced use of mercury in gold processing</li> <li>- Increased revenue from gold production and delivery of services</li> </ul>	Regional	DGSM	NEMA, Development Partners, the private sector, MoLG

<b>3. To strengthen stakeholder engagement in the implementation of the NAP</b>	<b>3.1 Strategies for involving stakeholders in the implementation and continuing development of the plan (As required by point 1(g) of the Annex C of the Minamata Convention)</b>	<b>3.1.1 Establishing a Multi-stakeholders' Working Group Responsible for the implementation of the National Action Plan (NAP)</b>				
		3.1.1.1 Undertaking the mapping of national stakeholders to form a NAP implementation working group	- A comprehensive database of the stakeholders in place	National, regional, local government	NEMA	→Development partners, the private sector, MDAs, CSOs, Academia
		3.1.1.2 Defining the post NAP implementation working group terms of references, their interest and potential contributions in reviewing and implementing the NAP	- Smooth implementation of the NAP leading to the eventual elimination of mercury	National, regional, local government	NEMA	DGSM, MoLG
		3.1.1.3 Establishing and updating of a national database of ASGM stakeholders (inclusive of regional stakeholders)	- Enhanced national and regional collaborative mechanism	National, Regional, Local government	NEMA	→Development Partners, MDAs, NGO board, CBOs, LGs, MoLG
		3.1.1.4 Creating synergies with other projects being implemented by sectors, CSOs, private sector and other stakeholders in line with the NAP	- Enhanced collaboration among different agencies, institutions and organisations to in reducing mercury use and emissions in Uganda	National, Regional, Local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG
		3.1.1.5 Tracking, monitoring and evaluating implementation of NAP interventions/activities	- Enhanced monitoring of NAP implementation	National, Regional, local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG
		<b>3.1.2 Enhancing information sharing among key stakeholders</b>				
		3.1.2.1 Holding periodic stakeholder review meetings to review the NAP	- Improved information sharing on NAP implementation - Rolling out of NAP activities undertaken - Feedback on challenges on NAP implementation obtained	National, regional, local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG
		3.1.2.2 Holding community barazas to share information on strategies to reduce mercury emissions and releases and obtain feedback	- Enhanced knowledge on mercury and its dangers - Feedback on challenges on NAP implementation obtained	Local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG



<b>4. To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024</b>	<b>4.1 Strategies for managing trade and preventing diversion of mercury and mercury compounds (As required by point 1(f) of the Annex C of the Minamata Convention)</b>	<b>4.1.1 Development of a mercury trade tracking system</b>				
		4.1.1.1 Developing and updating of a data base of key players in mercury trade and authorised traders in unlisted MAPs	- Efficient information exchange among traders and institutions - Reduced smuggling of mercury - Enhanced transportation, storage, handling and disposal of mercury and MAPs - Enhanced monitoring of end users of mercury	National, Local government levels	MoTIC	URA, NEMA, UNBS, MoLG
		4.1.1.2 Documenting imported un listed and listed MAPs and restricting (introducing penalties against them) importation of all listed MAPs	- Reduced importation and trade of listed MAPs - Reduced trade in mercury contained in MAPs	National	URA	MoTIC, NEMA, MoLG
		4.1.1.3 Undertaking surveillance of porous borders and ASGM sites to track illegal mercury trade	- Reduced illegal trade in mercury	National, local government	URA	LGs, NEMA, MoTIC, MoLG
		4.1.1.4 Training of communities and ASG miners to serve as whistle blowers for smuggled mercury	- Reduced illegal trade in mercury and use of mercury - Reduced and eventual elimination of mercury use by ASGMs	Local government	NEMA	LGs, DGSM, MGLSD, MoLG
		4.1.1.5 Undertaking studies to assess mercury pathways/trade routes to effectively roll out strategies that manage mercury trade	- Reduced illegal trade in mercury - Reduced and eventual elimination of mercury use by ASGMs	National	URA	LGs, NEMA, MGLSD, MoLG
		4.1.1.6 Training police and judiciary on prosecution of victims engaging in illegal mercury trade	- Efficiency in the judicial system on prosecuting cases against mercury	National	MoJCA	NEMA, LGs, DGSM, MoLG
		<b>4.1.2 Strengthening institutional capacity in detecting and analysing samples for mercury</b>				
		4.1.2.1 Procuring and equipping inspectors with tools for detecting mercury on site	- Quick detection of mercury and seizure of consignments - Reduced errors in reporting and seizures - Early detection of contaminated sites and medium - Improved reporting by Inspectors	National, local government level	NEMA	Development Partners, the private sector, URA, MoTIC, MWE, MGLSD, MoH, UNBS, UBOS, MoLG
		4.1.2.2 Equipping laboratories with tools for testing mercury in samples	- Reliable and valid results	National	NEMA	Academia, DGAL, Development Partners, the private sector, URA, UNBS, MoES, MoLG

	4.1.2.3 Accrediting government laboratories to analyse mercury	- Reliable, valid and certified results	National	NEMA	Academia, DGAL, Development Partners, the private sector, URA, UNBS, MoES, MoLG
	4.1.2.4 Developing institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste	- Efficient mercury waste management	National	NEMA	MWE, MGLSD, MoH, Development Partners, MoLG
	4.1.2.5 Developing a mercury spill contingency plan for use by mercury traders, institutions and ASGMs	- Efficient mercury management along the value chain	National	NEMA	MWE, MGLSD, MoH, Development Partners, MoLG
	<b>4.1.3 Strengthen regional cooperation and cross-border inter-agency collaboration on the tracking of mercury</b>				
	4.1.3.1 Developing a single window importation platform to track mercury trade over the entire value chain	- Reduction in illegal mercury trade and restriction of mercury importation	National	URA	URA, NEMA, MoTIC, Development Partners, MoLG
	4.1.3.2 Training customs officers at border points to be able to identify mercury, register mercury and MAPs traders	- Efficient management of trade in mercury and mercury added products	National, Local government	URA	NEMA, MoTIC, Development Partners, MoLG
	4.1.3.3 Benchmarking best practices, standards and case studies from other countries	- Established references for best practices, standards and case studies - Tailored interventions in the ASGM sector - Improved and regionally harmonised management of mercury trade and mercury added products	National	NEMA	URA, MoTIC, Development partners, MoLG
	4.1.3.4 Developing a regional collaborative mechanism in tracking and managing smuggled mercury and MAPs	- Efficient cross boundary management of the trade of mercury and mercury added products - Improved criminal investigation	National	URA	MoTIC, NEMA Development Partners, MoLG
	4.1.3.5 Establishing regional disincentives in mercury trade	- Reduced trade in mercury	National	URA	MoTIC, NEMA, Development Partners, MoLG
	4.1.3.6 Developing a collaborative mechanism among regional and national mercury traders to consider trade in alternatives to mercury for gold processing	- Reduced in mercury supply and trade for gold processing - Reduced mercury use for gold processing	National, Local government	NEMA	MoTIC, URA, Development Partners, LGs, MoLG, DGSM, URA, UIA, Eastern and Southern African countries

<b>5. To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024</b>	<b>5.1 Implementation of a Public Health Strategy on the exposure of artisanal and small-scale gold miners and their communities to mercury (As required by point 1(h) of the Annex C of the Minamata Convention)</b>	<b>5.1.1 Carrying out the situational analysis of public health concerns in the ASGM sector</b>				
		5.1.1.1 Reviewing the Public Health Strategy to ensure that all ASGM health related concerns have been incorporated	- A plan to address public health concerns in place	National	MoH	NEMA, MGLSD, MEMD, MUSPH, CSOs (ACEMP, UNACOH), LGs, MoLG
		5.1.1.2 Carrying out a baseline survey of the extent of public health concerns in the ASGM sector	- Increased knowledge on the extent of public health concerns surrounding the ASGM sector	National	MoH	NEMA, MUSPH, MGLSD, MoLG
		5.1.1.3 Disseminating survey results to national and local stakeholders	- Increased national stakeholder perception on the severity and extent of public health concerns - All national stakeholders aware of practices and effects of mercury on the human health and the environment	National	NEMA	MoH, MGLSD, MUSPH, ACEMP, UNACOH, ACCC, AAU, LGs, MoLG
		5.1.1.4 Sharing of information at regional and international platforms or forums	- Enhanced collaboration in finding solutions to identified public health concerns	National	NEMA	MoH, LGs, Development Partners, MGLSD, DGSM, MoLG
		<b>5.1.2 Building the capacity of health care workers, VHTs on the effects of mercury, diagnosis and treatment of the same and equipping health facilities including health centre IIs &amp; IIIs with diagnostic tools</b>				
		5.1.2.1 Training health care workers and Village Health Teams (VHTs) on the effects of mercury and how to diagnose and treat mercury related complications at the earliest time possible	- Early diagnosis and treatment of mercury related complications	National	MoH	NEMA, MGLSD, LGs, Development Partners, MoLG
		5.1.2.2 Drafting Standard Operating Procedures (SOPs) and guidelines	- Early and efficient diagnosis and treatment of mercury-related complications	National	MoH	NEMA, MGLSD, LGs, Development Partners, MoLG
		5.1.2.3 Equipping health workers / health centers with diagnostic tools and equipment as well as medicine (chelators)	- Efficient diagnosis and treatment of mercury-related complications	National, local government	NEMA	NEMA, MGLSD, LGs, Development Partners, MoLG
		<b>5.1.3 Raising awareness of ASGMs and surrounding communities on the dangers of mercury use in gold extraction and alternative including pollution mitigation measures</b>				
		5.1.3.1 Developing and disseminating customised/ popular versions of IEC materials	- Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures - Reduced mercury use - Increased use of PPEs - Increased use of alternatives to mercury	National, regional, local government	NEMA	MoH, Development Partners, MGLSD, LGs, MoLG

	5.1.3.2 Disseminating of information through use of community change agents	<ul style="list-style-type: none"> <li>- Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures</li> <li>- Reduced mercury use</li> <li>- Increased use of PPEs</li> <li>- Increased use of alternatives to mercury</li> </ul>	Local government	NEMA	MoH, Development Partners, MGLSD, LGs, MoLG
	5.1.3.3 Holding community meetings/barazas, dialogues and outreach	<ul style="list-style-type: none"> <li>- Improved feedback on challenges faced by ASG miners, and local stakeholders</li> <li>- Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures</li> <li>- Reduced mercury use</li> <li>- Increased use of PPEs</li> <li>- Increased use of alternatives to mercury</li> </ul>	Local government	NEMA	MoH, Development Partners, MGLSD, LGs, Development Partners, CSO (ACEMP, UNACOH, ACCC, AAU) , MoLG
	5.1.3.4 Developing and producing spot messages and jingles	<ul style="list-style-type: none"> <li>- Increased information sharing on the dangers of mercury and how to cater for personal protection</li> <li>- Reduced mercury use</li> <li>- Increased use of PPEs</li> <li>- Increased use of alternatives to mercury</li> </ul>	National, Local government	NEMA	MoICT, MoH, Development Partners, MGLSD, LGs, Development Partners, MoLG
	5.1.3.5 Training of ASGMs on early detection of mercury poisoning/pollution/contamination and response mechanism	<ul style="list-style-type: none"> <li>- Developed personal emergency response plan</li> <li>- Increased medical checkups by ASG miners</li> </ul>	Local government	NEMA	MoH, Development Partners, MGLSD, LGs, Development Partners, MoLG
	5.1.3.6 Popularising existing chemicals regulations, OSHE regulations, formulating bye-laws and ordinances against poor OSHE practices at ASGM sites	<ul style="list-style-type: none"> <li>- Increased adherence to OSHE standards</li> <li>- Prosecution of culprits at a local level</li> </ul>	National, Local government	NEMA	MWE, MGLSD, MoLG, LGs
	<b>5.1.4 Enhancing inter-sectoral coordination in the management of mercury use in ASGM</b>				
	5.1.4.1 Undertaking MDAs joint inspections and monitoring/surveillance of health/public health related aspects of the ASGM sites	<ul style="list-style-type: none"> <li>- Improved knowledge sharing</li> </ul>	National, local government	NEMA	DGSM, MWE, MGLSD, MoH, LGs, MoLG
	<b>5.1.5 Supporting ASGM communities to observe OSHE practices</b>				
	5.1.5.1 Training ASGMs on use of mercury vapour capture tools including retorts	<ul style="list-style-type: none"> <li>- Reduction in mercury emissions</li> </ul>	Local government	NEMA	MGLSD, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)
	5.1.5.2 Training ASGMs on use of PPEs during gold extraction and processing	<ul style="list-style-type: none"> <li>- Improvement in OSHE standards at ASGM sites</li> </ul>	Local government	MGLSD	NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)

		5.1.5.3 Demonstrating to ASGM mitigation measures for dust pollution	- Reduced silicosis at ASGM sites - Reduced dust pollution at ASGM sites	Local government	NEMA	MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)
		5.1.5.4 Training miners on containment of mercury effluent	- Reduced environmental pollution from inefficient management of mercury effluent	Local government	NEMA	MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)
		5.1.5.5 Demonstrating to ASGMs mercury-free processing methods including minimal mercury use technologies for gold processing	- Reduction in mercury use in ASGM	Local government	NEMA	DGSM, Development Partners, MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)
		5.1.5.6 Engaging mine landlords on sustainable mine operations	- Reduced environmental pollution/degradation - Increased mine restoration - Reduced OSHE hazards	National, Local government	NEMA	DGSM, Development Partners, MWE, NEMA, CSOs (ACEMP, UNACOH, ACCC, AAU)
		5.1.5.7 Developing a reporting/ feedback mechanism from sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries on inspected/ monitored indicators related to water catchments, water bodies, flora and fauna for pollution risks at ASGM sites	- Improved interagency cooperation and reporting - Increased innovations in NAP implementation mechanisms	National, local government	NEMA	MWE, MAAIF, DGSM, MGLSD, MoLG, MDAs
		5.1.5.8 Enforcing public health, OSHE laws and regulations at ASGM sites	- Increased ASGM adherence to public health and OSHE standards	Local government	NEMA	MoH, MGLSD, LGs, MoLG
<b>6. To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024</b>	<b>6.1 Strategies to prevent the exposure of vulnerable populations, particularly children, women of child-bearing age, pregnant mothers and nursing mothers to mercury used in ASGM (As required by point 1(i) of the Annex C of the Minamata Convention)</b>	<b>6.1.1 Undertaking community outreach programmes to emphasise the risks vulnerable populations face in and around mine sites</b>				
		6.1.1.1 Carrying out sensitise campaigns, dialogues and meetings with vulnerable populations	- Increased knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD
		6.1.1.2 Developing an informative documentary on the dangers of mercury to human health and environment and screening the documentary in ASGM camps, communities and national televisions	- Increased knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use	National and local government level	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD

		6.1.1.3 Developing the capacities of ASGMs on mining practices that will prevent exposure of vulnerable populations to mercury	- Reduced exposure of vulnerable populations to mercury emissions and releases	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD
		6.1.1.4 Facilitating ASGM local exchange visits in regard to knowledge transfer and practices related to mercury-free technology and safe practices	- Increased adoption of mercury free technologies	Local government	NEMA	DGSM, MoGLSD, Development Partners
		<b>6.1.2 Introducing alternative income generating activities to vulnerable groups to reduce gold mining pressure where mercury free gold processing methods may be costly to adopt</b>				
		6.1.2.1 Training women miners, youth and elderly persons on alternative income generating activities, entrepreneurship skills, business, record keeping and financial management	- Increase in the number of women miners youth and elderly persons adopting alternative income generating activities - Improved women miners, youth and elderly persons livelihoods due to improved income generation	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD
		6.1.2.2 Supporting vulnerable groups to access funds and other support from government and development partners to engage in alternative, healthier and economic livelihoods	- Increase in the number of women miners, youth and elderly persons adopting alternative income generating activities - Improved livelihoods of vulnerable populations - Reduced exposure of vulnerable populations to mercury emissions and releases	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD
		6.1.2.3 Facilitating vulnerable groups to form groups, associations or cooperatives and SACCOs	- Increased finances to acquire equipment and practice safer gold mining and processing methods - Increased access to financial mechanisms to enable adoption of best available practices and technologies - Improved livelihoods of vulnerable populations	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD
		6.1.2.4 Engaging Private Sector Foundation (PSF) and other business incubation initiatives to train the youth, elderly and women in alternative SMEs	- Increase in the number of women, youth and elderly miners adopting alternative income generating activities - Improved livelihoods of vulnerable populations - Reduced exposure of vulnerable populations to mercury emissions and releases	National, local government	NEMA	PSF, OWC, ADB, MSC, DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD

	6.1.2.5 Developing a curriculum at all levels of higher education including secondary, tertiary and vocational institutions to train learners, youth and elderly persons and certificate courses to equip learners with OSHE skills and safer mining practices among others	- Better skills being practiced in the ASGM sector - A sustainable ASGM sector	National	MoES	NEMA, MGSLD, DGSM, MoLG, Development Partners, MGLS
	<b>6.1.3 Formulating policies protecting vulnerable populations including reducing foetal and infant exposure to mercury contamination from emissions and releases</b>				
	6.1.3.1 Developing bye-law and ordinances prohibiting the following: - Children, expectant mothers and nursing mothers from engaging in gold processing with mercury - Taking toddlers to mining sites where mercury is used without its containment areas; - Prohibiting mercury storage in homes - Prohibiting processing of gold in and around residential homes/ settlements/dwellings, mining camps and public places - Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained	- Reduced exposure of vulnerable populations to mercury emissions and releases - Confined gold processing with mercury - Reduced mercury use at ASGM sites - Increased adoption of alternative gold processing methods with mercury - Consumption of wholesome food	National, local government	MoJCA	NEMA, MGSLD, DGSM, MoLG, Development Partners, MGLSD
	6.1.3.2 Updating the National ASM Management Strategy to encompass strategies to reduce and where possible combat the exposure of vulnerable populations to mercury emissions and releases	- Reduced exposure of vulnerable populations to mercury use	National	DGSM	DGSM, MoLG, Development Partners, MGLSD
	<b>6.1.4 Implementing labour and mining regulations prohibiting child labour in ASGM</b>				
	6.1.4.1 Strengthening enforcement of existing child labour laws	- Reduced child labour in ASGM activities	National, local government	MGLSD	LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development partners
	6.1.4.2 Formulating bye-law and ordinances against child labour at ASGM sites	- Reduction in the number of children participating in ASGM activities	National, local government	MoJCA	MGLSD, LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development Partners

		6.1.4.3 Enforcing the ICGLR standards that prohibit mine site owners and mineral exporters sourcing their gold from mine sites that employ children	- Reduced number of children engaging in ASGM activities	National	DGSM	MGLSD, LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development Partners
		6.1.4.4 Carrying out regular monitoring to ensure that child labour laws are adhered to by ASGM	- Reduction in the number of children engaging in ASGM	Local government	MGLSD	MIA, MFA, DGSM, Development Partners
		6.1.4.5 Committing parents in mining camps to take their children to school including taking advantage of UPE and USE programmes	- Reduced number of children participating in ASGM - Increase in the number of children going to school	Local government	MoE	NEMA, LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development Partners
		6.1.4.6 Supporting the construction of schools closer to designated mining camps and areas	- Reduction in the number of children participating in ASGM - Increase in the number of children going to school	National level	MoES	NEMA, DGSM, MoLG, MoH, MoLG, Development Partners
		<b>6.1.5 Developing accurate perceptions of miners and national stakeholders on the levels of mercury contamination in environmental samples</b>				
		6.1.5.1 Assessing levels of mercury contamination in soil, water, land, fish, breast milk for ASGM and infants whose mothers work in gold mines	- ASGMs, health workers, policy makers, government institutions aware of the gravity of mercury pollution in humans and environmental media - Increased behavioural change in miners with regard to mercury use	National, Local government	NEMA	MWE, MoH, MGLSD, Development Partners
<b>7. To develop market based mechanisms for the promotion of reduced mercury use by 2024</b>	<b>7.1 Strategies for instituting market-based mechanisms for promoting reduced mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>7.1.1 Establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations</b>				
		7.1.1.1 Committing financial institutions to extend credit facilities to ASGM miners with evidence of zero mercury use in gold processing	- Increased access of ASGM miners to credit - Increased adoption of mercury-free technologies - Reduced mercury use, emissions and releases at ASGM sites	National	MoFPED	MoTIC, MoLG, UNBS, Customs, CSOs, LGs, DGSM, NEMA, Development Partners
		7.1.1.2 Instituting disincentives on mercury importation and incentives on mercury-free technologies and products	- Increased importation of mercury alternatives	National	URA	MoTIC, NEMA, Development Partners, MoLG
		7.1.1.3 Certifying gold mining and processing methods	- Reduction in mercury use in ASGM - Increased value for gold processed with mercury-free methods	National	DGSM	NEMA, UNBS, Development Partners, MoTIC, MoLG
		<b>7.1.2 Establishing market standards to determine mercury-free gold</b>				



		7.1.2.1 Monitoring and inspecting ASG mine sites and border points for mercury use and trade	- Reduction in mercury use and its illegal importation	Local government	URA	MoTIC, DGSM, UNBS, LGs, NEMA, Development Partners, MoLG
		7.1.2.2 Enforcing OECD and ICGLR standards on gold mining and trade such as the implementation of the ICGLR ASM gold strategy and the Regional Certification Mechanism standards	- Reduced mercury use in ASGM - Decreased child labour	National, Local government	DGSM	MIA, MFA, MGLSD, NEMA, Development Partners, MoLG
		7.1.2.3 Committing national refineries on incentivising mercury-free gold	- Reduced mercury use in ASGM - Increased adoption of mercury-free technologies - Imposing high taxes on gold produced with mercury - Reduced sale of gold produced with mercury	National	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG
		7.1.2.4 Committing local gold buyers on buying gold produced with mercury-free methods	- Reduced purchase price for gold produced without mercury - Reduced mercury use in ASGM - Increased adoption of mercury-free technologies	Local government	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG
		7.1.2.5 Committing ASG miners to dis-incentivise purchase of gold produced with mercury	- Increased sales price for gold produced without mercury and reduced sales price for gold produced with mercury - Reduced mercury use in ASGM - Increased adoption of mercury-free technologies	Local government	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG
		7.1.2.6 Benchmarking international practices on market incentives and exploring possibilities to adapt them to Uganda's context	- Instituted national policies enabling adoption on market incentives - Adopted international practices on market incentives	National	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG
		7.1.2.7 Undertaking a pilot study on implementing lessons learnt from international practices on market incentives	- Developed and customised models for best practices	National	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG
		7.1.2.8 Updating/develop a legal framework to provide for legally registered ASGMs access to financial credits	- Increased number of ASGMs accessing credit - A sustainable ASGM sector	National	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG

<b>8. To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030</b>	<b>8.1 Strategies to provide alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>8.1.1 Supporting the adoption of mercury-free gold mining practices and technologies</b>				
		8.1.1.1 Sensitising miners on mercury-free technologies, costs and benefits	- Increased adoption of international best practice and technologies	Local government	NEMA	Development Partners, CSOs (ACEMP, UNACOH, AAU ACCC) MoFPED, DGSM, MoGLD, MoTIC, MoLG
		8.1.1.2 Constructing demonstration and piloting sites do demonstrate alternatives technologies and best practices in gold mining and processing in ASGM sector	- Increased adoption of international best practice and mercury-free technologies across the country - Challenges with adoption of safer methods addressed	National	NEMA	Development Partners, CSOs (ACEMP, UNACOH, AAU, ACCC) MoFPED, DGSM, MoLG MoGLD, MoTIC, Development Partners
		8.1.1.3 Training the judicial officers and law enforcement agencies on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade	- Enhanced monitoring of ASGM sites - Increased adherence to OSHE laws, regulations, ordinances and bye-law	National	MoJCA	NEMA, Development Partners, MoLG

<b>10. To develop and enforce an ASGM environment management strategy by 2030</b>	<b>10.1 An environment management strategy for ASGM related operations</b>	<b>10.1.1 Facilitating ASGM's adherence to environmentally friendly mining practices including restorative measures</b>				
		10.1.1.1 Developing environmental management guidelines for ASGM operations and activities	- Improved environmental standards in the ASGM sector - Targeted monitoring of ASGM sites by inspectors	National	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.2 Training ASGMs, LGs, health officers, among others on existing environmentally friendly methods and best practices	- Efficient monitoring of environmental standards in the ASGM sector - Improved observance of environmental standards in the ASGM sector	National, Regional, Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.3 Carrying out community awareness meetings on sustainable gold mining	- Increased knowledge on mercury and the dangers it poses to the environment - Increased adherence of miners to environmental standards - Reduced environmental hazards at ASGM sites	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.4 Increasing monitoring frequency of ASGM operations	- Reduced environmental degradation	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.5 Strengthening the capacity of key stakeholders including minerals police, environment police to monitor ASGM activities	- Reduced environmental degradation	National, local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.6 Supporting ASG miners in restoring previously degraded abandoned sites	- Reduced in environmental degradation - Improved environmental rehabilitation and proper mine closure	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.7 Committing miners to environmental restoration and proper waste including rock waste disposal as a prerequisite to approval of a license application	- Reduced environmental degradation - Improved environmental rehabilitation - Improved waste disposal practices	National	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
		10.1.1.8 Establishing demonstration sites at mercury-free mine sites to demonstrate shafts and pit construction	- Reduced mine collapse and loss of lives - Reduced vegetation loss - Reduced soil erosion - Reduction in environmental degradation - Improved environmental rehabilitation	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners
10.1.1.9 Preparing, publishing and continuously updating geological maps to be used as reference by ASGMs	- Reduced in environmental degradation that is caused by ASGMs exploring different areas - Reduced vegetation loss	National	DGSM	NEMA, MWE, DSGM, MoLG, LGs, Development Partners		

		10.1.1.10 Defining the level of ESIA to be undertaken by various ASGM categories/structures	- Improved environmental standards in the ASGM sector	National	NEMA	DGSM, MWE, MoLG, LGs, Development Partners	
		10.1.1.11 Formulating/reviewing policies to ensure that Location Licences are issued after environmental assessments have been undertaken; mining leases for vast pieces of land are issued after environment and social impact assessments subjected to public hearing	- Improved environmental standards in the ASGM sector - Reduction in environmental degradation caused by ASGM	National	NEMA	DGSM, MWE, MoLG, LGs, Development Partners, UWA, NFA	
		10.1.1.12 Equipping MDAs including NEMA, LGs, MGLSD with tools for early detection of mercury contamination in environmental samples including air, land and water	- Efficient and continuous monitoring of environmental standards in the ASGM sector - Improved environmental standards in the ASGM sector	National	NEMA	Development Partners, UNBS, DGSM, MWE, MoLG, LGs, UWA, NFA	
		10.1.1.13 Formulating and instituting fines for non-compliance of ASMs/ ASGMs to environmental standards	- Improved environmental standards in the ASGM sector	National	MoJCA	Development Partners, UNBS, DGSM, MWE, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH	
		10.1.1.14 Carrying out joint sectoral monitoring of ASGM sites	- Improved interagency coordination on monitoring of ASGM sites - Efficient and continuous monitoring of environmental standards in the ASGM sector	National	NEMA	Development Partners, UNBS, DGSM, MWE, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH	
		10.1.1.15 Extending public utilities including portable water and electricity to gazetted ASGM sites	- Improved labour standards at ASGM sites - Improved OSHE standards at ASGM sites - Reduced oil spillages at ASGM sites - Reduced waterborne diseases at ASGM sites - Reduced use of LPG gas - Reduced operational costs at ASGM sites	National	MWE	MEMD, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	
		<b>10.1.2 Strengthening the conservation of protected areas</b>					
		10.1.2.1 Strengthening the capacity of environment protection police force and minerals police unit to carry out their mandate	- Effective monitoring of environmental standards in the ASGM sector - Reduction in environmental degradation caused by ASGM - Victims prosecuted for non-compliance to OSHE laws and regulations	National	NEMA	MFA, MEMD, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	

		10.1.2.2 Holding public hearings before allocating mining leases on extensive pieces of land including protected areas	<ul style="list-style-type: none"> <li>- Increased participation of community members in issuance of mineral licences</li> <li>- Reduced environmental degradation in protected areas</li> <li>- Sustainable biodiversity conservation</li> <li>- Reduced encroachment on protected areas</li> <li>- Reduced human wildlife conflicts</li> </ul>	Local government	NEMA	MWE, DGSM, LGs, NEMA, UWA, NFA, Development Partners, MoLG	
		10.1.2.3 Holding stakeholder engagements to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas	<ul style="list-style-type: none"> <li>- Increased participation of stakeholders in decisions made in the sector</li> <li>- Reduction of encroachment on protected areas</li> <li>- Reduction in environmental degradation in protected areas</li> <li>- Reduced human wildlife conflicts</li> </ul>	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, UWA, NFA	
		10.1.2.4 Inspecting and monitoring ASGM activities in protected areas	<ul style="list-style-type: none"> <li>- Increased adherence to OSHE laws and regulations in protected areas</li> <li>- Reduced environmental degradation of protected areas</li> <li>- Reduced human wildlife conflicts</li> <li>- Compliance to conditions in ESIA/Environment Certificate of Approval for all types of licences including small-scale mining licences and artisanal mining licences issued in and outside protected areas</li> </ul>	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA	
		10.1.2.5 Updating geological maps with protected areas' layers to indicate where the protected areas are situated so as to prevent licensing of these areas without prior stakeholder consultations	<ul style="list-style-type: none"> <li>- Reduced encroachment of protected areas</li> <li>- Reduced environmental degradation in protected areas</li> <li>- Reduced human wildlife conflicts</li> <li>- Environmentally certified ASGM operations</li> </ul>	Local government	DGSM	NEMA, MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA	
		10.1.2.6 Assessing the impact of upstream and downstream ASGM activities (wetlands, water bodies)	<ul style="list-style-type: none"> <li>- Contamination of upstream and downstream media from ASGM activities mitigated/minimised</li> <li>- Developed monitoring indicators for upstream and downstream ASGM activities</li> <li>- Early detection of mercury contamination upstream and down stream</li> <li>- Effectively monitored environmental standards in and around water bodies</li> <li>- Reduced environmental degradation from ASGM operations</li> </ul>	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA, DWRM	
		<b>10.1.3 Minimising Greenhouse Gas emissions from ASGM activities</b>					

		10.1.3.1 Committing ASGM site landowners to planting trees on site	<ul style="list-style-type: none"> <li>- Increased reforestation after mine closure</li> <li>- Increased carbon sinks enabling carbon dioxide sequestration</li> </ul>	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	
		10.1.3.2 Restricting tree cutting and open cast mining at ASGM sites	<ul style="list-style-type: none"> <li>- Minimised deforestation at ASGM sites</li> <li>- Increased adoption of shaft mining where source of gold ore is hard rock</li> <li>- Sustained carbon sinks coverage enabling carbon dioxide sequestration</li> <li>- Reduced deforestation at ASGM sites</li> <li>- Reduced alteration of ecosystems (e.g. river morphology that could increase flood risks)</li> </ul>	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	
		10.1.3.3 Training miners on construction of concrete shafts	<ul style="list-style-type: none"> <li>- Reduced use of timber for shaft construction</li> <li>- Reduced emissions of greenhouse gases from decomposing timber</li> </ul>	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	
		10.1.3.4 Training ASGM site restaurant managers on existing alternatives to fuel wood and energy saving technologies	<ul style="list-style-type: none"> <li>- Reduced use of fuelwood</li> <li>- Increased adoption of energy saving cook stoves</li> <li>- Reduced deforestation</li> <li>- Reduced emissions of greenhouse gases</li> </ul>	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	
		10.1.3.5 Extending electricity to ASGM camps as well as host communities	<ul style="list-style-type: none"> <li>- Reduced greenhouse gas emissions</li> <li>- Reduced fuelwood consumption</li> <li>- Reduced heavy carbon energy sources such as diesel commonly used at ASGM sites</li> </ul>	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	
		10.1.3.6 Training ASGMs and community members on climate change, impacts, and potential mitigation and adaptation actions they can take to reduce contributions to and impacts of climate change	<ul style="list-style-type: none"> <li>- Reduced greenhouse gas emissions</li> <li>- Reduced environmental degradation caused by ASGM</li> </ul>	Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	
		<b>10.1.4 Improve institutional environmental planning</b>					
		10.1.4.1 Carrying out a Strategic Environment Assessment for the ASGM sector	<ul style="list-style-type: none"> <li>- Policies, plans or programmes having environment concerns in the ASGM sector integrated</li> <li>- Reduced cumulative effects of environment concerns in the ASGM sector</li> <li>- Sustainable decision making alongside economic and social considerations</li> </ul>	National, Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	

<b>11. To continuously raise awareness and sensitisation on mercury use in the ASGM sector and its dangers</b>	<b>11.1 Strategies for providing information to artisanal and small-scale miners and affected communities (As required by point 1(j) of the Annex C of the Minamata Convention)</b>	<b>11.1.1 Development of a Communication Strategy</b>				
		11.1.1.1 Developing a communication strategy	- Targeted communication made to national stakeholders and ASGM miners - Documented dissemination strategies ensuring a wider public outreach - Increased public knowledge on mercury and its dangers	National, regional, local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA
		11.1.1.2 Developing targeted messages and holding targeted stakeholder meetings in regard to effects of mercury on human health and environment, existing alternatives and mitigation measures	- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA
		<b>11.1.2 Documenting and dissemination of information on mercury use and its dangers</b>				
		11.1.2.1 Developing and translating (into local languages) IEC materials on effects of mercury on human health and environment and BATs	- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA
		<b>11.1.3 Implementation and dissemination of information on mercury use and dangers</b>				
		11.1.3.1 Holding public meetings to disseminate information on effects of mercury on human health and environment and BATs in collaboration with ASGMs	- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA
		11.1.3.2 Disseminating information on the impacts of mercury on human health and environment and adoption of BATs through media	- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA
		11.1.3.3 Holding Training of Trainers on impacts of mercury on human health and environment and BATs	- Continuous information sharing on the dangers of mercury on human health and environment - A sustainable ASGM sector with reduced and eventual elimination of mercury use - Sustainability of ASGM good practices ascertained	Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA
		11.1.3.4 Developing an ASGM platform for sharing information with national stakeholders and miners and also serving as a feedback loop	- Efficient information sharing, increased public knowledge and wide dissemination of information on mercury and its dangers enhanced	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners

		11.1.3.5 Documenting, popularising and disseminating of good ASGM practices	<ul style="list-style-type: none"> <li>- Increased public knowledge and wide dissemination of information on mercury and its dangers</li> <li>- Adoption of good mining practices and standards</li> </ul>	National, regional, local government	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	
		11.1.3.6 Developing the capacity of media houses and other communication channels to monitor and relay information on ASGM operations and good practices	<ul style="list-style-type: none"> <li>- Efficient information sharing across the country</li> <li>- Increased public knowledge and wide dissemination of information on mercury and its dangers</li> </ul>	National	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	
		11.1.3.7 Undertaking ASGM technical officers to exposure visits to countries with ASGM good practices	<ul style="list-style-type: none"> <li>-Increased public knowledge and wide dissemination of information on mercury and its dangers</li> <li>-Technical officers in the ASGM sector knowledgeable about safe practices of gold mining</li> </ul>	National	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	
		<b>11.1.4 Instituting an information sharing platform for disseminating mining information</b>					
		11.1.4.1 Setting up an information dissemination system including cadaster related information	<ul style="list-style-type: none"> <li>-Ease of access to information by ASGMs and feedback</li> <li>-Increased public knowledge and wide dissemination of information on mercury and its dangers</li> <li>-Improved collaborations between the ASG Miners and institutions in charge of the sector</li> </ul>	National, regional, local government	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	
		11.1.4 .2 Develop a database for suppliers and local fabricators of ASGM/ASM mining equipment	<ul style="list-style-type: none"> <li>-A comprehensive database of suppliers and local fabricators of ASGM/ASM mining equipment</li> <li>-Adoption of mercury-free tools and technologies</li> <li>-A comprehensive data base of suppliers and local fabricators of mercury free mining equipment established</li> </ul>	National	NEMA	Private sector, Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT, UMA	



## 6.0 Implementation Plan for the Strategies of the NAP on ASGM

This section expounds on the strategies and interventions highlighted in the table 20. The short-term strategies will kick off upon endorsement of the NAP on ASGM while others will take medium to long term interventions.

The strategies and interventions for implementing the NAP on ASGM have been linked back to the national objectives.

**Objective 1: To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024**

**Strategy 1.1: Actions to eliminate worst practices (as required by point 1(b) of Annex C of the Minamata Convention)**

This strategy is provided for under Annex C, paragraph 1(b) which outlines the four worst practices and requires the NAP to demonstrate how these practices will be addressed. These practices were observed more in the Central and Eastern regions with some miners from the Central Region introducing them in other regions as was observed in the Karamoja Region. The actions under this strategy will target these two regions after which they will be rolled out to Karamoja and Ankole regions.

**Intervention area/action 1.1.1: Elimination of whole ore amalgamation**

Whole ore amalgamation is the method used where the ASGMs mix the mercury in a large amount of ore. The mercury is then mixed straight into the ore in the ball mill and then processed. This method generally uses large quantities of mercury.

**1.1.1.1 Holding sensitisation campaigns on mercury use and its dangers**

Awareness creation through sensitisation campaigns on mercury use and its dangers shall be undertaken. Most ASGMs are unaware of the difference in whole ore amalgamation and concentration amalgamation. Awareness raising on the dangers of whole ore amalgamation will be undertaken through sensitisation campaigns using both IEC materials and trainings at mine sites in order to encourage miners to adopt lower mercury concentration methods and/or mercury-free methods.

**Anticipated outcomes:**

- \* Increased knowledge on the dangers of mercury on human health and the environment
- \* Increased ASGM adoption of safer gold processing method
- \* Increased adoption of safety and health measures when using mercury

**Level of implementation for action**

Sensitisation will be held at all Local Government levels including those located in Kigezi Region which ASGMs did not use mercury at the time of the NBO study of 2019

**1.1.1.2 Developing and producing communication materials to illustrate the disadvantages of whole ore amalgamation and other worst practices and solutions**

This action will be undertaken in order to inform and educate ASGMs on the advantages of concentration

amalgamation, as opposed to whole ore amalgamation which is not only a waste of money because one uses high amounts of the mercury, but it also does not necessarily yield a higher amount of gold in comparison to concentration amalgamation as believed by the miners. The IEC materials will be developed, published and distributed at different mine sites and the ASGMs will be educated on concentration amalgamation.

#### **Anticipated outcomes:**

- \* Reduced mercury emissions and releases from ASGM activities
- \* Increased knowledge on efficient gold concentration methods
- \* Reduced exposure of ASG miners to mercury emissions and releases
- \* Reduced environmental contamination with mercury

#### **Level of implementation for action**

Communication materials on the disadvantages of whole ore amalgamation and other worst practices will be developed and disseminated at local government level in the ASGM districts with the main focus on the districts of Kassanda in the Central Region and Buhweju in Ankole Region where whole ore amalgamation was most observed.

#### **1.1.1.3 Conducting demonstrations on alternative methods to mercury: Use of gravitational methods and cyanide technologies**

There are a number of alternative methods to mercury use while processing gold. These include gravitational technologies (for example sluicing, dry separation, spirals, jigs, shaking tables and centrifuge concentrators) and cyanide. Some of these, for example cyanode, yield higher quantity and better quality gold. However, the ore grade differs from region to region with Central and Eastern regions having the highest average ore grade of 19.8 g/T, followed by Ankole with 8.7 g/T, Karamoja with 8.5 g/T and lastly Kigezi with 0.8 g/T.

The miners will be trained in gold liberation methods and the best alternative technology for each region will be identified. These experiments on gold liberation and alternative technologies will be carried out at demonstration sites set up in each region, where Training of Trainers will be carried out. The trainers will ensure that these methods are rolled out region-wide as best alternatives.

The ASGMs interested in the use of cyanide will be encouraged to form associations. Through these associations they will raise funds in order to afford the initial investment in the equipment. They will also continuously save to be able to maintain the cyanide plant.

#### **Anticipated outcome:**

- \* Increased adoption of mercury-free technologies

#### **Level of implementation for action**

The different alternative methods to mercury use in each region will be set up according to the ore type and geology of the region which will inform the selection of the most suitable alternative method for a specific region. The demonstration sites will be set up at the local government level in descending order from the highest mercury using region to the lowest. This means Central Region (7,822kg/yr) will come first, Eastern Region (5,023kg/yr) second, Karamoja Region (1,259kg/yr) third, and lastly, Ankole Region (1,129kg/yr).

#### **1.1.1.4 Instituting a collaborative mechanism between ASG miners and suppliers including technicians of equipment that require little to no mercury use in gold processing**

Different trainings will be carried out at mine sites and will involve the participation of various actors

including distributors of alternative technologies and suppliers of cyanide. These trainings will act as a platform on which the miners can form collaborations with the different actors and reach agreements of technical assistance or formation of investor/gold buyer-miner agreements.

#### **Anticipated outcomes:**

- \* Increased adoption of mercury-free technologies
- \* Enhanced ASGM skills in operating mercury-free technologies
- \* Increased ASGM skills in operating and maintaining equipment
- \* Increased ASGM knowledge on local fabricators/sources of mineral processing equipment

#### **Level of implementation for action**

These collaborations will be formed both nationally and at the local government level. This activity will be implemented across the country to ensure sustainability of mercury-free technologies in ASGM.

#### **1.1.1.5 Developing Bye-law and Ordinances against ASG miner engagement in worst practices**

Bye-law and Ordinances will be developed against bad practices that relate to gold production with the use of mercury in artisanal and small scale gold mining. These will work to enable the reduction in mercury use and make the regulation of the harmful chemical more efficient. Culprits will be apprehended at local government level.

#### **Anticipated outcomes:**

- \* Reduction in the use of worst practices by the miners
- \* Reduced emissions and releases of mercury from ASGM sector
- \* Reduced ASGM engagement in worst practices including whole ore amalgamation
- \* ASG miners violating the ordinance apprehended at a local level/sources of mineral processing equipment

#### **Level of implementation for action**

These will be developed at the local government level in the 16 ASGM districts which include Kisoro in Kigezi Region, Bushenyi, Buhweju and Ibanda in Ankole Region, Kassanda and Kyegegwa in Central Region, Bugiri, Busia and Namayingo in the Eastern Region and Kotido, Kaabong, Moroto, Amudat, Nakapiripirit, Nabilatuk, Bukwo in Karamoja Region.

#### **1.1.1.6 Developing ASGM popularised guidelines on sustainable gold mining and processing**

Guidelines on sustainable gold mining practices and standards will be developed, published and disseminated across all the gold mining regions. These will serve as a measure of standards that the ASGM should follow during their mining activities. The guidelines will also serve as a tool for ASGM inspectors and monitoring officers from different institutions and the local government.

#### **Anticipated outcome:**

- \* Increased adoption of sustainable gold mining and processing standards

#### **Level of implementation for action**

These guidelines will be developed at the national level and will be used as a reference by different actors at all levels of the ASGM sector. They will be developed by DGSM.

#### **Intervention area/action 1.1.2: Elimination of open burning of amalgam or processed amalgam**

When mercury is released into the atmosphere, it is inhaled by the miners and communities where it is burnt. The same mercury is also released into crops and is eventually consumed by mining communities negatively affecting their health and that of generations after them. Though the national study did not test the quality of air within the ASGM mining areas covered due to lack of the required equipment, it is imperative that open burning of amalgam be greatly discouraged under this NAP with plans to eliminate it altogether in the long term.

### 1.1.2.1 Demonstrating to miners existing mercury containment tools/technologies including retorts and fume hoods

Open burning of amalgam will be discouraged by the introduction and demonstration of the use of better practices of burning for example through the use of retorts, a small device which provides a chamber for the burning of mercury at high temperatures and mercury capture hoods which are used to trap the mercury vapour that is given off during the process of burning restricting it from being released into the atmosphere. These are supplied by fabricators located in Kisenyi Market in Kampala and Katwe Market along Entebbe Road in Kampala Capital City.

#### Anticipated outcomes:

- \* Reduced exposure of persons in and around the mines to mercury emissions and releases
- \* Reduced mercury emissions and releases from ASGM sector
- \* Increased recycling of mercury

#### Level of implementation for action

This will take place at local government level where ASGMs will be trained through demonstrations on the existing mercury containment tools. The demonstrations will initially take place in Central and Eastern regions which have the highest mercury releases. These will be rolled out across the other regions and rolled out across the other regions.

### 1.1.2.2 Incentivising the acquisition of alternative methods to gold processing with mercury

The NAP will work towards incentivising the purchase and use of alternative methods and engaging development partners to avail ASGMs with the equipment needed. Development partners will be engaged to avail ASGMs with the tools and equipment required in order to reach the objective for the elimination of the practice of open burning. Tools like retorts can be produced locally by metal fabricators at affordable prices. However, there are no shops selling retorts because there is low demand for them as a result of limited awareness of their importance by the miners. ASGMs under their associations will be encouraged to purchase and continuously apply these tools beyond the life of the pilot project.

#### Anticipated outcome:

- \* Increased miners' acquisition of mercury-free technologies and equipment

#### Level of implementation for action

This activity will take place at the national level and it will involve lobbying development partners as well as the private sector to provide incentives for the ASGMs to purchase mercury-free technologies and equipment.

### 1.1.2.3 Distributing of mercury containment tools/technologies including mercury-free processing technologies to ASGMs

Mercury containment/capture tools and technologies will be distributed to different ASGM miners at sites across the country, giving priority to ASGM sites transitioning to mercury-free sites. The tools which range

from UGX 100,000 to UGX 120,000 (USD 26.6 – 32.0) can be fabricated in Kisenyi and Katwe markets in Kampala, and distributed to the miners in the different ASGM districts.

#### **Anticipated outcomes:**

- \* Reduced mercury emissions and releases from ASGM sector
- \* Increased recycling of mercury

#### **Level of implementation for action**

Open burning of amalgam was observed in most of the ASGM sites in the country. The tools will therefore be distributed in all sites in the country starting in the regions with the highest mercury releases which are Central and Eastern and rolled out across the other regions.

#### **Intervention area/action 1.1.3: Elimination of burning of amalgam in residential areas**

Due to the harmful nature of mercury and its high retention capacity in the environment, burning of amalgam in residential areas leads to adverse public health effects such as mercury poisoning, prolonged coughs, skin lacerations and abrasions. Amalgam burning should, therefore, always take place at a safe distance from a residence and from children and pregnant women. This safe distance will be determined in the baseline survey on public health that is to be undertaken under the Public Health Strategy.

##### **1.1.3.1 Facilitating the establishment of designated gold processing units at each ASGM mine site**

This NAP will set out to ensure that ASGMs and mine owners are trained in proper site planning so as to have a designated processing area at each mine site where the burning of amalgam will take place. It will be closed off to those that are not processors.

#### **Anticipated outcome:**

- \* Reduced exposure of miners and mine workforce to mercury emissions and releases

#### **Level of implementation for action**

This process will start at national level and then be enforced through mines inspections at local government level. It will be advised that every gold mine site in Uganda has a designated processing area.

##### **1.1.3.2 Updating environmental regulations to incorporate restrictions on open burning of amalgam in residential areas/settlements/ dwellings/ and mining camp sites**

The environmental regulations will be updated to incorporate restrictions on open burning of amalgam in residential areas /settlements/ dwellings/and mining camp sites. The amalgam burning area should be away from residential areas/settlements/ dwellings/ and mining camp sites and this will be stipulated in environmental and ASGM mining regulations. This area will also be cordoned off to prevent children and other vulnerable persons like pregnant women being exposed to the mercury. This will be further supported by the DGSM as plans are to gazette areas for ASM operations which will keep the gold processing activities a distance away from community dwellings, residences and settlements.

#### **Anticipated outcome:**

- \* Reduced exposure of communities and miners to mercury emissions and releases

#### **Level of implementation for action**

This will be spearheaded by NEMA in collaboration with Ministry of Justice and Constitutional Affairs and Ministry of Gender Labour and Social Development at the national level.

## Intervention area/action 1.1.4: Elimination of cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury

Cyanide leaching of mercury-contaminated tailings is greatly discouraged because the chemical formed between mercury and cyanide is harmful to the environment and human health. Furthermore, the yield is lower than what is realised when mercury-free ore is used. This is because the mercury reduces the cyanide in solution which leads to a reduction in gold leaching.

### 1.1.4.1 Training small to medium scale gold miners on handling, storage and decontaminating mercury containing tailings

Decontamination is a long and laborious process which many ASGMs might be opposed to. This will require sensitisation on its advantages which, aside from the potential harm to the environment and human health, include a higher gold yield and hence more profits. The miners shall, in addition, be trained on decontamination of mercury contaminated tailings by use of concentration. Mercury contaminated tailings should not be disposed of to the environment. They can undergo cyanidation as they still contain gold due to the low gold yield capacity of mercury compared to cyanide. However, the tailings must be decontaminated before they are taken through the cyanidation process. The residual mercury can be removed from the tailings by use of the concentration method. ASGMs will be trained in this method to eliminate any mercury in the leaching process which is currently a common practice.

#### Anticipated outcomes:

- \* Reduced leaching of mercury contaminated tailings
- \* Prior extraction of mercury from tailings prior to gold processing with cyanide
- \* Adequate handling, storage and disposal of waste containing mercury

#### Level of implementation for action

This will be undertaken at the local government level in the districts most affected by mercury which are in Central and Eastern regions. This will also happen in Karamoja and Ankole regions. NEMA will take lead with implementation partners being Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), the private sector, LGs, and MoLG, among others.

### 1.1.4.2 Developing a collaborative mechanism between medium to large scale mining companies and ASGMs as part of CSR to develop ASGM technical capacities

This will involve encouraging buyer-seller collaboration between medium to large scale mining companies and ASGMs. These companies have the financial resources and equipment for the decontamination of mercury tailings. It was discovered that the medium scale gold mining companies were the ones heavily reliant on artisanal mercury containing tailings to sustain their plants and operations. Collaboration between these companies and ASGMs will be formed so that the companies are able to buy mercury contaminated tailings from ASGMs and decontaminate the same before subjecting it to the Carbon in Pulp (CIP) and Carbon in Column (CIC) leaching processes. In addition to these, engagement meetings will be held with medium scale miners to explore collaboration initiatives for the sustainability of ASGM mining activities.

#### Anticipated outcomes:

- \* Decreased use of mercury contaminated tailings
- \* Increased knowledge transfer from medium to large scale mining companies to ASGMs

#### Level of implementation for action

This action will be implemented by NEMA on the national level.

### 1.1.4.3 Committing medium to large scale gold processors to adequately transport, handle and store mercury containing tailings and dispose of mercury containing waste after cyanidation processing with mercury containing tailings

Mercury contained tailings are mainly used by medium to large scale gold miners who carry out cyanide leaching on the contaminated tailings in order to recover the remaining gold. This is one of the worst practices in gold processing and this level of miners will be required to commit to adequately transport, handle and store mercury containing tailings as well as proper disposal of mercury containing waste after cyanidation processing of mercury contained tailings.

#### Anticipated outcomes:

- \* Reduced leaching of mercury contaminated tailings
- \* Prior extraction of mercury from tailings prior to gold processing with cyanide
- \* Adequate handling, storage and disposal of waste containing mercury

#### Level of implementation for action

This action will be implemented at the local government level starting with Central and Eastern regions because the two use the highest amount of mercury. NEMA will be lead implementer.

### Strategy 1.2: Strategies for promoting the reduction of emissions, releases, and risks of exposure to mercury (As required by point 1(e) of the Annex C of the Minamata Convention)

While processing gold using mercury, emissions are released into the atmosphere, crops and fish when poorly disposed of. These retain mercury for a long period of time causing harm to generations of people in that area and are subject to exposure. ASGMs have used mercury while unaware of this fact and the dangers of the harmful chemical to the environment and human health.

#### Intervention area/action 1.2.1: Assessing existing minimal mercury use to mercury-free technologies for gold processing by ASGMs

##### 1.2.1.1 Benchmarking mercury-free technologies including associated costs and benefits

The NBO study of 2019 undertaken by NEMA established several reasons why ASGMs prefer to use mercury to alternative technologies. The reasons included the following:

- i. Mercury is cheaper and easier to access mercury than the alternatives
- ii. Miners lack knowledge on available alternatives to mercury
- iii. Miners lack adequate capital to buy equipment that would require use of less mercury or no mercury at all
- iv. Lack of access to utilities such as water and electricity which are usually required in high amounts to facilitate use of alternative technologies
- v. Limited supply/amount of ore quantities and quality to meet the capacity for equipment related to alternative technologies

In addition to encouraging ASGM to undertake exploration for ASGM operations and gazetted areas, a study will also be undertaken to benchmark internationally acceptable mercury-free gold extraction and production technologies. This study will establish their recovery rates in comparison to mercury, the cost benefit analysis of using these technologies over mercury and their acceptability among ASGMs where they have been implemented successfully. Some of these alternatives include but are not limited to cyanide and gravitational methods.

### Anticipated outcomes:

- \* Targeted acquisition of gold processing technologies/equipment by ASGMs
- \* Lessons learnt adopted by benchmarking institutions

### Level of implementation for action

This study will be carried out at the national and local government levels to capture the different mercury-free technologies and tools.

#### 1.2.1.2 Training local masons and fabricators in producing retorts, mercury capture hoods, construction of mercury effluent containment structures, among others

The NAP will train local masons and metal fabricators in the production of mercury capture tools. This will make the tools readily available and easily affordable for ASGMs as they will be locally produced.

### Anticipated outcomes:

- \* Increased production of mercury capture tools
- \* Improved design of gold processing areas
- \* Improved containment of mercury containing waste

### Level of implementation for action

This will take place at local government level in all the ASGM regions. Fabricators will be brought together and trained on the fabrication of these technologies and tools.

### Intervention area/action 1.2.2: Supporting the use of mercury-free and mercury capture technologies

#### 1.2.2.1 Training ASG miners on mercury effluent and emissions containment tools and technologies

To support the achievement of this strategy, ASGMs will be trained on mercury management tools to help significantly reduce mercury emissions and releases. This training will target Training of Trainers in all the mapped gold mining areas and camp sites to enable a national sustainable adoption of these tools. During the transition phase from mercury use to mercury-free technologies, the ASGMs will be trained in the use of mercury capture tools for example retorts and capture hoods.

### Anticipated outcomes:

- \* Increased adoption of mercury effluent and emissions containment tools and technologies
- \* Reduced mercury emissions and releases at ASGM sites
- \* Reduced mercury pollution

### Level of implementation for action

This will take place at local government level in the ASGM regions starting with Central and Eastern regions where the use of mercury is highest; and later the Karamoja and Ankole regions.

#### 1.2.2.2 Integrating miner needs into local and national government planning and budgeting programmes and projects

Mainstreaming of plans, budgets and programmes with interventions/actions contained in the NAP on ASGM will be undertaken by national stakeholders including government agencies at national and local, CSOs and development partners. Mainstreaming of NAP interventions will contribute to the achievement of the NAP goal and objectives.



### Anticipated outcomes:

- \* More miners accessing finance to afford the methods they currently consider expensive
- \* ASGMs access to government inputs instituted
- \* ASGM benefiting from government livelihood programmes like Operation Wealth Creation (OWC)
- \* ASGMs benefiting from small grants programmes and revolving funds/microfinance schemes
- \* Increased acquisition of mercury-free technologies, tools and equipment by ASG miners

### Level of implementation for action

This will be implemented at both the local and national levels in order to identify as many programmes as possible.

#### 1.2.2.3 Carrying out formal and informal education in institutions and mining communities regarding mercury effects on human health and environment and mitigating effects

In order to increase knowledge on the dangers of mercury among the wider communities, the NAP will also set out to have formal and informal education on mercury effects on human health and environment and how these can be mitigated in institutions and in mining communities. This will enable the achievement and sustainability of the NAP goal towards the elimination of mercury use in the ASGM sector.

### Anticipated outcome:

- \* Increased knowledge on dangers of mercury use and alternatives to mercury use

### Level of implementation for action

This will be undertaken nation-wide by the Ministry of Education and Sports.

#### 1.2.2.4 Updating the curriculum of public vocational institutions to cover ASM/ASGM trainings on sustainable gold extraction, processing and fabrication of tools/equipment

**The curriculum of public vocational institutions will be updated to cover trainings on sustainable gold extraction and processing methods and fabrication of tools/equipment.**

This will enable the youth and other interested persons to acquire skills in mining, mineral (including gold) processing, equipment fabrication and maintenance.

### Anticipated outcome:

- \* Public vocational institutes awarding certificates and diplomas to miners

### Level of implementation for action

This will be undertaken nation-wide by the Ministry of Education and Sports.

### Intervention area/action 1.2.3: Establishing a safe waste disposal programme in the ASGM sector

#### 1.2.3.1 Training ASGMs in safe waste disposal methods, waste/effluent treatment and recycling and mercury containing tailings containment

It was observed in the national overview that ASGMs do not generally practice proper waste disposal due to ignorance about the dangers of poor disposal of mercury and lack of training on design of proper waste disposal systems. To ensure safe waste disposal, ASGMs will be trained in safe waste disposal methods and practices. These trainings will take place at mine sites in order to get a physical example on how to plan out a proper disposal system. Standards will be set on disposal of mercury waste and tailings containing

mercury where a water tank can be constructed to store water which is either rain water or pumped from a nearby water body and the use of sedimentation pools where water pumped from tailings can be stored to be re-used. Shallow ponds can be hand dug with hoes and spades and sluicing carried out in these ponds and not in water bodies from which the communities in and around the mines fetch water for domestic consumption.

#### **Anticipated outcome:**

- \* Safer waste disposal methods adopted by ASGMs

#### **Level of implementation for action**

This will be carried out at both the local and national levels with NEMA as the lead implementer. It will be undertaken nation-wide because none of the ASGM sites had proper waste disposal systems.

#### **Objective 2: To facilitate the formalisation of the ASGM sector by 2024**

##### **Strategy 2.1: Steps to facilitate formalisation or regulation of the ASGM sector (As required by point 1(c) of the Annex C of the Minamata Convention)**

The Government of Uganda recognises the ASM sector as a major player in the mining sector because it is a source of livelihood for many people across the nation.

The Mining and Mineral Policy, 2018 recognises the importance of the ASM subsector in job creation and employment of youth and women. The government has, therefore, taken steps towards the formalisation of the ASM sector with Objective V in the Policy being: 'To organise and legislate Artisanal and Small-Scale Mining in Uganda.'

The subsequent Mining and Mineral Bill, 2019 which is currently under review, introduces a new licensing regime for ASM activities. Clause 84 to 97 of this Bill is dedicated to the formalisation of artisanal mining while Clause 73 to 83 of the same Bill are dedicated to the formalisation and regulation of small scale mining activities. The latter provisions above are an upgrade from the location licensing regime under the 2003 Mining Act.

In March 2019, DGSM launched the process of biometric registration of ASMs nationally which will, inter alia, aid the formalisation, management and overall regulation of the ASGM subsector. A database was developed and registration of ASMs should have commenced in November 2019 with the project finalised in June of 2020.

A national umbrella ASM association with full representation of the ASGM subsector has been put in place to aid the formalisation process and the National ASM Management Strategy will be reviewed. This will put in place further strategies to enable the formalisation and regulation of the ASGM subsector along other ASM clusters.

#### **Intervention area/action 2.1.1: Developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities**

##### **2.1.1.1 Reviewing relevant laws/regulations to incorporate provisions of ASGM/ASM formalisation strategies**

This will ensure that ASGM activities are provided for in subsequent legislation to implement the provisions of the Mining and Minerals Policy, 2018. Implementation of the Mining and Minerals Policy, 2018, will address issues in the ASGM sector. The MEMD will support effective regulation of the ASGM sector ensuring enforcement of the NAP and implementation of the strategies under formalisation of the ASGM sector.

### Anticipated outcomes:

- \* Creating an enabling environment for ASGM/ASM to operate
- \* Improved ASG miner organisations
- \* Enhanced access to financial credit by ASG miners
- \* Increased acquisition of mining licences by ASMs/ASGMs
- \* Reduced ASM/ASGM and medium to large scale miner conflicts

### Level of implementation for action

This will be implemented at the national level by DGSM and NEMA.

#### 2.1.1.2 Formulating ordinances and bye-laws against to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations

The ASGM sector is largely centralised with little authority left to the local governments where the mines are located. There is need to form bye-laws and ordinances at the district and sub-county levels to support and localise principle legal frameworks which will ease the implementation and enforcement of environment and natural resources regulations.

### Anticipated outcomes:

- \* Increased adherence of ASG miners to environment and natural resources laws/regulations
- \* Environmental certification for ASGM operations
- \* Sustainable processing of gold by ASGM

### Level of implementation for action

These will be developed at the local government level in the 16 ASGM districts which include Kisoro in Kigezi Region, Bushenyi, Buhweju and Ibanda in Ankole Region, Kassanda and Kyegegwa in Central Region, Bugiri, Busia and Namayingo in the Eastern Region, and Kotido, Kaabong, Moroto, Amudat, Nakapiripirit, Nabilatuk and Bukwo in Karamoja Region.

#### 2.1.1.3 Developing monitoring guidelines for ASM/ASGM activities

The NAP will ensure that local governments actively participate in regulating the ASGM subsector to plug the existing central government sector monitoring gaps due to the few mining inspectors. This will be facilitated by developing monitoring guidelines for ASGM activities. This will also make the process cost effective as the officers carrying out monitoring will be on ground.

### Anticipated outcome:

- \* Improved monitoring of ASGM activities by MDAs

### Level of implementation for action

This will be undertaken at the national level by NEMA.

#### 2.1.1.4 Reviewing and improving the efficiency of the licensing system to provide for categories of ASGM operations and ascertaining viability of dormant mineral licences

There have been cases of mineral licenses that have been left dormant and not followed up by the DGSM which is mandated to ensure that mineral works are being undertaken on every licence. The NAP will support the process of reviewing and improving the licensing system so that these licences are cancelled thus providing for ASGM operations to be undertaken.

**Anticipated outcomes:**

- \* ASGMs licensed according to their legal organisations/categories
- \* Cancellation of dormant licences
- \* Online mineral licence application system in place

**Level of implementation for action**

This will be implemented at the national level by the DGSM.

**Intervention area/action 2.1.2: Building the capacity of ASGMs and extension staff to manage the ASGM sector****2.1.2.1 Carrying out research on best ASGM practices and technologies in ASGM sector**

A big component of the NAP, along with training and capacity building is research. Research is expected to play a vital role in the achievement of the NAP goals and objectives because it enables the generation of data and information on best practices in the ASGM sector. Research will be undertaken on the best ASGM practices and mercury-free technologies. This will include the cost effectiveness of the technologies and efficiency of gold recovery from ore.

**Anticipated outcomes:**

- \* Quick references to documented best ASGM practices and technologies in ASGM sector
- \* Tailored/recommended best ASGM practices and technologies for different regions
- \* Improved technology efficiencies

**Level of implementation for action**

This will be undertaken on a national level by Academia.

**2.1.2.2 Carrying out inspectors and ASG miners capacity needs assessment in regard to managing the ASGM sector**

In order to ascertain the training and capacity needs of the inspectors and ASGMs, a capacity needs assessment will be carried out. This will assess the inspectors and miners' capacity to manage the ASGM sector, and where they fall short; a plan will be made to build their capacity and skills. Inspectors from different institutions will be assessed to ensure they are fully capable of carrying out their mandate.

**Anticipated outcomes:**

- \* Inspectors' capacity needs to manage the ASGM sector identified
- \* ASG miners' needs to reduce and eliminate mercury use identified

**Level of implementation for action**

This will be undertaken at both the local and national government levels.

**2.1.2.3 Training of ASGM trainers and youth miners on best ASGM practices and technologies**

ASGM trainers of trainer and youth will undergo training in ASGM best practices, technologies and tools. Training of Trainers will serve the purpose of sustainability of these practices in the sector.

**Anticipated outcomes:**

- \* ASG miners' capacity to reduce and eliminate mercury use enhanced
- \* Improved observance of OSHE standards at ASGM sites
- \* Improved practices and acquisition of best technologies by ASGM

- \* Reduced mercury use in the ASGM sector
- \* Increased adoption of best available practices and technologies
- \* Increased awareness of miners on best ASGM practices and alternative technologies

#### Level of implementation for action

This will be undertaken on national and local government levels and will target all the ASGM regions.

#### 2.1.2.4 Training of inspectors on ASGM activity monitoring, ASGM protocols, standards and regulations

Local government officials charged with the administration of this sector i.e. the district environment and natural resources officers will be trained in ASGM national, regional and international activity monitoring protocols, standards and regulations.

#### Anticipated outcomes:

- \* Improved monitoring and reporting of ASGMs activities by inspectors
- \* Efficient management of mercury use in the ASGM sector
- \* Improved observance of OSHE standards at ASGM sites
- \* Inspectors' capacity to managing the ASGM sector enhanced
- \* Increased awareness of inspectors on best ASGM practices and alternative technologies

#### Level of implementation for action

This will be implemented at the national and local government levels in order to train the inspectors in government institutions and those at the district or regional level.

#### 2.1.2.5 Developing mobile applications for cell phones to enhance information sharing among miners and between miners and inspectors/MDAs and the private sector

There is a communication gap not only among miners but also between the government and the miners. To bridge this gap, a mobile application (app) shall be developed to enhance information sharing amongst the different stakeholders in the sector. The ASGMs will be able to download the app on their respective phones enabling them to receive notifications on updates in the sector. They will also be able to use the same app to share their concerns or give feedback on relevant issues.

#### Anticipated outcome:

- \* Efficiency in inquiries and feedback enhanced

#### Level of implementation for action

The app will be developed on a national level by the Ministry of Information, Communication and Technology.

#### 2.1.2.6 Train responsible officers in management of mercury

Officers from DGSM, MoTIC, URA, UNBS and UBOS, among others, will undergo training in the management of mercury to build their capacity and minimise the use and trade of mercury. This is a necessary action as it was observed under the NBO study that many officers charged with the management of the harmful chemical have never handled mercury and some do not even know what mercury looks like

#### Anticipated outcome:

- \* Efficient in management of mercury use and trade in Uganda

#### Level of implementation for action

This training will be undertaken at the national level.

### **Intervention area/action 2.1.3: Forming, strengthening and defining ASGM associations, companies and cooperatives**

#### **2.1.3.1 Training ASGM on rules and procedures for forming associations, cooperatives and companies**

In order to have a more organised and regulated sector, formulation of ASGM associations plays a key role in self-monitoring and regulation by the miners themselves. Compliance to these mercury reduction strategies will be linked to ASGM licensing standards that must be met by these associations in order to retain their licences and/or operational permits. ASGMs will be encouraged to form associations, cooperatives and companies and, therefore, trained on the procedure of forming and registering these entities. By forming or joining one of these, the process of acquiring a mining permit is easier than when one is an individual.

##### **Anticipated outcomes:**

- \* ASGM fully knowledgeable about the procedures of registering associations and advantages of working in associations
- \* Increased number of ASGM opting for associations
- \* Membership and operations of existing ASGM associations strengthened

##### **Level of implementation for action**

This will be implemented at both the national and local government levels. It will be led by the Ministry of Trade, Industry and Cooperatives.

#### **2.1.3.2 Registering of ASGM associations, cooperatives, companies**

The NAP will support the registration of ASGM associations, cooperatives and companies through the provision of registration fees and development of constitutions for the associations and cooperatives. This facilitates the monitoring of gold activity and benefits the ASGMs as well, given that the MEMD issues licences and permits to organised ASGM that are in registered groups and/or associations that meet all occupational, health, safety and environmental standards including access, use and disposal of mercury in the gold extraction process.

##### **Anticipated outcomes:**

- \* Higher numbers of fully registered and functioning ASGM associations, cooperatives and companies
- \* Increase in ASGM associations, cooperatives and companies following association rules and procedures
- \* Reduced migrations of ASGMs
- \* Increase in ASGM mining capital investments

##### **Level of implementation for action**

This will be implemented at both the national and the local levels in the ASGM districts. It will be led by DGSM.

#### **2.1.3.3 Establishing a national ASGM umbrella association or network**

In addition to the different ASGM associations, a national ASGM umbrella association or network will be established which will give the ASGMs a unified and collective platform through which they can voice their interests and engage with regulatory bodies, key partners and stakeholders.

### Anticipated outcome:

- \* Increased information sharing

### Level of implementation for action

Led by DGSM, this will be implemented at both the national and the local government levels in the ASGM districts.

## Intervention area/action 2.1.4: Facilitating miners to access financial credit

### 2.1.4.1 Reviewing financial regulations to provide for ASGM associations, cooperatives and companies access to credit schemes

According to the NBO study, there were no formal financing systems within the ASGM camps, and the miners did not have access to cheap financing for their operations. This NAP provides for the review of the financial regulations to enable ASGM associations, cooperatives and companies access credit schemes.

### Anticipated outcomes:

- \* Finance institutions legally committed to offering ASGM financial services
- \* A change in attitude by banking institutions, lending associations, cooperatives and other financial service providers towards suitability of ASGM operations as investments that can access financial credit.

### Level of implementation for action

This will be implemented at the national level. The Ministry of Finance, Planning and Economic Development will spearhead this.

### 2.1.4.2 Holding engagements between ASGMs and financial institutions

The NBO study of 2019 found that while the micro-financing options available in the rural areas are costly for the miners, they also have no incentive to lend to them because they are considered risky due to the uncertainty of gold yields and the high migratory nature of their lifestyle. Engagements will be held between ASGMs and financial institutions to encourage the latter to provide funds to the ASGMs. Financial institutions will have the opportunity to take the ASGMs through the procedures of securing finances to help them appreciate the formalities and requirements better.

### Anticipated outcomes:

- \* ASGM knowledgeable about finance mechanisms for their activities
- \* More miners and ASGM associations accessing finance and affordable alternative technologies

### Level of implementation for action

These will be held at the national level and implemented with MoFPED as the lead stakeholder.

## Intervention area/action 2.1.5: Geo-prospecting and zoning of ASGM mining areas

### 2.1.5.1 Collecting geological data and gazetting areas for ASGM operations

To ease the process of licensing of gold activities, action will be taken to gazette specific areas where ASGMs will carry out mining activities. This eases the process of monitoring and tracking of mercury sales within the sector as inspectors will have targeted checks at specific sites.

**Anticipated outcomes:**

- \* ASGMs made more aware of mineral spatial distribution
- \* Reduced ASGM and medium to large scale miner conflicts
- \* Reduced migrating of ASGM
- \* Sustainable ASGM associations, cooperatives and companies
- \* Reduced environmental degradation

**Level of implementation for action**

This will be implemented at national and local government levels by DGSM.

**2.1.5.2 Cancellation of dormant licences**

The NAP will set out to have dormant licences cancelled to enable ASGM associations, cooperatives and companies apply for them. To facilitate the efficient implementation of the gazetting of ASM mining areas, the dormant licences can be cancelled and gazetted as ASGM mining licences/areas.

**Anticipated outcomes:**

- \* Reduced dormancy of issued mineral/mining licences
- \* Re-allocation of licences to ASGM operations

**Level of implementation for action**

This will be implemented by DGSM at the national and local government levels.

**Intervention area/action 2.1.6: Undertake a national biometric registration and mapping of all ASGM value chain key players****2.1.6.1 Carrying out a baseline survey of ASG households, actors along the ASGM value chain and location of ASGM operations**

Existing data from the NBO study estimated that there are more than 31,000 miners actively involved in ASGM. This estimation excludes ASGM dealers and middlemen. In order to formalise the sector, there will be need to undertake a country-wide registration of all ASGM value chain key players. These include the extraction workers, transporters, processors, mine owners, landlords, gold buyers and mercury sellers. This will enable the government and line ministry to keep track of gold production activities in the country. An initial baseline survey on the actors in the ASGM sector will be undertaken to determine the approximate number of ASGMs in Uganda, the secondary dependents of the subsector and map out the location of their sites. It will also map out mercury and gold trade routes so as to track the sale of these two products.

**Anticipated outcome:**

- \* ASGM sector specific data and information in place

**Level of implementation for action**

This will be undertaken by DGSM at the national and local government levels in all the ASGM districts. Implementation will be supported by the district local governments.

**2.1.6.2 Undertaking the biometric registration of ASGMs (launched in March 2019 to commence in November 2019 and end by June 2020)**

The actors along the ASGM value chain will be registered, their roles in the sector established and number of actors in each role ascertained. A database will be created which will be monitored by DGSM in support



of other interventions designed to reduce the sale of mercury to ASGMs.

**Anticipated outcome:**

- \* ASG miners and their operations easily tracked

**Level of implementation for action**

This is will be undertaken by DGSM on a national and local government level in all the ASGM districts.

**2.1.6.3 Benchmarking of best practice in the formation of ASGM associations, companies and cooperatives**

A benchmarking study will be undertaken in order to ascertain the best practice in the formation of ASGM associations, companies and cooperatives. This will facilitate the formation of the associations, companies and cooperatives and also set standards, guidelines and procedures in the sector for ASGMs to follow.

**Anticipated outcome:**

- \* Adoption of best practices

**Level of implementation for action**

This will be implemented at the national level with DGSM taking the lead stakeholder.

**2.1.6.4 Establishing gazetted buying centers for gold**

Regional gold buying centres will be established where ASGMS can sell their mercury-free gold. This not only benefits the buying centres but also the ASGMs as the process eliminates middlemen who are usually buying gold at very low prices. This action gives miners a chance to sell their gold at competitive international market prices.

**Anticipated outcomes:**

- \* Processing methods for gold tracked
- \* Improved prices for gold from ASGM
- \* Reduced use of mercury in gold processing
- \* Increased revenue from gold production and delivery of services

**Level of implementation for action**

This will take place at the regional level and will be implemented by DGSM as the lead. A gold buying centre will be set up in every gold mining region.

**Objective 3: To strengthen stakeholder engagement in the implementation of the NAP**

**Strategy 3.1: Strategies for involving stakeholders in the implementation and continuing development of the plan (As required by point 1(g) of the Annex C of the Minamata Convention)**

Various stakeholders were involved in the national overview of the ASGM sector undertaken by NEMA and in the development of the NAP. This practice will allow for the involvement of stakeholders throughout the implementation of the NAP and continuous development of the plan every three years as is allowed for in the Minamata Convention.

**Intervention area/action 3.1.1: Establishing a Multi-stakeholders' Working Group Responsible for the implementation of the NAP**

### 3.1.1.1 Undertaking the mapping of national stakeholders to form a NAP implementation working group

Based on findings from the NBO on the ASGM value chain and the different actors in the sector, an initial ASGM stakeholder analysis will be carried out. This will map out and identify the different stakeholders that will be engaged, ensuring that no actor is excluded. The process will also identify the expertise that is needed to ensure the proper implementation of the NAP.

#### Anticipated outcome:

- \* A comprehensive database of the stakeholders in place

#### Level of implementation for action

This nation-wide mapping will be implemented at the national, regional and local government levels. NEMA will be lead agency.

### 3.1.1.2 Defining the National Action Plan implementation working group terms of references, their interest and potential contributions in reviewing and implementing the NAP

Terms of Reference will be drawn out and defined for the NAP implementation working group. These will spell out their interests and potential contributions in the implementation and monitoring of this NAP.

#### Anticipated outcome:

- \* Smooth implementation of the National Action Plan leading to the eventual elimination of mercury

#### Level of implementation for action

This will be implemented at the national, regional and local levels. NEMA will take lead.

### 3.1.1.3 Establishing and updating of a national database of ASGM stakeholders (inclusive of regional stakeholders)

This will enable the establishment of a database of ASGM stakeholders while capturing miners, land owners, associations, local leaders, DEOs, DNROs, CDOs and other district officials involved in the management of the ASGM sector. The database will answer the 'who, what and where' of the ASGM sector.

#### Anticipated outcome:

- \* Enhanced national and regional collaborative mechanism

#### Level of implementation for action

This will be implemented at the national, regional and local levels with NEMA as the lead agency.

### 3.1.1.4 Creating synergies with other projects being implemented by sectors, CSOs, private sector and other stakeholders in line with the NAP

The National Working Group will create synergies with other stakeholders who will be assigned roles and responsibilities as per their strengths, positions and work done in the ASGM sector. This will enhance involvement of the stakeholders in the management of mercury. Regional coordinators and district focal persons in the gold rich districts will be appointed and their terms of reference developed through consultative meetings.

#### **Anticipated outcome:**

- \* Enhanced collaboration among different agencies, institutions and organisations in reducing mercury use and emissions in Uganda

#### **Level of implementation for action**

This will be implemented at the national, regional and local levels. NEMA will be lead agency.

### **3.1.1.5 Tracking, monitoring and evaluating implementation of NAP interventions/activities**

The National Working Group will consistently track and monitor implementation of the NAP strategic intervention and activities ensuring planned actions are being undertaken and that NAP implementation partners work towards achieving the desired goals and national targets.

#### **Anticipated outcome:**

- \* Enhanced monitoring of NAP implementation

#### **Level of implementation for action**

This will be implemented at the national, regional and local levels. NEMA will take lead.

### **Intervention area/action 3.1.2: Enhancing information sharing among key stakeholders**

#### **3.1.2.1 Holding periodic stakeholder review meetings to review the NAP**

Periodic stakeholder reviews will be held in order to review the implementation of the NAP, mobilise resources for activities and share information among different stakeholders. This will ensure all implementing partners are updated on the NAP implementation and reduction targets achievements. It will also work to eliminate repetition of interventions by the different partners.

#### **Anticipated outcomes:**

- \* Improved information sharing on NAP implementation
- \* Rolling out of NAP activities undertaken
- \* Feedback on challenges on NAP implementation obtained

#### **Level of implementation for action**

This will be implemented at the national, regional and local government levels. NEMA will be lead agency.

#### **3.1.2.2 Holding community barazas to share information on strategies to reduce mercury emissions and releases and obtain feedback**

Community barazas will be held in order to share information on the strategies being undertaken by the implementing partners to reduce mercury emissions and releases. The barazas will also be avenues that enable the National Working Group to obtain feedback from the communities which will inform their implementation. This action will ensure participation across the board and involve all groups of society that hold a stake in the ASGM sector, including children, women, and persons with disabilities, indigenous groups or their representatives.

#### **Anticipated outcomes:**

- \* Enhanced knowledge on mercury and its dangers
- \* Feedback on challenges on NAP implementation obtained

#### **Level of implementation for action**

This will be implemented at the local government level. NEMA will be lead agency.

#### **Objective 4: To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024**

##### **Strategy 4.1: Strategies for managing trade and preventing diversion of mercury and mercury compounds (As required by point 1(f) of the Annex C of the Minamata Convention)**

The baseline study established the amount of mercury used by the ASGM sector. However, the amount of mercury that is imported remains unknown due to porous borders and illegal trade of the metal. This calls for regional and cross-border inter-agency collaborations to ensure the tracking of mercury trade and enforce trade provisions.

#### **Intervention area/action 4.1.1: Development of a mercury trade tracking system**

##### **4.1.1.1 Developing and updating of a data base of key players in mercury trade and authorised traders in unlisted MAPs**

A data base of known and suspected key players in mercury trade will be created. These are players along the entire value chain which includes customs officers at border points, wholesalers, retail traders and mercury buyers who also occasionally double as gold buyers. The list may also include local manufacturers of mercury-containing cosmetics. This will enable the tracking of trade routes and monitoring of known and unknown traders, distributors and suppliers across the mercury value chain.

##### **Anticipated outcomes:**

- \* Efficient information exchange among traders and institutions
- \* Reduced smuggling of mercury
- \* Enhanced transportation, storage, handling and disposal of mercury and MAPs
- \* Enhanced monitoring of end users of mercury

##### **Level of implementation for action**

This will be implemented at the national and local government levels. MoTIC will be lead agency.

##### **4.1.1.2 Documenting imported unlisted and listed MAPs and restricting (penalties against them) importation of all listed MAPs**

Annex A (Part I and II) of the Minamata Convention lists MAPs that are to be phased out by 2020. These are products on the market that contain mercury and/or its compounds. The NAP aims to phase out the trade and importation of all MAPs within the high priority phase. This will be done by working with the relevant authorities who are part of the general enforcement framework to introduce penalties against importation of these products. The listed MAPs include some batteries, switches and relays, compact fluorescent lamps, linear fluorescent lamps, high pressure mercury vapour lamps, cosmetics, pesticides, biocides, antiseptics and non-electronic measuring devices, among others.

##### **Anticipated outcomes:**

- \* Reduced importation and trade of listed MAPs
- \* Reduced trade in mercury contained in MAPs

##### **Level of implementation for action**

This will be implemented at the national level with URA as the lead agency.

#### 4.1.1.3 Undertaking surveillance of porous borders and ASGM sites to track illegal mercury trade

In order to curb the use of mercury in the ASGM sector, there is need to detect and track mercury and mercury-containing products (MAPs) right from the customs office at the border point to its point of use at the mine site. Responsible MDAs will continuously monitor the mercury trade routes to make these actions sustainable.

##### Anticipated outcome:

- \* Reduced illegal trade in mercury

##### Level of implementation for action

This will be implemented at the national and local government levels. URA will be the lead agency. It will target different border points around Uganda but will aim mainly for those in or near major ASGM districts which have been known for entry of mercury into the country; namely the Busia and Malaba borders on the Uganda-Kenya border line.

#### 4.1.1.4 Training of communities and ASG miners to serve as whistle blowers for smuggled mercury

Selected community members and ASGMs will be identified and engaged to serve as whistleblowers for smuggled mercury. This is because the mercury trade especially at border points is very secretive and it is because of this that it is difficult to intercept a smuggler. The smugglers in addition have rings and informants of their own. Whistleblowers will give the border customs officials a chance at intercepting illegal mercury.

##### Anticipated outcomes:

- \* Reduced illegal trade in mercury and use of mercury
- \* Reduced and eventual elimination of mercury use by ASGMs

##### Level of implementation for action

This will be implemented at the local government level with NEMA as the lead implementing agency.

#### 4.1.1.5 Undertaking studies to assess mercury pathways/trade routes to effectively roll out strategies that manage mercury trade

Studies will be undertaken to assess and map out mercury trade routes from border to mine site. This will enable the development of strategies which will support and facilitate the management of illegal mercury supply and trade.

##### Anticipated outcomes:

- \* Reduced illegal trade in mercury
- \* Reduced and eventual elimination of mercury use by ASGMs

##### Level of implementation for action

This will be implemented at the national level. URA will be lead agency.

#### 4.1.1.6 Training police and judiciary on prosecution of suspects engaging in illegal mercury trade

Police officers and the judiciary will undergo training in prosecution of suspects who are engaged in illegal mercury trade as this has not been a common occurrence due to no provision in the Ugandan law for it. This will greatly discourage the supply, trade and use of mercury which will eventually lead to the elimination

of mercury use.

**Anticipated outcome:**

- \* Efficiency in the judicial system on prosecuting cases against mercury

**Level of implementation for action**

This will be implemented at the national level with MoJCA as the lead agency.

**Intervention area/action 4.1.2: Strengthening institutional capacity in detecting and analysing samples for mercury**

**4.1.2.1 Procuring and equipping inspectors with tools for detecting mercury on site**

The capacity of different inspectors to detect mercury levels, manage trade and prevent the diversion of mercury and its compounds will be built by provision of detection tools and equipment. This will enable them to play their role in the ASGM sector. For example some URA border customs officers are unable to detect products that contain mercury and its compounds. Therefore, many MAPs slip through the checks and into the country undetected. Detection tools are, therefore, required to enable officers intercept mercury or mercury-containing products.

**Anticipated outcomes:**

- \* Quick detection of mercury and seizure of consignments
- \* Reduced errors in reporting and seizures
- \* Early detection of contaminated sites and medium
- \* Improved reporting by inspectors

**Level of implementation for action**

This will be implemented at the national and local levels with NEMA as the lead agency.

**4.1.2.2 Equipping laboratories with tools for testing mercury in samples**

Steps will be taken to enhance the capacity of the laboratories to be able to carry out tests for mercury and its compounds. This will include the provision of mercury testing tools and equipment which will enable the laboratories to provide reliable and valid results.

**Anticipated outcome:**

- \* Reliable and valid results of mercury tests

**Level of implementation for action**

This will be implemented at the national level with NEMA as the lead agency.

**4.1.2.3 Accrediting government laboratories to analyse mercury**

There is currently no accredited laboratory in Uganda that can analyse mercury. This hinders the provision of certified results. This action will work towards accrediting the government laboratory to be able to analyse and certify results on mercury detection tests.

**Anticipated outcome:**

- \* Reliable, valid and certified results

## Level of implementation for action

This will be implemented at the national level. NEMA will be the lead agency.

### 4.1.2.4 Developing institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste

There are no regulations on mercury in Uganda, and therefore, no guidelines on its handling and disposal. Under the NAP implementation, this activity will develop guidelines for handling, transportation, storage, and stabilisation of mercury waste. These will be published and disseminated to different stakeholders.

#### Anticipated outcome:

- \* Efficient mercury waste management

## Level of implementation for action

This will be implemented at the national level with NEMA taking the lead.

### 4.1.2.5 Developing a mercury spill contingency plan for use by traders, institutions and ASGMs

The NAP will provide for the development of the mercury spill contingency plan which will be used by actors along the mercury trade value chain including traders, institutions and ASGMs.

#### Anticipated outcome:

- \* Efficient mercury management along the value chain

## Level of implementation for action

This will be implemented at the national level with NEMA as the lead agency.

### Intervention area/action 4.1.3: Strengthen regional cooperation and cross-border inter-agency collaboration on the tracking of mercury

#### 4.1.3.1 Developing a single window importation platform to track mercury trade across the entire value chain

This will be used to track mercury trade across the entire value chain from regional to national and to local government level. The platform will involve regional actors and enable trans-boundary collaboration. This will be made possible by enhancement of interstate intelligence on cross border trade.

#### Anticipated outcome:

- \* Reduction in illegal mercury trade and restriction of mercury importation

## Level of implementation for action

This will be implemented at the national level. URA will lead.

#### 4.1.3.2 Training customs officers at border points to be able to identify mercury, register mercury and MAPs traders

URA border customs officers will be trained in the management of mercury to be able to identify, register and confiscate all the blacklisted mercury containing products. They will also register the MAPs traders to capture them in the system. This will enable tracking of these specific individuals or entities.

#### **Anticipated outcome:**

- \* Efficient management of trade in mercury and mercury added products

#### **Level of implementation for action**

This will be implemented at the national and local government levels. URA will be lead agency.

#### **4.1.3.3 Benchmarking best practices, standards and case studies from other countries**

The control and management of illegal mercury trade is lacking in Uganda as the NBO shows that ASGMs have continued to illegally supply and trade the harmful chemical. The NAP will, therefore, provide for a study to be conducted so as to benchmark the best practices and standards used by different case studies in the management of mercury and its trade.

#### **Anticipated outcomes:**

- \* Established references for best practices, standards and case studies
- \* Tailored interventions in the ASGM sector
- \* Improved and regionally harmonised management of mercury trade and MAPs

#### **Level of implementation for action**

This will be implemented at the national level with URA as the lead agency.

#### **4.1.3.4 Developing a regional collaborative mechanism in confiscating, handling, stabilising and disposing of confiscated smuggled mercury and MAPs**

A regional collaborative mechanism will be developed. Under the NBO, Uganda was referred to as a transit country for illegal mercury to DRC. There is need to develop a regional collaborative mechanism in confiscating, handling, stabilising and disposing of confiscated smuggled mercury and MAPs to disrupt mercury supply and trade.

#### **Anticipated outcomes:**

- \* Efficient cross boundary management of the trade of mercury and MAPs
- \* Improved investigation of mercury related cases

#### **Level of implementation for action**

This will be implemented at the national level. URA will be the lead agency.

#### **4.1.3.5 Establishing regional disincentives in mercury trade**

Currently, there are more incentives than disincentives to engage in mercury trade. Under the NAP implementation, disincentives will be established to discourage the trade of mercury. This will include strengthening disincentives for illegal behaviour, for example, making it more difficult and costly to trade in illegal mercury. Incentives for inspectors will also be increased, for example, by strengthening both the financial and non-financial rewards for intercepting illegal mercury trade.

#### **Anticipated outcome:**

- \* Reduced trade in mercury.

#### **Level of implementation for action**

This will be implemented at the national level with URA as the lead agency.



#### 4.1.3.6 Developing a collaborative mechanism among regional and national mercury traders to consider trade in alternatives to mercury for gold processing

Collaboration between agencies and institutions charged with monitoring trade will be key in the prevention of the mercury trade. Information sharing among the different officers and MDAs will be promoted in order to keep the illegal trade of mercury under constant surveillance.

##### Anticipated outcomes:

- \* Reduced mercury supply and trade for gold processing
- \* Reduced mercury use for gold processing

##### Level of implementation for action

This will be implemented at the national and local levels. NEMA will take the lead.

#### Objective 7: To develop market-based mechanisms for the promotion of reduced mercury use by 2024

Market-based mechanisms provide for financial support and the reduction of costs in the ASGM sector and encourage ASGMs to take up alternative technologies to reduce mercury externalities. They will create incentives for ASGMs to transition from mercury use to mercury-free technologies. Conversely, market-based mechanisms are also necessary to make the cost of mercury accessibility and use very costly and uneconomical for ASGMs. This will require subsidisation of mercury-free technologies to make them cheap and affordable. This will enable Uganda to achieve its 70% reduction target by 2024.

#### Strategy 7.1: Strategies for instituting market-based mechanisms for promoting reduced mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)

##### Intervention area/action 7.1.1: Establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations

##### 7.1.1.1 Committing finance institutions to extend credit facilities to ASG miners with evidence of zero mercury use in gold processing

Financial institutions will be lobbied to extend low interest credit facilities to organised ASGM groups and associations. These services will be given to ASGMs whose operations are mercury-free and those that are willing to eliminate mercury from their gold processing activities. Microfinance institutions will play a key role in this process. For example, incentives and disincentives will be provided to ASGMs that use and are willing to use mercury-free gold processing technologies. Tax holidays will also be provided to ASGM that use mercury-free technologies. This means they will be able to conduct their sales with a tax reduction or elimination. This will create incentives for more ASGMs to produce mercury-free gold. Having a differential in prices for gold produced with mercury and that produced without mercury will further encourage the miners to transform to using mercury-free methods.

##### Anticipated outcomes:

- \* Increased access by ASG miners to credit
- \* Increased adoption of mercury-free technologies
- \* Reduced mercury use, emissions and releases at ASGM sites

##### Level of implementation for action

This will be implemented at the national level with MoFPED taking the lead.

### 7.1.1.2 Instituting disincentives on mercury importation and incentives on mercury-free technologies and products

Incentives will be introduced in order to support the use of mercury-free technologies in ASGM operations. ASGMs do not have the financial means or technical capacity to use some of these technologies like the 'gold kacha' concentrator machine which requires constant supply of electricity. Other mercury-free technologies include gravitational technologies (for example sluicing, dry separation, spirals, jigs, shaking tables and centrifuge concentrators) some of which require electricity. Others are not used because they are said to take a long time to get results compared to mercury.

There is also borax which the miners do not use as it requires specific skills and constant production of high temperatures.

These are some of the disabling factors to the transition from mercury use to mercury-free technologies. In order to discourage the importation of mercury, its import tax will be increased. The increase in this tax will lead to increased retail prices of mercury. This will deter ASGMs from using the harmful chemical as the gold price will be the same implying that the use of the higher price mercury becomes uneconomical.

#### Anticipated outcome:

- \* Increased importation of mercury alternatives by ASGMs

#### Level of implementation for action

This will be implemented at the national level. URA will be lead agency.

### 7.1.1.3 Certifying gold mining and processing methods

A system shall be put in place which allows certified gold buyers (not middlemen) to buy only mercury-free gold that meets regional and international standards. Gold production processes from extraction, transportation, exportation and all the others along the entire value chain will be certified. The system shall enable the back tracking of a gold sale in order to find out the compliance standards from the source of origin. The gold will be tagged and the chain of custody recorded along the entire value chain. This will require data transparency and institutional collaboration to succeed.

Fortunately, there is already an existing framework under the ICGLR Regional Initiative against illegal trade of Natural Resources (RINR) and one of the complimentary tools to the Regional Certification Mechanism, the Regional Mineral Database and Member State mineral database requirements will facilitate the execution of this activity.

#### Anticipated outcomes:

- \* Reduction in mercury use in ASGM
- \* Increased value for gold processed with mercury-free methods

#### Level of implementation for action

This will be implemented at the national level with DGSM as the lead agency.

### Intervention area/action 7.1.2: Establishing market standards to determine mercury-free gold

#### 7.1.2.1 Monitoring and inspecting ASG mine sites and border points for mercury use and trade

ASGM mine sites will continuously be monitored and inspected for signs of mercury use by the PMPU and NEMA, supported by district environment and natural resources officers. URA customs officers will also

monitor and curb the entry of mercury and mercury-contaminated products at border points.

**Anticipated outcome:**

- \* Reduction in mercury use and its illegal importation

**Level of implementation for action**

This will be implemented at the local government level. URA will take the lead.

**7.1.2.2 Enforcing OECD and ICGLR standards on gold mining and trade such as the implementation of the ICGLR ASM Gold Strategy and the Regional Certification Mechanism standards**

In 2010, Uganda endorsed the six tools of the RINR under the ICGLR. These tools are Regional Certification Mechanism (RCM); harmonisation of national laws; regional database on mineral flows; formalisation of ASMs; EITI; and Whistle Blowing. The RCM and formalisation of ASMs will be enforced under this NAP. The RCM will provide for a regional certification framework of gold and due diligence of the entire gold supply chain. Incorporated under this action will be the ICGLR ASM Gold Strategy which, among its other objectives, seeks to certify and track the gold chain of custody, formalise the ASGM sector, harmonise the legal and policy frameworks and facilitate for inter-regional cooperation and communication.

**Anticipated outcomes:**

- \* Reduced mercury use in ASGM
- \* Decreased child labour

**Level of implementation for action**

This will be implemented at the national and local government levels. DGSM will be the lead agency. The gold produced at mercury-free sites will be certified from the point of extraction to the point of export.

**7.1.2.3 Committing national refineries on incentivising mercury-free gold**

There are currently four registered refineries in Uganda, i.e. the Africa Gold Refinery (market leader), Simba Gold Refinery, Bullion Gold Refinery and Victoria Gold Star. These refineries work mainly with medium to large scale mining companies due to the quantities required for them to make a purchase. The minimum quantity for some is 50kgs per batch. However, this action will work to acquire their commitment to incentivise mercury-free gold and thus commit to buy gold from the organised and registered ASGM associations, cooperatives and companies.

**Anticipated outcomes:**

- \* Reduced mercury use in ASGM
- \* Increased adoption of mercury-free technologies
- \* Imposing high taxes on gold produced with mercury
- \* Reduced sale of gold produced with mercury

**Level of implementation for action**

This will be implemented at the national level with MoFPED taking the lead.

**7.1.2.4 Committing local gold buyers on buying gold produced with mercury-free methods**

The challenge faced in the ASGM industry is that most of the local gold buyers double as mercury sellers. There are, however, a few of these gold buyers that purely target the gold trade. These will be identified and engaged in order to commit to only purchasing gold that is produced with mercury-free technologies.

### Anticipated outcomes:

- \* Reduced purchase price for gold produced without mercury
- \* Reduced mercury use in ASGM
- \* Increased adoption of mercury-free technologies

### Level of implementation for action

This will be implemented at the local government level with MoFPED as the lead agency. The gold buyers in the most affected regions and busiest gold mining districts of Kassanda, Busia and Buhweju will be engaged first.

#### 7.1.2.5 Committing ASG miners to disincentivise purchase of gold produced with mercury

The ASG miners will also be required to commit to disincentivising the purchase of gold produced with mercury. There is no guarantee that the local gold buyers will only stick to purchasing mercury-free gold. However, the miners will be required to encourage the purchase of mercury-free gold at a higher price than the gold produced using mercury. This will discourage the use of mercury in ASGM thus reducing it.

### Anticipated outcomes:

- \* Increased sales price for gold produced without mercury and reduced sales price for gold produced with mercury
- \* Reduced mercury use in ASGM
- \* Increased adoption of mercury-free technologies

### Level of implementation for action

This will be implemented at the local government level. MoFPED will lead. The ASG miners in the busiest gold mining and mercury using districts of Kassanda, Busia and Buhweju will be engaged first.

#### 7.1.2.6 Benchmarking international practices on market incentives and exploring possibilities to adapt them to Uganda's context

This will be an initiative that Uganda has not undertaken before. There will be a benchmarking study undertaken on international practices on market incentives and exploring the possibilities to adapt them to Uganda's context. This will aim to set standards and guide the policy makers on best practices.

### Anticipated outcomes:

- \* Instituted national policies enabling adoption on market incentives
- \* Adopted international practices on market incentives

### Level of implementation for action

This will be implemented at the national level and will be led by NEMA.

#### 7.1.2.7 Undertaking a pilot study on implementing lessons learnt from international practices on market incentives

A pilot study will be conducted in order to assess the international best practices recommended by the benchmarking study and tailor-make them for the Ugandan market and ASGM sector.

### Anticipated outcome:

- \* Developed and customised models for best practices

## Level of implementation for action

This will be implemented at the national level and will be led by NEMA. The pilot study will be conducted in the busiest gold mining district at the time of implementation.

### 7.1.2.8 Updating/developing a legal framework to provide for legally registered ASGMs access to financial credits

Uganda's formal micro-finance and commercial banking sector has not taken steps to deliberately understand the mining sector and explore ways in which they can be supported with affordable financing. NAP implementation will work towards developing a legal framework to provide for legally registered ASGMs and their associations, cooperatives or companies access to financial credit for their mining operations.

#### Anticipated outcomes:

- \* Increased number of ASGMs accessing credit
- \* A sustainable ASGM sector

## Level of implementation for action

This will be implemented at the national level and will be led by NEMA.

### Objective 8: To provide alternatives and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030

The overall target of the NAP is to reduce and eventually eliminate mercury use in ASGM activities. To achieve this, there is need to adopt alternative gold extraction technologies and allow for the miners to transition from mercury use. The baseline study found that since 2005, when mercury was introduced into Uganda's ASGM sector through Busia District, its use countrywide at ASGM sites has gone up as the miners abandoned the gravitational methods of panning and sluicing which were being used before its introduction. These were looked at as laborious in nature especially for the areas where gold is alluvial. There is little knowledge on the other alternative methods to mercury that do not require as much labour but require other financial and technical/skills inputs.

### Strategy 8.1: Strategies to provide alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)

#### Intervention area/action 8.1.1: Supporting the adoption of mercury-free gold mining practices and technologies

##### 8.1.1.1 Sensitising miners on mercury-free technologies, costs and benefits

Sensitisation campaigns will be carried out to make the ASGMs aware of the alternative mercury-free technologies, their operation and application to different ore types. The ASGMs claim that they use mercury because it is cheap, readily available and fast; saying that technologies like borax are not readily available on the market, some concentration methods like the gold kacha require constant electricity and sluicing, and take a very long time when used alone. These campaigns will aim to sensitise miners on what mercury-free technique will work best for their different operational areas.

#### Anticipated outcome:

- \* Increased adoption of international best practice and technologies

## Level of implementation for action

This will be implemented at the local government level and will be led by NEMA. The sensitisation campaigns on mercury-free alternatives will target the most affected regions first. These are the Central and Eastern regions. They will then spread out to Ankole and Karamoja regions.

### 8.1.1.2 Constructing demonstration and piloting sites to demonstrate alternative technologies and best practices in mining and processing in ASGM sector

Development partners and government will be encouraged to fund regional pilot schemes showcasing these technologies in key gold mining regions. These will be mercury-free demonstration sites set up regionally so that miners across the regions can take lessons and gain skills on the use of these technologies. Mine sites that are willing to transition or have already transitioned into mercury-free sites will be piloted as beneficiaries for technology transfer and centres of excellence. The ASGMs will be trained in mercury-free technologies and provided with the tools and equipment to sustain this practice.

#### Anticipated outcomes:

- \* Increased adoption of international best practice and mercury-free technologies across the country
- \* Challenges with adoption of safer methods addressed

## Level of implementation for action

This will be implemented at the national and regional levels. NEMA will lead.

### 8.1.1.3 Training judicial officers and law enforcement agencies on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade

Judicial officers and law enforcement agencies will be trained on the dangers of mercury use in gold extraction and on the enforcement of laws against mercury trade. This action will facilitate appropriate enforcement of laws in the ASGM sector and enable the achievement of the national objectives and targets because a law that is not enforced is redundant.

#### Anticipated outcomes:

- \* Enhanced monitoring of ASGM sites
- \* Increased adherence to OSHE laws, regulations, ordinances and bye-law

## Level of implementation for action

This will be implemented at the national and regional levels. MoJCA will take the lead.

## 7. Outreach Plan

### Objective 11: To continuously raise awareness and sensitisation on mercury use and its dangers in the ASGM sector

There is inadequate information on mercury use and its dangers not only in the mines and the communities around them but also among the general public and relevant regulatory agencies. A big percentage of Ugandans are oblivious to the dangers of mercury which makes them to use it.

### Strategy 11.1: Providing information to artisanal and small-scale miners and affected communities (As required by point 1(j) of the Annex C of the Minamata Convention)

#### Intervention area/action 11.1.1: Development of a Communication Strategy

##### 11.1.1.1 Developing a communication strategy

A communication strategy on the dangers of mercury and its use will be formulated and developed. It will include the setup of dissemination strategies to ensure wide reach of the message on mercury. This will enable effective, efficient and targeted transmission of information.

#### Anticipated outcomes:

- \* Targeted communication made to national stakeholders and ASG miners
- \* Documented dissemination strategies ensuring a wide public reach
- \* Increased public knowledge on mercury and its dangers

#### Level of implementation for action

This will be implemented at a regional, national and local government levels. It will be spearheaded by NEMA.

##### 11.1.1.2 Developing targeted messages and holding targeted stakeholder meetings regarding effects of mercury on human health and environment, existing alternatives and mitigation measures

There are several actors along the mercury value chain including those in direct contact with the chemical and those that are only exposed to it. Different messages will be tailored to serve as a country-wide broadcast to different stakeholders especially those in ASGM districts and those involved in the trade and supply of mercury. This action will cut across the different strategies with the aim of developing and disseminating information on various aspects of the NAP.

#### Anticipated outcomes:

- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Increased adoption of BATs

#### Level of implementation for action

The messages on mercury will be developed at national level with NEMA leading the activity. They will be disseminated nation-wide especially at the local and community levels.

#### Intervention area/action 11.1.2: Documenting and dissemination of information on mercury use and its dangers

##### 11.1.2.1 Developing and translating IEC materials on effects of mercury on human health and

## environment and BATs

Information, Education and Communication (IEC) materials will be developed, printed and disseminated through workshops, seminars and meetings. These will also be translated into local languages to cater for those that cannot read English and to enable the message to reach the intended target.

### Anticipated outcomes:

- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Increased adoption of BATs

### Level of implementation for action

The IEC materials will be developed and translated at the national level with NEMA as activity lead.

## Intervention area/action 11.1.3: Implementation and dissemination of information on mercury use and its dangers

### 11.1.3.1 Holding meetings for ASGMs to disseminate information on effects of mercury on human health and environment and BATs in collaboration with ASGMs

Different dissemination and information sharing methods will be applied over the period of implementation of the NAP. These will include holding meetings with ASGMs in order to publicise and disseminate information on mercury use, the dangers it poses to human health and to the environment and the best available alternative techniques.

### Anticipated outcomes:

- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Increased adoption of BATs

### Level of implementation for action

These meetings will be held at local government level with NEMA as activity lead. The different CSOs that have been undertaking work towards achieving the same objective will be partners in this activity. These include ACEMP, PROBICO, UNACOH, ACCC and AAU. Other Government agencies that will take part in this exercise include MOH and MGLSD.

### 11.1.3.2 Disseminating information on the impacts of mercury on human health and environment and adoption of BATs through media

Media engagements will be carried out to enable dissemination of the information. This will be done through continuous campaigns over the Radio, TV talkshows and media articles whose services have to be procured.

### Anticipated outcomes:

- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Increased adoption of BATs

### Level of implementation for action

This will be undertaken by NEMA at the national level.

### 11.1.3.3 Holding Training of Trainers on impacts of mercury on human health and environment and BATs

Influential persons or Change Agents in the mining communities will be engaged and trained to participate in the dissemination of information as they are trusted members of the community. These persons include community leaders, traditional leaders, religious leaders, subcounty chiefs and head teachers at community



schools.

#### **Anticipated outcomes:**

- \* Continuous information sharing on the dangers of mercury use
- \* A sustainable ASGM sector with reduced and eventual elimination of mercury use
- \* Sustainability of ASGM good practices ascertained

#### **Level of implementation for action**

These trainings will take place at local government levels and will be led by NEMA. They will be implemented in all the mercury using districts. Other Government agencies that will take part in this exercise include MOH and MGLSD

#### **11.1.3.4 Developing an ASGM platform for sharing information with national stakeholders and miners and also serving as a feedback loop**

There is limited information sharing in the ASGM sector which leads to misinformation and at times tensions between government and the miners. Under this NAP, an ASGM platform will be developed. This will enhance information sharing among the different stakeholders and bridge the gap between miners and government as it will enable the miners make inquiries as well as give feedback on different aspects of their operations.

#### **Anticipated outcome:**

- \* Efficient information sharing, increased public knowledge and wide dissemination of information on mercury and its dangers enhanced.

#### **Level of implementation for action**

This will be implemented at the national level led by NEMA.

#### **11.1.3.5 Documenting, popularising and disseminating of good ASGM practices**

Documentation on good ASGM practices will continuously be developed, published and disseminated throughout the NAP implementation period. This will allow for sustainability of the message against mercury use. It is also a means in which to popularise ASGM best practices.

#### **Anticipated outcomes:**

- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Adoption of good mining practices and standards

#### **Level of implementation for action**

This will be implemented by NEMA at the national, regional and local government levels. Other participating Government agencies will include MGLSD, LGs and DGSM.

#### **11.1.3.6 Developing the capacity of media houses and other communication channels to monitor and relay information on ASGM operations and good practices**

Relevant media houses such as TVs, radio stations and newspapers will be engaged. Their capacities to monitor, relay and publish information on mercury use, ASGM operations and good practices in the sector will be built. This will enable the efficient packaging and transmission of not only the information on mercury in ASGM but also updates on NAP implementation, mercury use and trade, and the ASGM sector.

#### **Anticipated outcomes:**

- \* Efficient information sharing across the country
- \* Increased public knowledge and wide dissemination of information on mercury and its dangers

## Level of implementation for action

This activity will be undertaken by NEMA at the national level. Television and radio stations, newspapers will be engaged. Those at local levels will also broadcast in local languages to reach different communities.

### 11.1.3.7 Undertaking ASGM technical officers' exposure visits to countries with ASGM good practices

Exposure visits will be carried out in order to improve the knowledge and practices of the ASGM technical officers and their institutions, exchange experiences and discover ASGM good practices and approaches undertaken in other countries. The exposure visits seek to integrate the experience technical officers gain from the visits into their operations and management of Uganda's ASGM sector.

#### Anticipated outcome:

- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Technical officers in the ASGM sector knowledgeable about safe practices of gold mining

## Level of implementation for action

This activity will be implemented at the national level led by NEMA.

### Intervention area/action 11.1.4: Instituting an information sharing platform for disseminating mining information

#### 11.1.4.1 Setting up an information dissemination system including cadaster related information

ASGMs have for long complained about the information and communication gap between them and the institutions in charge of the sector. Many of them do not have mobile phones hence do not have access to certain information, for example, the online mineral cadaster that was launched by DGSM. This hinders them from applying for licences. A dissemination system will be developed to bridge this gap and bring information closer to the ASGMs.

#### Anticipated outcomes:

- \* Ease of access to information by ASGMs
- \* Increased public knowledge and wide dissemination of information on mercury and its dangers
- \* Improved collaborations between the ASG Miners and institutions in charge of the sector

## Level of implementation for action

This will be implemented by NEMA at the national, regional and local levels which will enable them capture countrywide sectoral information.

#### 11.1.4.2 Develop a database for suppliers and local fabricators of ASGM/ASM mining equipment

In order to enable ASGMs transition from mercury use to mercury-free technologies, a database of suppliers and local fabricators of ASGM/ASM mining equipment will be set up and accessed by both suppliers and miners so as to allow them to reach out to each other and access markets and equipment respectively.

#### Anticipated outcomes:

- \* A comprehensive database of suppliers and local fabricators of ASGM/ASM mining equipment
- \* Adoption of mercury-free tools and technologies
- \* A comprehensive data base of suppliers and local fabricators of mercury free mining equipment established

## Level of implementation for action

This will be undertaken at the national level led by NEMA.

## 8. Public Health Strategy

**Objective 5: To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury-related complications in ASGM by 2024**

Due to the harmful nature and long stay of mercury and its compounds in the air, the environment and human body, a Public Health Strategy is one of the key outputs of the NAP. The baseline overview found that not only do the communities lack the knowledge and awareness that mercury has life threatening impacts on their livelihoods, the local health centres in the mining regions lack the facilities, capacity, knowledge and trained health service personnel to diagnose mercury poisoning and provide treatment to exposed patients. This calls for immediate action from the health sector, MDAs, and development partners such as the WHO to roll out a mercury exposure treatment programme to Minamata Convention State Parties where mercury use in gold is more than insignificant.

**Strategy 5.1: A Public Health Strategy on the exposure of artisanal and small-scale gold miners and their communities to mercury (As required by point 1(h) of the Annex C of the Minamata Convention)**

**Intervention area/action 5.1.1: Carrying out the situational analysis of public health concerns in the ASGM sector**

**5.1.1.1 A baseline survey on public health concerns in ASGM**

**5.1.1.1 Reviewing the Public Health Strategy to ensure that all ASGM health-related concerns have been incorporated**

A review of the Public Health Strategy will be undertaken to evaluate whether health issues concerning the ASGM sector, miners that undertake ASGM and the communities in mining areas are comprehensively incorporated. The results from this review will aid the decision making and implementation of Strategy 5 of the NAP.

**Anticipated outcome:**

- \* A plan to address public health concerns in place

**Level of implementation for action**

The review will be undertaken at the national level by the Ministry of Health.

**5.1.1.2 Carrying out a baseline survey of the extent of public health concerns in the ASGM sector**

This will include an assessment of the impact of mercury thus far, common symptoms displayed by the communities involved in the use of mercury, the levels of poisoning in different areas, the magnitude of mercury poisoning thus far, ways in which to detect early signs of mercury poisoning and how to treat those exposed.

**Anticipated outcome:**

- \* Increased knowledge on the extent of public health concerns surrounding the ASGM sector

**Level of implementation for action**

The survey will be undertaken at the national level by the Ministry of Health. It will cover the entire ASGM

sector and communities that are indirectly affected.

### 5.1.1.3 Disseminating survey results to national and local stakeholders

The results of the study will be widely disseminated to the MDAs charged with regulating the ASGM sector, the Ministry of Health, MGLSD, academic institutions, local governments, CSOs, mining communities as well as the individual participants in this baseline survey. This will be done to raise awareness about the dangers of mercury and its effects on communities and public health, in addition to enriching research on mercury poisoning and treatment.

#### Anticipated outcome:

- \* Increased national stakeholder perception on the severity and extent of public health concerns
- \* All national stakeholders aware of practices and effects of mercury on the human health and the environment

#### Level of implementation for action

The results will be disseminated by NEMA at the national level.

### 5.1.1.4 Sharing of information at regional and international platforms or forums

The above results will also be shared at regional and international platforms and forums with the aim of exchanging information with other State Parties and signatories to the Minamata Convention. This will also enable the capture of lessons from other countries.

#### Anticipated outcome:

- \* Enhanced collaboration in finding solutions to identified public health concerns

#### Level of implementation for action

This will be implemented at the national level by NEMA.

### Intervention area/action 5.1.2: Building the capacity of health care workers, Village Health Teams (VHTs) on the health effects of mercury, diagnosis and treatment of the same and equipping health facilities including health Centre IIs & IIIs with diagnostic tools

#### 5.1.2.1 Training health care workers and VHTs on the effects of mercury and how to diagnose and treat mercury-related complications at the earliest time possible

It was noted by the NBO study that health workers and health care facilities do not have the means and capacity to diagnose and treat mercury health-related complications and ailments. The harmful chemical possesses symptoms that can be manifested by other ailments commonly leading to misdiagnosis. Health care workers require capacity building in the health effects of mercury, diagnosis and treatment of the same. This will be done by undertaking the training of health care workers and VHTs on the effects of mercury and how to diagnose and treat mercury-related complications at the earliest time possible. VHTs and health care centre workers are the nearest to the mine sites and are situated in the communities around the mines. This is the first point of contact a person with mercury poisoning will have. They will be trained in the diagnosis and early treatment of mercury poisoning.

#### Anticipated outcome:

- \* Early diagnosis and treatment of mercury-related complications

## Level of implementation for action

These trainings will be undertaken at the local government level where health centres and VHTs are. It will be led by the Ministry of Health and implemented across all the ASGM districts.

### 5.1.2.2 Drafting Standard Operating Procedures and guidelines

Standard Operating Procedures (SOPs) and guidelines for the procedures do not exist. Therefore, health workers, currently, have no guidance on the detection and treatment of mercury poisoning. These will be drafted as part of the NAP implementation.

#### Anticipated outcome:

- \* Early and efficient diagnosis and treatment of mercury-related complications

## Level of implementation for action

The SOPs and guidelines will be drafted at the national level by the Ministry of Health.

### 5.1.2.3 Equipping health care workers/health centres with diagnostic tools and equipment as well as medicine

Health care workers (at health care centres 1, 2 and 3) and VHTs will be equipped with diagnostic tools and equipment as well as medicine (chelators) to aid the treatment of mercury poisoning as they are the facilities that are available to the ASGMs and ASGM communities.

#### Anticipated outcome:

- \* Efficient diagnosis and treatment of mercury related complications.

## Level of implementation for action

This activity will be led by NEMA and implemented at national and local levels across all the ASGM districts.

### Intervention area/action 5.1.3: Raising awareness of ASGMs and surrounding communities on the dangers of mercury use in gold extraction and alternatives, including pollution mitigation measures

#### 5.1.3.1 Developing and disseminating customised/popular versions of IEC materials

Informative messages and customised IEC materials on the dangers of mercury use and its effects on human health and environment will be developed. These will, in addition, be translated into region-specific languages and disseminated to mine sites and communities around the mines.

#### Anticipated outcomes:

- \* Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures
- \* Reduced mercury use
- \* Increased use of PPEs
- \* Increased use of alternatives to mercury

## Level of implementation for action

This will be undertaken by NEMA at the national, regional and local levels to enable countrywide reach of the message.

### 5.1.3.2 Disseminating of information through use of community Change Agents

Community Change Agents will be engaged to spread the message. These are persons that are influential in their communities and are trusted by the members. They include religious, cultural and subcounty leaders, community chiefs and elders.

#### **Anticipated outcomes:**

- \* Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures
- \* Reduced mercury use
- \* Increased use of PPEs
- \* Increased use of alternatives to mercury

#### **Level of implementation for action**

This will be implemented by NEMA at the local government level and in the districts of Busia, Namayingo, Bugiri, Buhweju, Kassanda, Kotido, Nakapiripirit, Amudat and Nabilatuk.

#### **5.1.3.3 Holding community meetings or barazas, dialogues and outreach**

Outreach will be undertaken in the form of community meetings, barazas and dialogues to ensure wide reach of information on the dangers of mercury and also get the views of the different members of the communities. This activity will involve miners and other people, including: Men, women, children, the elderly, persons with disabilities, among others.

#### **Anticipated outcomes:**

- \* Improved feedback on challenges faced by ASGMs, and local stakeholders
- \* Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures
- \* Reduced mercury use
- \* Increased use of PPEs
- \* Increased use of alternatives to mercury

#### **Level of implementation for action**

These will be carried out by NEMA at local government level. Other participating Government agencies will include MGLSD.

#### **5.1.3.4 Developing and producing spot messages and jingles**

Spot messages and jingles will be developed, produced and disseminated via television and radio in the different ASGM regions. This will raise awareness on the dangers of mercury use and its effects on human health and the environment.

#### **Anticipated outcomes:**

- \* Increased information sharing on the dangers of mercury and how to cater for personal protection
- \* Reduced mercury use
- \* Increased use of PPEs
- \* Increased use of alternatives to mercury

#### **Level of implementation for action**

This will be implemented by NEMA at national and local government levels.

#### **5.1.3.5 Training of ASGM on early detection of mercury poisoning/pollution/contamination and response mechanism**

The national overview found the ASGM who use mercury to be unaware of its effects and the way it manifests. Under the NAP, ASGMs will be made aware of the signs and symptoms to look out for to enable early detection of mercury poisoning, pollution or contamination. They will also be trained on early response mechanism in order to be able to seek medical assistance as quickly as possible and not let the mercury poisoning or contamination worsen.

**Anticipated outcomes:**

- \* Developed personal emergency response plan
- \* Increased medical checkups by ASGM miners

**Level of implementation for action**

This will be implemented by NEMA at the local government level and in the ASGM regions that use mercury.

**5.1.3.6 Popularising existing chemicals regulations, OSHE regulations, formulating bye-laws and ordinances against poor OSHE practices at ASGM sites**

There are existing chemical and Occupational Safety, Health and Environment (OSHE) regulations in Uganda. However, these are not adhered to mainly because they are complicated to a miner, and also the ASGMs do not have access to them. These regulations will be simplified and popularised amongst the ASGM sites. This action will go further and formulate bye-law and ordinances against poor OSHE practices in ASGM.

**Anticipated outcomes:**

- \* Increased adherence to OSHE standards
- \* Prosecution of culprits at local levels

**Level of implementation for action**

This will be undertaken by MGLSD Department of Occupational Safety and Health NEMA at national and local levels in all ASGM districts across the country.

**Intervention area/action 5.1.4: Enhancing inter-sectoral coordination in the management of mercury use in ASGM**

**5.1.4.1 Undertaking MDAs joint inspections and monitoring/surveillance of health/public health related aspects of the ASGM sites**

Coordination among the various actors both in the ASGM sector and public health is key in combating the use of mercury and its release into the communities. This will be enabled by undertaking joint inspections by different MDAs, for example, Ministry of Health, NEMA, MGLSD and the local governments. This will create a platform for resource and information sharing among the MDAs concerns. It will also work against the repetition of mine sites and community inspections which is wasteful.

**Anticipated outcome:**

- \* Improved knowledge sharing

**Level of implementation for action**

This will be undertaken at national and local levels in all ASGM districts across the country. The activity will be implemented by NEMA as the lead agency.

## Intervention area/action 5.1.5: Supporting ASGM communities to observe OSHE practices

### 5.1.5.1 Training ASGMs on use of mercury vapour capture tools including retorts

Mercury vapour capture or containment tools are those used during gold processing to capture the mercury vapour that is given off during the burning of amalgam. These tools reduce the chances of exposure of the miners and mining communities to mercury. ASGMs will be trained on these mercury containment tools which will significantly lead to the reduction of mercury emissions and releases.

#### Anticipated outcome:

- \* Reduction in mercury emissions

#### Level of implementation for action

These will be undertaken at the local government level. NEMA will be lead agency. In the early stages of implementation the action will focus on the Central and Eastern regions as they have the highest mercury use. It will later be rolled out to Ankole and Karamoja regions.

### 5.1.5.2 Training ASGMs on use of PPEs during gold extraction and processing

It was observed during the NBO study that ASGM did not use personal protective gear. The women stand for long hours in water which they use for panning with no protective gear for their hands or feet. The same was observed with the miners at the sites who were involved in crushing of stones. They too used their bare hands, and close observation showed a lot of damage including scars on their skin and bodies. The NAP will provide for the training of ASGMs in the purpose of protective gear and its effective use during gold mining.

#### Anticipated outcome:

- \* Improvement in OSHE standards at ASGM sites

#### Level of implementation for action

These will be undertaken at the local government level across the country. The Ministry of Gender, Labour and Social Development will take the lead.

### 5.1.5.3 Demonstrating to ASGM mitigation measures for dust pollution

The NBO study furthermore found evidence of dust and noise pollution, especially, from the stone crushers and mill operators at the mine sites. The miners' bodies were often covered with dust and interviews revealed that most of them are vulnerable to respiratory-related diseases such as cough and other respiratory complications. Demonstrations will be conducted to illustrate to the ASGMs measures to mitigate dust pollution.

#### Anticipated outcomes:

- \* Reduced silicosis at ASGM sites
- \* Reduced dust pollution at ASGM sites

#### Level of implementation for action

These will be undertaken at the local government level across the country, and implementation will be led by MGLSG/Occupational Safety and Health Department. Other government agencies include NEMA.

### 5.1.5.4 Training miners on containment of mercury effluent



As ASGMs transition from mercury use to mercury-free gold processing, they will be trained on containment methods of mercury effluent. This will ensure better management of mercury waste at the mine sites preventing further contamination of the environment and poisoning of human health.

#### **Anticipated outcome:**

- \* Reduced environmental pollution from inefficient management of mercury effluent

#### **Level of implementation for action**

These trainings will be undertaken at the local government level by NEMA supported by the Ministry of Water and Environment, Development Partners and CSOs such as ACEMP, UNACOH, ACCC and AAU. These trainings will take place nationwide in ASGM districts where mercury is used.

#### **5.1.5.5 Demonstrating to ASGM mercury-free processing methods including minimal mercury use technologies for gold processing**

Demonstration sites will be set up regionally where miners will be trained on minimal mercury use and release techniques (for those transitioning from mercury), and in mercury-free processing.

#### **Anticipated outcome:**

- \* Reduction in mercury use in ASGM

#### **Level of implementation for action**

These trainings will be undertaken at the local government level by NEMA and will be implemented in Central, Eastern, Karamoja and Ankole regions that use mercury.

#### **5.1.5.6 Engaging mine landlords on sustainable mine operations**

Mine site landlords are a key factor in the ASGM value chain. The NAP will engage different landlords and sensitise them on sustainable mine operations as a way to encourage them to ensure that miners on their land mine in a sustainable manner. This will include use of safe mining practices and land restoration after mine closures. This will reduce the OSHE hazards as well as the environmental degradation of mine sites.

#### **Anticipated outcomes:**

- \* Reduced environmental pollution/degradation
- \* Increased mine restoration
- \* Reduced OSHE hazards

#### **Level of implementation for action**

This will be undertaken by NEMA as the lead implementer whereas other participating Government agencies include MGLSD. It will be carried out at national and local government levels covering all ASGM regions.

#### **5.1.5.7 Developing a reporting/feedback mechanism from sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries on inspected/monitored indicators related to water catchments, water bodies, flora and fauna for pollution risks at ASGM sites**

Periodic stakeholder meetings will be held among the different MDAs participating in the implementation of the NAP in order to share information, updates from the different sectors and review the approaches and interventions. This will harmonise implementation and create synergies for interagency collaboration

among the different sectors which is key to the achievement of the NAP goal.

#### **Anticipated outcomes:**

- \* Improved interagency cooperation and reporting
- \* Increased innovations in NAP implementation mechanisms

#### **Level of implementation for action**

NEMA will take lead in the implementation of this action at both the national and local government levels. This will be undertaken by NEMA as the lead implementer. It will be carried out at national and local government levels covering all ASGM regions. All institutions that are taking part in the NAP implementation will be involved.

#### **5.1.5.8 Enforcing public health, OSHE laws and regulations at ASGM sites**

Public health and OSHE Standards are not adhered to in the ASGM sector largely due to ignorance but also due to the lack of enforcement of the laws and regulations by the responsible authorities. The NAP will provide for the enforcement of public health and OSHE laws and regulations at ASGM sites through constant monitoring and spot checks or inspections.

#### **Anticipated outcome:**

- \* Increased ASGM adherence to public health and OSHE standards

#### **Level of implementation for action**

This will be undertaken at the local government level by MGLSD and other participating Government agencies will include NEMA with support from the district local governments in all the ASGM districts.

#### **Objective 9: To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030**

The Public Health Strategy will also look at occupational safety, health and environmental concerns in the ASGM sector. It was observed in the baseline study that out of 82 mine sites covered under this study, 100% did not uphold any of these standards. This shows the dire need of intervention in OSHE practices.

#### **Strategy 9.1: To facilitate OSH observance at ASGM sites**

#### **Intervention area/action 9.1.1: Enhancing the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector**

#### **9.1.1.1 Equipping the Department of OSH, NEMA, DGSM, and UNBS with the tools to carry out standard/comprehensive inspections**

Development partners, the government and other implementing partners will be encouraged to support the Department of OSH at MGLSD, NEMA, DGSM, and UNBS, among others, through providing funds and/or equipment that will enable the officers to carry out standard inspections and ensure early detection of mercury contamination at ASGM mine sites.

#### **Anticipated outcome:**

- \* Increased effectiveness in monitoring ASGM sites for observance of OSH standards

#### **Level of implementation for action**

This activity will be spearheaded by NEMA and undertaken at both the national and local government levels.

### 9.1.1.2 Training district labour officers and other inspectors to monitor ASGM activities in ASGM districts

Mines inspectors will be trained on how to monitor and identify non-compliance with OSHE standards at ASGM sites. This will improve these standards at mine sites and lead to sustainability of good practices.

#### Anticipated outcomes:

- \* Improved monitoring and reporting on ASGM activities
- \* Enhanced capacity to carry out health surveillance in order to identify the early exposure of miners to mercury
- \* Increased adherence to OSHE laws, regulations, ordinances and bye-laws

#### Level of implementation for action

The trainings will be implemented at the local government level by MGLSD. They will be undertaken in all ASGM districts.

### Intervention area/action 9.1.2 Establishing OSH standards and practices at ASGM mine sites

#### 9.1.2.1 Setting up regional demonstration sites for OSH best practices in ASGM

Regional demonstration sites for OSH best practices in ASGM will be set up. At these sites, ASGMs will be taken through the legal procedures and compliance with the relevant national, laws, regulations and standards, safe work procedures, safe organisation and management, safety of tools and equipment, safety during transportation, safe handling and use of substances and emergency response plans.

#### Anticipated outcomes:

- \* Increased observance of OSH practices at ASGM sites
- \* Improved health and environment at ASGM sites

#### Level of implementation for action

This will be implemented at the local government level by MGLSD. Demonstration sites will be set up in every ASGM region.

#### 9.1.2.2 Updating/drafting guidelines for OSH implementation at ASM/ASGM sites and training mines inspectors on how to use the OSH Guidance Tool Kit

An ASGM mine site OSH Guidance will be drafted and an inspection toolkit developed. This guidance will be used by the inspection officers during inspection activities. It will also be used to train the ASGMs on OSH standards in the sector. The guidance will be based on the 4 C's of Safety and Health which are: Competence, Control, Cooperation and Communication.

#### Anticipated outcomes:

- \* Improved monitoring, inspection and surveillance of ASGM sites by inspectors and health workers
- \* Increased adherence to OSHE laws, regulations, ordinances and bye-laws

#### Level of implementation for action

The guidelines for OSH standards at ASM mine sites will be drafted by MGLSD at the national level.

# 9. Environment Management Strategy for ASGM Related Operations

## Objective 10: To develop and enforce an ASGM environment management strategy by 2030

The NBO study found the ASGM sites across the country to have glaring gaps in observing environment standards. These included poor disposal of tailings and waste water, non to poor restoration of open pits and abandoned pits left open without back filling with soil. The environment management strategy will aim to combat such poor environment standards in the ASGM sector.

### Strategy 10.1: An environment management strategy for ASGM related operations

#### Intervention area/action 10.1.1: Facilitating ASGM's adherence to environmentally friendly mining practices including restorative measures

##### 10.1.1.1 Developing environmental management guidelines for ASGM operations and activities

In order to ensure good environmental practices and standards in the ASGM sector, environmental management guidelines will be developed and published for use in the ASGM sector. The guidelines will also be used by environment officers during monitoring.

##### Anticipated outcomes:

- \* Improved environmental standards in the ASGM sector
- \* Targeted monitoring of ASGM sites by inspectors

##### Level of implementation for action

These guidelines will be developed and drafted by NEMA at the national level.

##### 10.1.1.2 Training ASGMs, LGs and health officers, among others, on existing environmentally friendly methods and best practices

ASGMs, LGs and health officers, among others, will be trained in environmentally friendly mining methods and practices which include back filling of pits, revegetation of closed mine sites, recycling and reuse of water, a designated waste disposal site and setting up tailings collection points at the mine site.

##### Anticipated outcomes:

- \* Efficient monitoring of environmental standards in the ASGM sector
- \* Improved observance of environmental standards in the ASGM sector

##### Level of implementation for action

The trainings will be implemented by NEMA at the national, regional and local levels.

##### 10.1.1.3 Carrying out community awareness meetings on sustainable gold mining

Community awareness on sustainable gold mining in ASGM will be carried out in order to minimise the environmental damage caused by ASGM activities.

##### Anticipated outcomes:

- \* Increased knowledge on mercury and its dangers to the environment
- \* Increased adherence of miners to environmental standards
- \* Reduced environmental hazards at ASGM sites

### Level of implementation for action

This will be implemented at the local government level by NEMA. It will cover all ASGM districts for sustainability purposes.

#### 10.1.1.4 Increasing monitoring frequency of ASGM operations

The district environment officers in gold mining districts will undertake constant monitoring of ASGM activities to prevent significant adverse effects on the environment. They will be facilitated for their movements to different mine sites to ensure effective monitoring.

#### Anticipated outcome:

- \* Reduced environmental degradation

### Level of implementation for action

This will be implemented at the local government level by NEMA. It will cover all ASGM districts.

#### 10.1.1.5 Strengthening the capacity of key stakeholders including Police Mineral Protection Unit, Environment Protection Force to monitor ASGM activities

The Police Mineral Protection Unit and the Environment Protection Unit are mandated to monitor activities in the ASGM sector to ensure that the miners are carrying out their mining activities in a sustainable manner. Key stakeholders including the aforementioned units will be trained in monitoring systems. They will also be trained in the application of the environmental management guidelines to ensure environment standards are upheld as ASGMs carry out their mining activities.

#### Anticipated outcome:

- \* Reduced environmental degradation

### Level of implementation for action

These trainings will be implemented by NEMA at both national and local government levels.

#### 10.1.1.6 Supporting ASG miners in restoring previously degraded abandoned sites

Revegetation exercises will be undertaken at closed and abandoned ASGM mine sites where the environment has been degraded. Local communities will also be involved in these exercises to aid the sustainability of rehabilitated mine sites after closure.

#### Anticipated outcomes:

- \* Reduction in environmental degradation
- \* Improved environmental rehabilitation and proper mine closure

### Level of implementation for action

This activity will be led by NEMA and implemented at local government level.

### 10.1.1.7 Committing miners to environmental restoration and proper waste including rock waste disposal as a prerequisite to approval of a licence application

DGSM will make the commitment to environmental restoration and proper and safe waste disposal will be a prerequisite to approval of a license application. Further incentives to encourage compliance will be used. These include compliance fees which are reimbursed once the land is restored.

#### Anticipated outcomes:

- \* Reduced environmental degradation
- \* Improved environmental rehabilitation
- \* Improved waste disposal practices

#### Level of implementation for action

This will be implemented at the national level with NEMA as the lead agency.

### 10.1.1.8 Establishing demonstration sites at mercury-free sites to demonstrate shafts and pits construction

Demonstration sites at mercury-free mine sites will be established. These will be used to demonstrate proper construction of shafts and pits that cause less environmental damage. The shafts will be reinforced with timber and concrete which allow the miners to mine downwards and not on the surface thereby limiting their environmental footprint.

#### Anticipated outcomes:

- \* Reduced mine collapse and/or loss of lives
- \* Reduced vegetation loss
- \* Reduced soil erosion
- \* Reduction in environmental degradation
- \* Improved environmental rehabilitation

#### Level of implementation for action

This will be implemented at the local government level with NEMA taking the lead. A demonstration site will be set up in each ASGM region.

### 10.1.1.9 Preparing, publishing and continuously updating geological maps to be used as reference by ASGMs

This will aim to clearly indicate where mineral deposits can be found and mined to prevent environmental degradation by ASGMs who operate by guesswork. It will also allow for the efficient zoning of ASGM areas restricting them to mine in one area, rehabilitate it, and move to the next.

#### Anticipated outcomes:

- \* Reduction in environmental degradation that is caused by ASGMs exploring different areas
- \* Reduced vegetation loss

#### Level of implementation for action

This will be implemented by DGSM at the national level.

### 10.1.1.10 Defining the level of ESIA to be undertaken by various ASGM categories/structures

The Mining and Mineral Bill, 2019 demands that all mineral rights applicants carry out an Environment and Social Impact Assessment (ESIA). However, this procedure is quite expensive for ASGMs given that they do not have access to finance to undertake such processes. The NAP will engage the responsible authorities to define the level of ESIA to be undertaken by various ASGM categories/structures.

#### **Anticipated outcome:**

- \* Improved environmental standards in the ASGM sector

#### **Level of implementation for action**

This will be implemented at the national level with NEMA as the lead agency.

#### **10.1.1.11 Formulating/reviewing policies to ensure that ASGM licences are issued after environmental assessments have been undertaken; mining leases for vast pieces of land are issued after environment and social impact assessments subjected to public hearing**

The Ministry of Energy and Mineral Development and DGSM will be engaged in order to review existing policies to ensure that ASGM licences are issued after environmental assessments have been undertaken and mining leases for vast pieces of land are subjected to the same but also awarded after public hearings. This activity aims at minimising the environmental damage caused by mining activities.

#### **Anticipated outcomes:**

- \* Improved environmental standards in the ASGM sector
- \* Reduction in environmental degradation caused by ASGM

#### **Level of implementation for action**

This action will be implemented at the national level with NEMA as lead agency.

#### **10.1.1.12 Equipping MDAs with tools for early detection of mercury contamination in environmental samples including air, land and water**

The MDAs responsible for the management of the environment and ensuring good environment standards will be equipped with tools to enable them carry out their mandate. The tools will aid the institutions in the early detection of mercury contamination in environmental samples including air, land and water. The MDAs include NEMA, MGLSD, MWE and local governments.

#### **Anticipated outcomes:**

- \* Efficient and continuous monitoring of environmental standards in the ASGM sector
- \* Improved environmental standards in the ASGM sector

#### **Level of implementation for action**

This action will be implemented at the national level with NEMA taking the lead.

#### **10.1.1.13 Formulating and instituting fines for non-compliance of ASMs/ASGMs to environmental standards**

In order to ensure adherence to environment standards by actors in the ASGM sector, fines for non-compliance will be formulated and given to the culprits. The fines also provide a source of funds for the NAP implementation.

#### **Anticipated outcome:**

- \* Improved environmental standards in the ASGM sector

### Level of implementation for action

This action will be implemented at the national level with MoJCA as the lead agency.

#### 10.1.1.14 Carrying out joint sectoral monitoring of ASGM sites

Collaboration between agencies and institutions charged with the management of environment standards in ASGM will be encouraged and facilitated during the NAP implementation.

#### Anticipated outcomes:

- \* Improved interagency coordination on monitoring of ASGM sites
- \* Efficient and continuous monitoring of environmental standards in the ASGM sector

### Level of implementation for action

This action will be implemented at the national level with NEMA as the lead agency.

#### 10.1.1.15 Extending public utilities including portable water and electricity to gazetted ASGM sites

During the NBO study, it was discovered that ASGM sites generally lacked WASH facilities. Furthermore, most mine sites used electricity generators to be able to access electricity. Under the NAP implementation, different stakeholders and partners will be engaged to extend these facilities to mine sites across Uganda.

#### Anticipated outcomes:

- \* Improved labour standards at ASGM sites
- \* Improved OSHE standards at ASGM sites
- \* Reduced oil spillages at ASGM sites
- \* Reduced waterborne diseases at AGM sites
- \* Reduced use of LPG gas
- \* Reduced operational costs at ASGM sites

### Level of implementation for action

This action will be implemented at the national level. MWE will be the lead agency.

### Intervention area/action 10.1.2: Strengthening the conservation of protected areas

#### 10.1.2.1 Strengthening the capacity of Environment Protection Police Force and Police Minerals Protection Unit to carry out their mandate

The capacity of these forces to monitor and enforce regulations will be built through trainings so as to minimise environmental damage in protected areas.

#### Anticipated outcomes:

- \* Effective monitoring of environmental standards in the ASGM sector
- \* Reduction in environmental degradation caused by ASGM
- \* Victims prosecuted for non-compliance to OSHE laws and regulations

### Level of implementation for action



This action will be implemented at the national level with NEMA taking the lead.

### 10.1.2.2 Holding public hearings before allocating mining leases on extensive pieces of land including protected areas

This will serve the purpose of information sharing as the public will be involved in the process of awarding the mineral rights. It also serves as a tool to advocate for the rules and regulations to be enforced.

#### Anticipated outcomes:

- \* Increased participation of community members in issuance of mineral licences
- \* Reduced environmental degradation in protected areas
- \* Sustainable biodiversity conservation
- \* Reduced encroachment on protected areas
- \* Reduced human-wildlife conflicts

#### Level of implementation for action

This action will be implemented at local government level in ASGM districts. NEMA will be the lead agency.

### 10.1.2.3 Holding stakeholder engagements to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas

In most cases biodiversity is affected by ASGM activity due to the change in morphology of a given habitat. The NAP will provide for stakeholder engagements to agree on how ASGM and biodiversity can sustainably co-exist.

#### Anticipated outcomes:

- \* Increased participation of stakeholders in decisions made in the sector
- \* Reduction of encroachment on protected areas
- \* Reduction in environmental degradation in protected areas
- \* Reduced human-wildlife conflicts

#### Level of implementation for action

This will be undertaken by NEMA at the local government level. The engagements will be held regionally involving stakeholders from all the ASGM districts in a particular region.

### 10.1.2.4 Inspecting and monitoring ASGM activities in protected areas

It is illegal to mine in protected areas without authorisation from the responsible authorities but there are different hindrances to the implementation of these laws. These include the lack of coordination between the Authorities (NEMA, UWA, and NFA, among others) responsible for the protected areas, and MEMD as mining licences are issued out. Monitoring and evaluation of these activities is also lacking making it easy for miners to continue carrying out activities in these areas. The NAP will provide for constant monitoring in protected areas to avoid degradation.

#### Anticipated outcomes:

- \* Increased adherence to OSHE laws and regulations in protected areas
- \* Reduced environmental degradation of protected areas
- \* Reduced human-wildlife conflicts
- \* Compliance to conditions in ESIA/Environment Certificate of Approval for all types of licences

- \* including small-scale mining licences and artisanal mining licences issued in and outside protected areas

### Level of implementation for action

This will be undertaken by NEMA at the local government level as implementation lead allowing Authority to monitor all protected areas where ASGM is being carried out. Interagency coordination will also be encouraged to enable efficiency in monitoring exercises.

#### 10.1.2.5 Updating geological maps with protected areas' layers to indicate where the protected areas are situated so as to prevent licensing of these areas without prior stakeholder consultations

The DGSM shall clearly indicate the location of protected areas in Uganda on geological maps and on the online cadaster. This will prevent licensing in these areas without the necessary checks for example the carrying out an EIA.

#### Anticipated outcomes:

- \* Reduced encroachment of protected areas
- \* Reduced environmental degradation in protected areas
- \* Reduced human-wildlife conflicts
- \* Environmentally certified ASGM operations

### Level of implementation for action

This will be undertaken by the DGSM as implementation lead at both the local and national levels.

#### 10.1.2.6 Assessing the impact of upstream and downstream ASGM activities (wetlands, water bodies)

The impact of ASGM activities upstream and downstream of wetland where mining activities are taking place will be assessed through consistent monitoring visits to ASGM mine sites around wetlands.

#### Anticipated outcomes:

- \* Contamination of upstream and downstream media from ASGM activities mitigated/minimised
- \* Developed monitoring indicators for upstream and downstream ASGM activities
- \* Early detection of mercury contamination upstream and downstream
- \* Effectively monitored environmental standards in and around water bodies
- \* Reduced environmental degradation from ASGM operations

### Level of implementation for action

This will be undertaken at the local government level by NEMA as implementation lead.

### Intervention area/action 10.1.3: Minimising Greenhouse Gas emissions from ASGM activities

#### 10.1.3.1 Committing ASGM site landlords to planting trees on site

ASGM sites landlords will be required to commit to planting trees on the site to enable carbon dioxide sequestration. They will also be required to ensure that the miners carry out re-forestation after mine closure.

#### Anticipated outcomes:

- \* Increased reforestation after mine closure
- \* Increased carbon sinks enabling carbon dioxide sequestration

## Level of implementation for action

This will be undertaken at the local government level with NEMA taking the lead. The activity will target all the ASGM districts.

### 10.1.3.2 Restricting tree cutting and open cast mining at ASGM sites

Deforestation and land clearing practices at ASGM sites will be discouraged as these practices contribute to loss of carbon sinks. This will be undertaken during monitoring and inspection visits.

#### Anticipated outcomes:

- \* Minimised deforestation at ASGM sites
- \* Increased adoption of shaft mining where source of gold ore is hard rock
- \* Sustained carbon sinks coverage enabling carbon dioxide sequestration
- \* Reduced deforestation at ASGM sites
- \* Reduced alteration of ecosystems (e.g. river morphology that could increase flood risks)

## Level of implementation for action

This will be undertaken at the local government level with NEMA taking the lead. The activity will target all the ASGM districts.

### 10.1.3.3 Training miners on construction of concrete shafts

The practice of open mining has been observed to cause more environmental damage than shafts do. However, ASGM in Uganda have been using timber to build shafts. The NAP will provide for the miners to be trained in the construction of concrete shafts so as to minimise deforestation which is done in order to harvest timber.

#### Anticipated outcomes:

- \* Reduced use of timber for shaft construction
- \* Reduced emissions of greenhouse gases from decomposing timber

## Level of implementation for action

This will be undertaken at the local government level with NEMA as the lead agency. It will be carried out at demonstration sites in all the ASGM regions.

### 10.1.3.4 Training ASGM site restaurant managers on existing alternatives to fuelwood and energy saving technologies

All ASGM mine sites have a designated cooking area. This is because the miners work all day and at the bigger ASGM sites, restaurants are opened up. Restaurant managers will be trained on the existing alternatives to fuelwood and energy saving technologies to reduce on the emissions of greenhouse gases and the deforestation that is undertaken in search of fuelwood.

#### Anticipated outcomes:

- \* Reduced use of fuelwood
- \* Increased adoption of energy saving cook stoves
- \* Reduced deforestation
- \* Reduced emissions of greenhouse gases

## Level of implementation for action

This will be undertaken at the local government level with NEMA as the implementation lead. The activity will target all the ASGM districts.

### 10.1.3.5 Extending electricity to ASGM camps as well as host communities

Electricity at ASGM sites is provided by businesspeople who offer electricity generator services to the miners at a fee. The NAP will facilitate the increased access to alternative energy sources within ASGM camps as well as host communities to reduce heavy reliance on carbon heavy energy sources such as diesel commonly used by ASGM operations.

#### Anticipated outcomes:

- \* Reduced greenhouse gas emissions
- \* Reduced fuel wood consumption
- \* Reduced heavy carbon energy sources such as diesel commonly used at ASGM sites

#### Level of implementation for action

This will be undertaken at the local government level with NEMA as the implementation lead. The activity will target all the ASGM districts.

### 10.1.3.6 Training ASGMs and community members on climate change, impacts, and potential mitigation and adaptation actions they can take to reduce contributions to and impacts of climate change

ASGMs are ignorant about matters of climate change. This action will support the educating and training of ASGMs and community members on climate change, its impacts and potential mitigation and adaptation actions that the miners can apply to reduce contributions to and impacts of climate change.

#### Anticipated outcomes:

- \* Reduced greenhouse gas emissions
- \* Reduced environmental degradation caused by ASGM

#### Level of implementation for action

This will be undertaken at the local government level with NEMA taking the lead. The activity will target all the ASGM districts.

## Intervention area/action 10.1.4: Improve institutional environmental planning

### 10.1.4.1 Carrying out a Strategic Environment Assessment for the ASGM sector

A Strategic Environmental Assessment of the ASGM sector will be undertaken. This will aim to ensure that environmental and possibly other sustainability aspects are considered effectively in Uganda's policies, plans and programmes.

#### Anticipated outcome:

- \* Policies, plans or programmes having environment concerns in the ASGM sector integrated

#### Level of implementation for action

This will be undertaken at the national and local levels with NEMA as the implementation lead. It will target all the ASGM districts and relevant institutions at the national level.

**Anticipated outcome:**

- \* Reduced cumulative effects of environment concerns in the ASGM sector

**Level of implementation for action**

This will be undertaken at the national and local levels with NEMA as the implementation lead. It will target all the ASGM districts and relevant institutions at the national level.

**Anticipated outcome:**

- \* Sustainable decision making alongside economic and social considerations

**Level of implementation for action**

This will be undertaken at the national and local levels with NEMA as the implementation lead. It will target all the ASGM districts and relevant institutions at the national level.

# 10. Preventing the Exposure of Vulnerable Populations, Particularly Children, Women of Child-Bearing Age and Nursing Mothers to Mercury used in ASGM

**Objective 6: To prevent exposure of vulnerable populations to mercury used in the ASGM sector by 2024**

In and around the mines are populations that are vulnerable to the effects of mercury. These include children, women of child-bearing age, nursing mothers and pregnant women, among others. The National Overview observed that some of these persons are involved in mining activities at sites that use mercury and face different risks during gold production. These will be highlighted and the communities made aware of the dangers.

**Strategy 6.1: Strategies to prevent the exposure of vulnerable populations, particularly children, women of child-bearing age, pregnant mothers and nursing mothers to mercury used in ASGM (As required by point 1(i) of the Annex C of the Minamata Convention)**

**Intervention area/action 6.1.1: Undertaking community outreach programmes to emphasise the risks vulnerable populations face in and around mine sites**

## **6.1.1.1 Carrying out sensitisation campaigns, dialogues and meetings with vulnerable populations**

There are vulnerable persons in and around mine sites. However, they and the miners are oblivious of the effects mercury has on human health. Sensitisation campaigns on the dangers of the use of mercury in ASGM will be carried out. These will also include community dialogues and meetings involving the participation of children, parents, other marginalised groups and community leaders.

### **Anticipated outcome:**

- \* Increased knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use

### **Level of implementation for action**

The sensitisation campaigns will be undertaken at local governments with NEMA as lead implementor. They will target all the ASGM districts.

## **6.1.1.2 Developing an informative documentary on the dangers of mercury to human health and environment and screening the documentary in ASGM camps, communities and national televisions**

An informative documentary on the dangers of mercury to human health and environment will be developed, translated and screened in ASGM camps and communities. It will also be broadcast on national televisions.

### **Anticipated outcome:**

- \* Increased knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use

### **Level of implementation for action**

This will be undertaken at the national and local levels with NEMA as the implementation lead. Information will be collected from all the ASGM districts and the relevant institutions at the national level.

### **6.1.1.3 Developing the capacities of ASGMs on mining practices that will prevent exposure of vulnerable populations to mercury**

The capacities of ASGMs will be built to enable them carry out their mining activities in a manner that prevents exposure of vulnerable persons to mercury. These will include using mercury capture hoods, establishing a designated processing area, practicing safe waste disposal and discouraging the burning of amalgam in or around residences and mining camps.

#### **Anticipated outcome:**

- \* Reduced exposure of vulnerable populations to mercury emissions and releases

#### **Level of implementation for action**

The trainings will be undertaken at the local government level with NEMA as the implementation lead. The activity will target all the ASGM districts.

### **6.1.1.4 Facilitating ASGM local exchange visits regarding knowledge transfer and practices related to mercury-free technologies and safe practices**

Local exchange visits will be facilitated between different ASGM sites i.e. those that are still using mercury and those that are mercury-free to encourage transition to the latter.

#### **Anticipated outcome:**

- \* Increased adoption of mercury-free technologies

#### **Level of implementation for action**

The exchange visits will be undertaken at the local government level with NEMA as the implementation lead. The activity will target different ASGM sites across the country.

### **Intervention area/action 6.1.2: Introducing alternative income generating activities to vulnerable groups to reduce gold mining pressure where options to mercury may be difficult to adopt**

#### **6.1.2.1 Training women miners, youth and elderly persons on alternative income generating activities, entrepreneurship, business, record keeping and financial management**

The NBO study discovered that majority of women in the ASGM sector are limited to doing the lesser paying odd jobs such as panning and amalgam concentration which expose them to mercury. Building their capacities on better paying economic activities within the gold supply chain could limit their interactions with gold mercury amalgam and the consequent health effects. Women in mining communities will be trained in alternative income generating activities along the ASGM supply value chain. In addition they will be trained in entrepreneurship, business and financial management such as book keeping, planning and other complimentary activities that are risk-free including supply of food and drinks at sites, and provision of cleaning services.

The Overview established that women were earning less than their male counterparts because they were not directly engaged in actual mining such as direct ore extraction, ownership of mining areas and/or pits due to cultural and traditional prejudices and limited access to finance.

#### **Anticipated outcomes:**

- \* Increased number of women, youth and elderly miners adopting alternative income generating activities

- \* Improved women, youth and elderly miners' livelihoods due to enhanced income generation

### Level of implementation for action

This activity will be implemented at local governments with NEMA as the lead agency. The trainings will be held in different ASGM districts.

#### 6.1.2.2 Supporting vulnerable groups to access funds from government and development partners to engage in alternative, healthier and economic livelihoods

Vulnerable groups will be supported to access finances from government programmes, for example, Youth Livelihood Programme and Operation Wealth Creation.

#### Anticipated outcomes:

- \* Increased number of women, youth and elderly miners adopting alternative income generating activities
- \* Improved livelihoods of vulnerable populations
- \* Reduced exposure of vulnerable populations to mercury emissions and releases

### Level of implementation for action

This activity will be implemented at the local government level led by NEMA.

#### 6.1.2.3 Facilitating vulnerable groups to form groups, associations or cooperatives and SACCOs

Vulnerable groups will be encouraged and enabled to form groups, associations or cooperatives and SACCOs. Through these, they can start savings initiatives to support their families or input into their businesses. This will also create a platform to bring together at-most-risk vulnerable groups with government and development partners to access funds which they can input into alternative, healthier and economic livelihoods.

#### Anticipated outcomes:

- \* Increased finances to acquire equipment and practice safer gold mining and processing methods
- \* Increased access to financial mechanisms to enable adoption of best available practices and technologies
- \* Improved livelihoods of vulnerable populations

### Level of implementation for action

This activity will be implemented at the local government level in ASGM districts. Implementation will be led by NEMA.

#### 6.1.2.4 Engaging Private Sector Foundation and other business incubation initiatives to train the youth, elderly and women in alternative SMEs

The NAP National Working Group will work with the Private Sector Foundation (PSF) and other business incubation initiatives to train the youth and women in alternative SMEs to diversify their business focus areas to exploit backward and forward linkage businesses to the ASGM. In the process the number of ASGMs will be reduced to manageable levels.

#### Anticipated outcomes:

- \* Increased number of women, youth and elderly miners adopting alternative income generating activities



- \* Improved livelihoods of vulnerable populations
- \* Reduced exposure of vulnerable populations to mercury emissions and releases

### Level of implementation for action

This intervention will be implemented at both the local and national government levels. NEMA will be the lead agency.

### 6.1.2.5 Developing a curriculum at all levels of higher education including secondary, tertiary and vocational institutions to train learners, youth and elderly persons, and certificate courses to equip learners with OSH skills and safer mining practices, among others

A curriculum in vocational schools will be developed for youth and teenagers to gain safer mining practices and technical skills to participate in the ASGM sub-sector. This is necessary because the institutions currently teaching mining skills only admit Senior 6 leavers. This initiative will allow earlier school dropouts and those that did not attend school to earn a living in a safe and healthy way.

#### Anticipated outcomes:

- \* Better skills being practiced in the ASGM sector
- \* A sustainable ASGM sector

### Level of implementation for action

This will be implemented at national level. MoES will be lead agency.

### Intervention area/action 6.1.3: Formulating policies protecting vulnerable populations (including reducing foetal and infant exposure to mercury contamination) from mercury emissions and releases

#### 6.1.3.1 Developing bye-laws and ordinances prohibiting:

- \* Children, expectant and nursing mothers from engaging in gold processing with mercury
- \* Toddlers at mining sites where mercury is used without its containment areas
- \* Mercury storage in homes
- \* Processing of gold in and around residences, mining camps and public places
- \* Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained

Bye-laws prohibiting children and pregnant women from conducting mining activities with emphasis on those that involve the use of mercury will be developed. This is because mercury affects both pregnant women and their unborn children who may be produced with defects like under developed limbs. Also mercury affects people of all ages including children who will not take care to ensure they are using protective means. Besides, the law prohibits children to work in gainful employment.

#### Anticipated outcomes:

- \* Reduced exposure of vulnerable populations to mercury emissions and releases
- \* Confined gold processing with mercury
- \* Reduced mercury use at ASGM sites
- \* Increased adoption of mercury-alternative gold processing methods

### Level of implementation for action

This will be implemented at national and local levels. MoJCA will be lead agency.

### 6.1.3.2 Updating the National ASM Management Strategy to encompass strategies to reduce and

## where possible combat the exposure of vulnerable populations to mercury emissions and releases

Strategies to reduce, and where possible combat the exposure of vulnerable populations to mercury use will be included in the National ASM Management Strategy which is currently under review.

### Anticipated outcome:

- \* Reduced exposure of vulnerable populations to mercury use

### Level of implementation for action

This will be implemented by the DGSM at the national level. However, consultations will be made with relevant authorities on what should be included in the Strategy.

## Intervention area/action 6.1.4: Implementing labour and mining regulations prohibiting child labour in ASGM

### 6.1.4.1 Strengthening enforcement of existing child labour laws

The Police Mineral Protection Unit and MGLSD will be charged with the duty of enforcement of child labour laws in the ASGM sector. This will be done by conducting spot checks in the mines and penalising parents that are working with their children.

### Anticipated outcome:

- \* Reduced child labour in ASGM activities

### Level of implementation for action

This will be implemented at national and local government levels by the MGLSD as the lead agency.

### 6.1.4.2 Formulating bye-laws and ordinances against child labour at ASGM sites

Child labour has been opposed for years now but the National Overview indicated that it still persists. Some miners claim they do not have anyone to leave home taking care of their children, while others say the children have to earn a living so as to contribute to the household income. The study further revealed that most ASGM operators are aware of the legal implications of child labour but continue to break the laws due to the weak monitoring and enforcement by the relevant authorities. At local government level, bye-laws will be created forcing children to go school. These will require constant monitoring and enforcement by the MGLSD, community development officers at the subcounty level and officials at the local government.

### Anticipated outcome:

- \* Reduction in the number of children participating in ASGM activities

### Level of implementation for action

This will be implemented at national and local government levels by the MoJCA as lead agency.

### 6.1.4.3 Enforcing the ICGLR standards that prohibit mine owners and mineral exporters sourcing their gold from sites that employ child labour

Under the ICGLR framework which is executed by the DGSM in collaboration with Ministry of Foreign Affairs regarding the Regional Certification Mechanism, mine site owners and mineral exporters are required to source their gold from sites that do not employ children. The relevant authorities, therefore, will use this framework to blacklist ASGM mines falling short of these standards.

**Anticipated outcome:**

- \* Reduced number of children engaging in ASGM activities

**Level of implementation for action**

The enforcement of the ICGLR standards will be implemented at national and local government levels by DGSM. It will be undertaken in all the ASGM districts.

**6.1.4.4 Carrying out regular monitoring to ensure that child labour laws are adhered to by ASGM**

One of the reasons child labour remains rampant at mine sites is the lack of monitoring of these sites. The NAP will facilitate continuous monitoring and spot inspections at ASGM sites to combat children's participation in mining.

**Anticipated outcome:**

- \* Reduction in the number of children engaging in ASGM

**Level of implementation for action**

This will be undertaken at local government level in all the ASGM districts. It will be led by MGLSD.

**6.1.4.5 Committing parents in mining camps to take their children to school, including taking advantage of UPE and USE programmes**

According to the National Overview, some parents stated that they are forced to take under age children to mining sites because they expect to get some money from the work the children do. This money, they say, can be used as a family. Others claimed they had no childcare at home making it impossible to leave the children alone. Initiatives will be started where scholastic materials and food will be provided to children whose parents are unable to afford fees for school. This will be undertaken by different NGOs that have carried out similar work before, for example, WFP, ILO and TUSOME. The parents will also be encouraged to make use of programmes such as Universal Primary Education and Universal Secondary Education. These programmes, run under MoES, offer tuition-free education to learners whose parents are unable to afford it.

**Anticipated outcome:**

- \* Reduced number of children participating in ASGM
- \* Increased number of children going to school

**Level of implementation for action**

This will be implemented at local government level and will be undertaken by MoES as the lead agency.

**6.1.4.6 Supporting the construction of schools closer to designated mining camps and areas**

During the NBO study, some of the parents said they do not take their children to school because the mines are usually located far away from such services. Therefore, schools will be constructed closer to the mining areas.

**Anticipated outcomes:**

- \* Reduction in the number of children participating in ASGM
- \* Increased number of children going to school

## Level of implementation for action

This activity will be undertaken at the national level and will be led by MoES.

### Intervention area/action 6.1.5 Developing accurate perceptions of miners and national stakeholders on the levels of mercury contamination in environmental samples

#### 6.1.5.1 Assessing levels of mercury contamination in soil, water, land, fish, breast milk for ASGM and infants whose mothers work in gold mines

A study will be conducted to assess the level of mercury contamination in the environment, crops miners eat, and infants whose mothers are miners. This assessment will shed light on the gravity of the situation and aid in changing the miners' attitude to transition to mercury-free technologies.

#### Anticipated outcomes:

- \* ASGMs, health workers, policy makers, government institutions aware of the gravity of mercury pollution in humans and environmental media
- \* Increased behavioural change in miners regarding mercury use

## Level of implementation for action

The study will be national and data will be collected at the local government level from ASGM sites across the country. This activity will be led by NEMA.

# 11. Workplan

The Minamata Convention requires governments with more than insignificant mercury use to submit their NAP within three years of the Convention entering into force. Subsequent progress reports are then required every three years. The initial workplan for implementation of the NAP, however, will incorporate the 3-year review and reporting obligation but plan for five years (2020 - 2024) as shown below. It should be noted that some of the similar activities (for example inspections and trainings) being undertaken by different institutions will be combined and carried out at the same time in order to allow for efficient utilisation of funds. This NAP strongly encourages inter-agency implementation not only for efficient execution but also to avoid duplication of actions and mismanagement of funds.

OBJECTIVE	STRATEGY	ACTIONS	PRIORITY	ACTIVITY LEAD	IMPLEMENTING PARTNER	BUDGET (UGX)	BUDGET (USD)	SOURCE OF FUNDING	2	2	2	2	2	EXPECTED RESULTS	INDICATOR	
									0	0	0	0	0			
1. To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024	1.1 Actions to eliminate worst practices (As required by point 1(b) of the Annex C of the Minamata Convention)	<b>1.1.1 Elimination of whole ore amalgamation</b>														
		1.1.1.1 Holding sensitisation campaigns on mercury use and its dangers	ST	NEMA	DGSM, MWE, LGs, MoLG, Development Partners, MGLSD, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)	597,000,000	159,200.00	GoU, Devt Partners							- Increased knowledge on the dangers of mercury on human health and the environment - Increased ASGM adoption of safer gold processing methods - Increased adoption of safety and health measures when using mercury	Number of sensitisation campaigns held
		1.1.1.2 Developing and producing communication materials to illustrate the disadvantages of whole ore amalgamation and other worst practices and solutions	ST	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)	50,700,000	13,520.00	GoU, Devt Partners							- Increased knowledge on efficient gold concentration methods	Number of communication materials developed

		1.1.1.3 Conducting demonstrations on alternative methods to mercury use, for example, use of gravitational methods and cyanide technologies	ST	DGSM	NEMA, LGs, Development Partners, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)	158,000,000	42,133.33	GoU, Devt Partners						- Increased adoption of mercury-free technologies	Number of miners participating in the demonstrations
		1.1.1.4 Instituting a collaborative mechanism between ASG miners and suppliers including technicians of equipment that requires little to no mercury use in gold processing	ST	NEMA	Private sector, Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE), UMA	10,000,000	2702.7	GoU, Devt Partners						- Increased adoption of mercury-free technologies - Enhanced ASGM skills in operating mercury-free technologies - Increased ASGM skills in operating and maintaining equipment - Increased ASGM knowledge on local fabricators/sources of mineral processing equipment	Number of ASGMs accessing equipment that requires little to no mercury use in gold processing Number of ASGMs trained Number of local fabrications supplied Number of local fabrications developed at ASGM sites
		1.1.1.5 Developing and enforcing Bye-laws and Ordinances against ASG miner engagement in worst practices	ST	MoLG	LGs, NEMA, MoJCA	37,500,000	10,000.00	GoU, Devt Partners						-- Reduced ASGM engagement in worst practices including whole ore amalgamation - ASG miners violating the ordinance apprehended at a local level  -Compliance to Ordinances and Bye-laws against engagement in worst practices	Number of bye-laws and ordinances developed in the ASGM districts  Number of offenders prosecuted
		1.1.1.6 Developing ASGM popularised guidelines on sustainable gold mining and processing	ST	DGSM	NEMA, LGs, MoLG, MGLSD	2,250,000	600.00	GoU, Devt Partners						-Increased awareness and adoption of sustainable techniques/processes for gold mining and processing	Number of disseminated guidelines on sustainable gold mining and processing
					<b>Sub Total</b>	<b>855,450,000</b>	<b>228,156.03</b>								

1.1.2 Elimination of open burning of amalgam or processed amalgam												
1.1.2.1 Demonstrating to miners existing mercury containment tools/technologies including retorts and fume hoods	ST	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE)	79,000,000	21,066.67	GoU, Devt Partners					- Reduced exposure of persons in and around the mines to mercury emissions and releases - Reduced mercury emissions and releases from ASGM sector - Increased recycling of mercury	Number of miners trained in mercury containment tools/technologies
1.1.2.2 Incentivising the acquisition of alternative methods to gold processing with mercury	ST	NEMA	DGSM, Development Partners, the private sector, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE)	4,000,000	1,066.67	GoU, Devt Partners					- Increased miners' acquisition of reduced use to mercury-free technologies	Number of miners using alternative methods to gold processing with mercury
1.1.2.3 Distributing of mercury containment tools/technologies including mercury-free processing technologies to ASGMs	ST	NEMA	DGSM, Development Partners, the private sector, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE, UMA)	190,000,000	50,666.67	GoU, Devt Partners					- Reduced mercury emissions and releases from ASGM sector - Increased recycling of mercury	Number of mercury containment tools/ technologies distributed
			<b>Subtotal</b>	<b>273,000,000</b>	<b>72,800.01</b>							
1.1.3 Elimination of burning of amalgam in residential areas												
1.1.3.1 Facilitating the establishment of designated gold processing units at each ASGM mine site	ST	DGSM	NEMA, MGLSD, Development Partners, LGs, MoLG	150,000,000	40,000.00	GoU, Devt Partners					- Reduced exposure of miner and miner work force to mercury emissions and releases	Number of ASGM mine sites with a designated gold processing unit
1.1.3.2 Updating environmental regulations to incorporate restrictions on open burning of amalgam in residential areas and mining camp sites	ST	NEMA	MWE, MoJCA, LGs, MoLG	10,000,000	2702.7	GoU, Devt Partners					- Reduced exposure of communities and miners to mercury emissions and releases - Improved Regulatory frameworks on sustainable ASG/AS mining and processing methods	- Number of updated laws and regulations on sustainable ASG/AS mining and processing methods
			<b>Subtotal</b>	<b>160,000,000</b>	<b>42,702.70</b>							
1.1.4 Elimination of cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury												

		1.1.4.1 Training small to medium scale gold miners on handling, storage and decontaminating mercury containing tailings	ST	NEMA	Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), the private sector, LGs, MoLG	31,600,000	8,426.67	GoU, Devt Partners						- Reduced leaching of mercury contaminated tailings	Number of ASGMs trained in handling, storage and decontaminating mercury containing tailings
		1.1.4.2 Developing a collaborative mechanism between medium to large scale mining companies and ASGMs as part of CSR to develop ASGM technical capacities	ST	DGSM	NEMA, Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), the private sector, MoLG	4,400,000	1,173.33	GoU, Devt Partners						- Decreased use of mercury contaminated tailings - Increased knowledge transfer from medium to large scale mining companies to ASGMs	Number of private mining companies engaging the ASGMs
		1.1.4.3 Committing medium to large scale gold processors to adequately transport, handle, store, process gold from mercury containing tailings and dispose of mercury containing waste	ST	NEMA	MWE, DGSM, LGs, ACEMP, AAU, UNACOH, ACCC	8,000,000	2,133.33	GoU, Devt Partners						- Reduced environmental pollution from mercury containing tailings - Reduced cyanidation of mercury containing tailings	Number of medium to large scale gold processors adequately transporting, handling, storing mercury containing tailings and disposing of mercury containing waste - Amount of mercury in tailings being subjected to cyanidation process
					<b>Subtotal</b>	<b>44,000,000</b>	<b>11,733.33</b>								



1.2 Strategies for promoting the reduction of emissions, releases, and risks of exposure to mercury (As required by point 1(e) of the Annex C of the Minamata Convention)	<b>1.2.1 Assessing existing minimal mercury use to mercury-free technologies for gold processing by ASGMs</b>													
	1.2.1.1 Benchmarking mercury free technologies including associated costs and benefits of these technologies	ST	NEMA	DGSM, CSOs (ACEMP, UNACOH, NAPE), MoLG, LG, UNCST, UMA	46,500,000	12,400.00	GoU, Devt Partners						- Targeted acquisition of gold processing technologies/equipment by ASGMs - Lessons learnt adopted by benchmarking institutions - IEC materials on gold mining and processing technologies developed and disseminated	A benchmarking report
	1.2.1.2 Training local masons and fabricators in producing retorts, mercury capture hoods, construction of mercury effluent containment structures among others	ST	NEMA	Development Partners, LGs, Private sector, ACEMP, AAU, UNACOH, ACCC, UMA, MoLG	48,800,000	13,013.33	GoU, Devt Partners						- Increased production of mercury capture tools - Improved design of gold processing areas - Improved containment of mercury containing waste	Number of local masons and fabricators trained in producing retorts, mercury capture hoods, construction of mercury effluent containment structures among others
				<b>Subtotal</b>	<b>95,300,000</b>	<b>25,413.33</b>								
	<b>1.2.2 Supporting the use of mercury-free and mercury capture technologies</b>													
1.2.2.1 Training ASG Miners on mercury effluent and emissions containment tools and technologies	ST	NEMA	MoLG, Development Partners, LGs, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), UNCST, UMA	48,800,000	13,013.33	GoU, Devt Partners						-Increased adoption of mercury effluent and emissions containment tools and technologies - Reduced environmental and human pollution from mercury emissions and releases at ASGM sites	Number of ASGM trained in emissions containment tools and technologies  Nature of tools and technologies adopted by ASGMs in emissions containment tools and technologies	

		1.2.2.2 Integrating miner needs into local and national government planning and budgeting programmes and projects	ST	NEMA	OWC, ADB, MSC, LGs, ACEMP, UNACOH, ACCC, private sector, MoLG, DLGs	130,000,000	34,666.67	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- More miners accessing finance to afford the methods they currently consider expensive</li> <li>- ASGMs access to government inputs instituted</li> <li>- ASGM benefiting from government livelihood programmes like Operation Wealth Creation (OWC)</li> <li>- ASGMs benefiting from small grants programmes and revolving funds/ microfinance schemes</li> <li>- Increased acquisition of mercury-free technologies, tools and equipment by ASG miners</li> </ul>	Number of ASGMs receiving funds or small grants
		1.2.2.3 Carrying out formal and informal education in institutions and mining communities in regard to mercury effects on human health and environment and mitigating such effects	ST	MoH	MoES, NEMA, Schools, Universities vocational institutions, DGSM, MGLSD	80,000,000	21,333.33	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Increased knowledge on dangers of mercury use and alternatives to mercury use</li> </ul>	Number of people engaged in the education on mercury effects on human health and environment and mitigating such effects
		1.2.2.4 Updating the curriculum of public vocational institutions to cover ASM/ASGM trainings on sustainable gold extraction, processing and fabrication of tools/equipment	ST	DGSM	MoES, NEMA, Universities, vocational institutions, DGSM	100,000,000	27027.01	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Public vocational institutes awarding certificates and diplomas to miners</li> </ul>	Number of public vocational institutions offering trainings on sustainable gold extraction and processing methods
					<b>Subtotal</b>	<b>358,800,000</b>	<b>96,040.34</b>									

1.2.3 Establishing a safe waste disposal programme in the ASGM sector														
		1.2.3.1 Training ASGMs in safe waste disposal methods, waste/effluent treatment and recycling methods and management of mercury containing tailings	ST	NEMA	DGSM, MoLG, MWE, LGs, CSOs (ACEMP, UNACOH)	76,400,000	20,373.33	GoU, Devt Partners					- Safer waste disposal methods adopted by ASGMs	Number of ASGMs trained in safe waste disposal methods, waste/effluent treatment and recycling and management of mercury containing tailings  Number of miners that have adopted safe waste disposal methods, waste/effluent treatment and recycling methods and management of mercury containing tailings
					<b>Sub total</b>	<b>76,400,000</b>	<b>20,373.33</b>							

<b>2. To facilitate the formalisation of the ASGM sector by 2024</b>	<b>2.1 Steps to facilitate formalisation or regulation of the ASGM sector (As required by point 1(c) of the Annex C of the Minamata Convention)</b>	<b>2.1.1 Developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities</b>										
		2.1.1.1 Reviewing relevant laws/regulations to incorporate provisions of ASGM/ASM formalisation strategies	ST	NEMA, DGSM	MoLG, Development Partners, LGs, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), MoTC, MGLSD	16,700,000	4,453	GoU, Devt Partners				

	2.1.1.2	Formulating ordinances and bye-laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations	ST	MoJCA	DGSM, NEMA, LGs, DGSM, MoLG, Development Partners, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), MoTC, MGLSD	37,500,000	10,000	GoU, Devt Partners							- Increased adherence of ASGM miners to environment and natural resources laws/regulations - Environmental certification for ASGM operations - Sustainable processing of gold by ASGM	Number of ordinance and bye-laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations formulated
	2.1.1.3	Developing monitoring guidelines for ASM/ASGM activities	ST	NEMA	LGs, MoLG, MGLSD, DGSM	2,250,000	600	GoU, Devt Partners							- Improved monitoring of ASGM activities by MDAs	The monitoring guidelines developed
	2.1.1.4	Reviewing and improving the efficiency of the licensing system to provide for categories of ASGM operations and ascertaining viability of dormant mineral licenses	ST	DGSM	NEMA, LGs, DGSM, MoLG, Development Partners, the private sector, UIA	26,700,000	7,120	GoU, Devt Partners							An efficient licencing system	Number of ASGMs licensed according to their legal organisations/categories  Number of dormant licenses canceled Number of online mineral license application system established
					<b>Subtotal</b>	<b>83,150,000</b>	<b>22,173</b>									
	<b>2.1.2 Building the capacity of ASGMs and extension staff to manage the ASGM sector</b>															
	2.1.2.1	Carrying out research on best ASGM practices and technologies in ASGM sector	ST	Academia	DGSM, Development Partners, Academia, UNCST, UMA	57,000,000	15,200.00	GoU, Devt Partners							- Quick references to documented best ASGM practices and technologies in ASGM sector - Tailored/ recommended best ASGM practices and technologies for different regions - Improved technology efficiencies	Percentage uptake of best ASGM practices and technologies in ASGM sector  Number of best practices and technologies developed

		2.1.2.2 Carrying out Inspectors and ASGM miner capacity needs assessment in regard to managing the ASGM sector	ST	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD	57,000,000	15,200.00	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Inspectors' capacity needs to manage the ASGM sector identified</li> <li>- ASGM miners' needs to reduce and eliminate mercury use identified</li> </ul>	An Inspectors and ASGM miner capacity needs assessment report
		2.1.2.3 Training of ASGM Trainers and youth miners on best ASGM practices and technologies	ST	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE)	156,000,000	41,600.00	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- ASGM miners' capacity to reduce and eliminate mercury use enhanced</li> <li>- Improved observance of OSHE standards at ASGM sites</li> <li>- Improved practices and acquisition of best technologies by ASGM</li> <li>- Reduced mercury use in the ASGM sector</li> <li>- Increased adoption of best available practices and technologies</li> <li>- Increased awareness of miners on best ASGM practices and alternative technologies</li> <li>- A pool of Training of Trainers developed</li> </ul>	Number of ASGM trainers and youth miners trained on best ASGM practices and technologies
		2.1.2.4 Training of Inspectors on ASGM activity monitoring, ASGM protocols, standards and regulations	ST	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE)	328,800,000	87,680	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Improved monitoring and reporting of ASGMs activities by Inspectors</li> <li>- Efficient management of mercury use in the ASGM sector</li> <li>- Improved observance of OSHE standards at ASGM sites</li> <li>- Inspectors' capacity to managing the ASGM sector enhanced</li> <li>- Increased awareness of inspectors on best ASGM practices and alternative technologies</li> </ul>	Number of Inspectors trained on ASGM activity monitoring, ASGM protocols, standards and regulations

	2.1.2.5 Developing mobile applications for cell phones to enhance information sharing among miners and between miners and inspectors/MDAs and private sector	ST	MICT	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD	73,500,000	19,600	GoU, Devt Partners						- Efficiency in inquiries and feedback	Number of miners and other stakeholders successfully using the mobile application
	2.1.2.6 Train responsible officers in management of mercury	ST	NEMA	URA, MoTIC, MWE, MGLSD, MoH, UNBS, UBOS	64,800,000	17,280	GoU, Devt Partners						- Efficient management of mercury use and trade in Uganda	Number of officers trained in management of mercury
				<b>Subtotal</b>	<b>737,100,000</b>	<b>196,560.00</b>								
	<b>2.1.3 Forming, strengthening and defining ASGM associations, companies and cooperatives</b>													
	2.1.3.1 Training ASGM on rules and procedures for forming associations, cooperatives and companies	ST	MoTIC	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD	52,400,000	13,973	GoU, Devt Partners						- ASGM fully knowledgeable about the procedures of registering associations and advantages of working in associations - Increased number of ASGM opting for associations - Membership and operations of existing ASGM associations strengthened	Number of ASGMs trained on rules and procedures for forming associations, cooperatives and companies
	2.1.3.2 Registering of ASGM associations, cooperatives, companies	ST	DGSM	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC	7,500,000	2,000	GoU, Devt Partners						- Increased fully registered and functioning ASGM associations, cooperatives and companies - Increase in ASGM associations, cooperatives and companies following rules and procedures - Reduced migrations of ASGMs - Increase in ASGM mining capital investments	Number of fully registered ASGM associations, cooperatives, companies
	2.1.3.3 Establishing a national ASGM umbrella association or network	ST	DGSM	LGs	16,300,000	4,347	GoU, Devt Partners						- Increased information sharing	A national ASGM umbrella Association

				<b>Subtotal</b>	<b>76,200,000</b>	<b>20,320</b>									
<b>2.1.4 Facilitating miners to access financial credit</b>															
2.1.4.1 Reviewing financial regulations to provide for ASGM associations, cooperatives and companies access to credit schemes	ST	MFPED	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC	22,000,000	5,867	GoU, Devt Partners								- Finance institutions legally committed to offering ASGM financial services - Banking institutions valuing ASGM investments - Banking institutions lending associations, cooperatives and companies	Provision for access to credit by ASGMs in the financial regulations
2.1.4.2 Holding engagements between ASGMs and financial institutions	ST	MFPED	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC	79,500,000	21,200	GoU, Devt Partners								- ASGM knowledgeable about finance mechanisms for their activities - More miners and ASGM associations accessing finance and affordable alternative technologies	Number of engagements held between ASGMs and financial institutions
				<b>Subtotal</b>	<b>101,500,000</b>	<b>27,067</b>									
<b>2.1.5 Geo-prospecting and zoning of ASGM mining areas</b>															
2.1.5.1 Collecting geological data and gazetting areas for ASGM operations	ST	DGSM	NEMA, UWA, NFA, MoLHUD, MoLG	7,000,000	1,867	GoU, Devt Partners								- ASGMs made more aware of mineral spatial distribution - Reduced ASGM and medium to large scale miner conflict - Reduced migrating of ASGM - Sustainable ASGM associations, cooperatives and companies - Reduced environmental degradation	Number of areas gazetted for ASGM
2.1.5.2 Cancellation of dormant licenses	ST	DGSM	NEMA, UWA, NFA, MoLHUD, MoLG	5,000,000	1351.3	GoU, Devt Partners								- Reduced dormancy of issued mineral/mining licences - Re-allocation of licences to ASGM operations	Number of dormant licences cancelled
				<b>Subtotal</b>	<b>12,000,000</b>	<b>3,218</b>									
<b>2.1.6 Undertake a national biometric registration and mapping of all ASGM value chain key players</b>															



		2.1.6.1 Carrying out a baseline survey of ASGM households, actors along the ASGM value chain and location of ASGM operations	ST	DGSM	LGs, MoLG	57,000,000	15,200.00	GoU, Devt Partners						- ASGM sector specific data and information in place	A baseline survey report
		2.1.6.2 Undertaking the biometric registration of ASGMs (launched in March, 2019 to commence in November 2019 and end by June 2020)	ST	DGSM	LGs, MoLG	40,000,000	10,667	GoU, Devt Partners						- ASGM miners and their operations easily tracked	Number of ASGMs registered
		2.1.6.3 Benchmarking of best practice in the formation of ASGM associations, companies and cooperatives	ST	DGSM	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC, MFPED	29,000,000	7,733.33	GoU, Devt Partners						- Adoption of best practices	Number of ASGM associations, companies or cooperatives registered
		2.1.6.4 Establishing gazetted buying centers for gold	ST	DGSM	NEMA, Development Partners, Private sector, MoLG	15,000,000,000	4,000,000.00	GoU, Devt Partners						- Processing methods for gold tracked - Improved prices for gold from ASGM using mercury free methods - Reduced use of mercury in gold processing - Increased revenue from gold production and delivery of services	Number of buying centres gazetted
					<b>Subtotal</b>	<b>15,126,000,000</b>	<b>4,033,600.33</b>								

<b>3. To strengthen stakeholder engagement in the</b>	<b>3.1 Strategies for involving stakeholders in the implementation and continuing development of the plan (As required by point 1(g) of the Annex C of the Minamata Convention)</b>	<b>3.1.1 Establishing a Multi-stakeholders' Working Group Responsible for the implementation of the NAP</b>												
		3.1.1.1 Undertaking the mapping of national stakeholders to form a National Action Plan implementation working group	ST	NEMA	– Development partners, private sector, MDAs, CSOs, Academia	38,200,000	10,186.67	GoU, Devt Partners					-A comprehensive database of the stakeholders in place	Number of national working group members
		3.1.1.2 Defining the post National Action Plan implementation working group terms of references, their interest and potential contributions in reviewing and implementing the NAP	ST	NEMA	DGSM, MoLG	5,000,000	1351.4	GoU, Devt Partners					- Smooth implementation of the National Action Plan leading to the eventual elimination of mercury	Development of the terms of references for the national working group
		3.1.1.3 Establishing and updating of a national database of ASGM stakeholders (inclusive of regional stakeholders)	ST	NEMA	–Development partners, MDAs, NGO board, CBOs, LGs, MoLG	12,000,000	3,200	GoU, Devt Partners					- Enhanced national and regional collaborative mechanism	Number of stakeholders captured on the national ASGM stakeholder database
		3.1.1.4 Creating synergies with other projects being implemented by sectors, CSOs, private sector and other stakeholders in line with the NAP	ST	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	270,000,000	72,000	GoU, Devt Partners					- Enhanced collaboration among different agencies, institutions and organisations to reduce mercury use and emissions in Uganda	Number of collaborations between different stakeholders
		3.1.1.5 Tracking, monitoring and evaluating implementation of NAP interventions/ activities	ST	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	1,510,800,000	402,880	GoU, Devt Partners					- Enhanced monitoring of NAP implementation	Percentage achievement of NAP goal
					<b>Subtotal</b>	<b>1,836,000,000</b>	<b>489,618.07</b>							
		<b>3.1.2 Enhancing information sharing among key stakeholders</b>												

		3.1.2.1 Holding periodic stakeholder review meetings to review the NAP	ST	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	620,000,000	165,333	GoU, Devt Partners							- Improved information sharing on NAP implementation - Rolling out of NAP activities undertaken - Feedback on challenges on NAP implementation obtained	Number of stakeholder review meetings held	
		3.1.2.2 Holding community barazas to share information on strategies to reduce mercury emissions and releases and obtain feedback	ST	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	270,000,000	72,000	GoU, Devt Partners							- Enhanced knowledge on mercury and its dangers - Feedback on challenges on NAP implementation obtained	Number of community barazas held	
					<b>Subtotal</b>	<b>890,000,000</b>	<b>237,333</b>										
<b>4. To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024</b>	<b>4.1 Strategies for managing trade and preventing diversion of mercury and mercury compounds (As required by point 1(f) of the Annex C of the Minamata Convention)</b>	<b>4.1.1 Development of a mercury trade tracking system</b>															
		4.1.1.1 Developing and updating of a data base of key players in mercury trade and authorised traders in unlisted MAPs	ST	MoTIC	URA, NEMA, UNBS, MoLG	9,200,000	2,453	GoU, Devt Partners								- Efficient information exchange among traders and institutions - Reduced smuggling of mercury - Enhanced transportation, storage, handling and disposal of mercury and MAPs - Enhanced monitoring of end users of mercury	Number of key players in mercury and MAP trade captured on the database
		4.1.1.2 Documenting imported un listed and listed MAPs and restricting (introducing penalties against them) importation of all listed MAPs	ST	URA	MoTIC, NEMA, MoLG	2,000,000	540.54	GoU, Devt Partners								- Reduced importation and trade of listed MAPs - Reduced trade in mercury contained in MAPs - Introduced penalties against the importation of listed MAPs	Number of offenders penalised
		4.1.1.3 Undertaking surveillance of porous borders and ASGM sites to track illegal mercury trade	ST	URA	LGs, NEMA, MoTIC, MoLG	1,200,000,000	320,000	GoU, Devt Partners								- Reduced illegal trade in mercury	Number of mercury trade routes intercepted

	4.1.1.4 Training of communities and ASG miners to serve as whistle blowers for smuggled mercury	ST	NEMA	LGs, DGSM, MGLSD, MoLG	22,250,000	5,933	GoU, Devt Partners							- Reduced illegal trade in mercury and use of mercury - Reduced and eventual elimination of mercury use by ASGMs	Number of communities and ASG miners trained to serve as whistleblowers
	4.1.1.5 Undertaking studies to assess mercury pathways/ trade routes to effectively roll out strategies that manage mercury trade	ST	URA	LGs, NEMA, MGLSD, MoLG	45,000,000	12,000	GoU, Devt Partners							- Reduced illegal trade in mercury - Reduced and eventual elimination of mercury use by ASGMs	Number of mercury trade routes intercepted
	4.1.1.6 Training police and judiciary on prosecution of suspects engaging in illegal mercury trade	ST	MoJCA	NEMA, LGs, DGSM, MoLG	23,700,000	6,320	GoU, Devt Partners							- Efficiency in the judicial system in prosecuting cases against mercury	Number of police and judiciary trained on prosecution of suspects engaging in illegal mercury trade
				<b>Subtotal</b>	<b>1,302,150,000</b>	<b>347,247</b>									
	<b>4.1.2 Strengthening institutional capacity in detecting and analysing samples for mercury</b>														
	4.1.2.1 Procuring and equipping inspectors with tools for detecting mercury on site	ST	NEMA	Development partners, Private sector, URA, MoTIC, MWE, MGLSD, MoH, UNBS, UBOS, MoLG	104,700,000	27,920	GoU, Devt Partners							- Quick detection of mercury and seizure of consignments - Reduced errors in reporting and seizures - Early detection of contaminated sites and medium - Improved reporting by inspectors	Number of inspectors equipped with tools for detecting mercury on site
	4.1.2.2 Equipping laboratories with tools for testing mercury in samples	ST	NEMA	Academia, DGAL, Development Partners, the private sector, URA, UNBS, MoES, MoLG	5,000,000,000	1,333,333	GoU, Devt Partners							- Reliable and valid results	Number of laboratories equipped with tools for testing mercury in samples

	4.1.2.3 Accrediting government laboratories to analyse mercury	ST	NEMA	Academia, DGAL, Development Partners, the private sector, URA, UNBS, MoES, MoLG	100,000,000	27,027	GoU, Devt Partners							- Reliable, valid and certified results	Number of government laboratories accredited to analyse mercury
	4.1.2.4 Developing institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste	ST	NEMA	MWE, MGLSD, MoH, Development Partners, MoLG	2,250,000	600	GoU, Devt Partners							- Efficient mercury waste management	Institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste developed
	4.1.2.5 Developing a mercury spill contingency plan for use by mercury traders, institutions and ASGMs	ST	NEMA	MWE, MGLSD, MoH, Development Partners, MoLG	68,000,000	18,133	GoU, Devt Partners							- Efficient mercury management along the value chain	A mercury spill contingency plan developed Number of spillages effectively handled
				<b>Subtotal</b>	<b>5,274,950,000</b>	<b>1,407,013</b>									
	<b>4.1.3 Strengthen regional cooperation and cross-border inter-agency collaboration on the tracking of mercury</b>														
	4.1.3.1 Developing a single window importation platform to track mercury trade over the entire value chain	ST	MoTIC	URA, NEMA, Development Partners, MoLG	62,000,000	16,533	GoU, Devt Partners							- Reduction in illegal mercury trade and restriction of mercury importation	A single window platform developed and fully functioning
	4.1.3.2 Training customs officers at border points to be able to identify mercury, register mercury and MAPs traders	ST	NEMA	URA, NEMA, MoTIC, Development Partners, MoLG	56,400,000	15,040	GoU, Devt Partners							- Efficient management of trade in mercury and mercury added products	Number of customs officers trained to identify mercury, register mercury and MAPs traders trained

		4.1.3.3 Benchmarking best practices, standards and case studies from other countries	ST	NEMA	URA, MoTIC, Development Partners, MoLG	17,000,000	4,533	GoU, Devt Partners							- Tailored interventions in the ASGM sector - Improved and regionally harmonised management of mercury trade and mercury added products	A benchmarking study report produced and printed	
		4.1.3.4 Developing a regional collaborative mechanism in tracking and managing smuggled mercury and MAPs	ST	URA	MoTIC, NEMA Development Partners, MoLG	21,000,000	5,600	GoU, Devt Partners							- Efficient cross boundary management of the trade of mercury and mercury added products - Improved criminal investigation	Number of mercury consignments and MAPs intercepted	
		4.1.3.5 Establishing regional disincentives in mercury trade	ST	URA	MoTIC, NEMA, Development Partners, MoLG	–	–	–							- Reduced trade in mercury	Percentage reduction in illegal mercury trade	
		4.1.3.6 Developing a collaborative mechanism among regional and national mercury traders to consider trade in alternatives to mercury for gold processing	ST	NEMA	MoTIC, URA, Development Partners, LGs, MoLG, DGSM, UIA, eastern and southern African countries	–	–	–							- Reduced in mercury supply and trade for gold processing - Reduced mercury use for gold processing	Percentage reduction in illegal mercury trade	
					<b>Subtotal</b>	<b>156,400,000</b>	<b>41,706</b>										
<b>5. To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024</b>	<b>5.1 Implementation of a Public Health Strategy on the exposure of artisanal and small-scale gold miners and their communities to mercury (As required by point 1(h) of the Annex C of the Minamata Convention)</b>	<b>5.1.1 Carrying out the situational analysis of public health concerns in the ASGM sector</b>															
		5.1.1.1 Reviewing the Public Health Strategy to ensure that all ASGM health related concerns have been incorporated	ST	MoH	NEMA, MGLSD, MEMD, MUSPH, CSOs (ACEMP, UNACOH), LGs, MoLG	14,900,000	3,973	GoU, Devt Partners								- A plan to address public health concerns in place	A review report published and presented to the relevant authorities
		5.1.1.2 Carrying out a baseline survey of the extent of public health concerns in the ASGM sector		MoH	NEMA, MUSPH, MGLSD, MoLG	315,800,000	84,213	GoU, Devt Partners								- Increased knowledge on the extent of public health concerns surrounding the ASGM sector	A baseline survey report produced and published

	5.1.1.3 Disseminating survey results to national and local stakeholders	ST	NEMA	MoH, MGLSD, MUSPH, ACEMP, UNACOH, ACCC, AAU, LGs, MoLG	1,000,000	267	GoU, Devt Partners						-Increased national stakeholder perception on the severity and extent of public health concerns -All national stakeholders aware of practices and effects of mercury on the human health and the environment	Number of survey reports published and disseminated
	5.1.1.4 Sharing of information at regional and international platforms or forums	ST	NEMA	MoH, LGs, Development Partners, MGLSD, DGSM, MoLG	156,250,000	41,666.67	GoU, Devt Partners						- Enhanced collaboration in finding solutions to identified public health concerns	Number of meetings held at regional and international level
				<b>Subtotal</b>	<b>487,950,000</b>	<b>130,120</b>								
	<b>5.1.2 Building the capacity of health care workers, VHTs on the health effects of mercury, diagnosis and treatment of the same and equipping health facilities including health centre IIs &amp; IIIs with diagnostic tools</b>													
	5.1.2.1 Training health care workers and Village Health Teams (VHTs) on the effects of mercury and how to diagnose and treat mercury-related complications at the earliest time possible	ST	MoH	NEMA, MGLSD, LGs, Development Partners, MoLG	602,850,000	160,760	GoU, Devt Partners						- Early diagnosis and treatment of mercury-related complications	Number of health care workers and VHT members trained on the effects of mercury and how to diagnose and treat mercuryrelated complications
	5.1.2.2 Drafting Standard Operating Procedures (SOPs) and guidelines	ST	MoH	NEMA, MGLSD, LGs, Development partners, MoLG	2,250,000	600	GoU, Devt Partners						- Early and efficient diagnosis and treatment of mercury-related complications	The SOPs and guidelines drafted and published
	5.1.2.3 Equipping health workers / health centres with diagnostic tools and equipment as well as medicine (chelators )	ST	NEMA	MoH, Development Partners, MGLSD, LGs , MoLG	318,750,000	85,000	GoU, Devt Partners						- Efficient diagnosis and treatment of mercury-related complications	Number of health workers /health centres equipped with diagnostic tools and equipment as well as medicine
				<b>Subtotal</b>	<b>923,850,000</b>	<b>246,360</b>								

5.1.3 Raising awareness of ASGMs and surrounding communities on the dangers of mercury use in gold extraction and alternative including pollution mitigation measures													
5.1.3.1 Developing and disseminating customised/ popular versions of IEC materials	ST	NEMA	MoH, Development Partners, MGLSD, LGs, MoLG	370,500,000	98,800	GoU, Devt Partners						<ul style="list-style-type: none"> <li>- Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures</li> <li>- Reduced mercury use</li> <li>- Increased use of PPEs</li> <li>- Increased use of alternatives to mercury</li> </ul>	Number of IEC materials developed and disseminated
5.1.3.2 Disseminating of information through use of community Change Agents	ST	NEMA	MoH, Development Partners, MGLSD, LGs, MoLG	324,000,000	86,400	GoU, Devt Partners						<ul style="list-style-type: none"> <li>- Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures</li> <li>- Reduced mercury use</li> <li>- Increased use of PPEs</li> <li>- Increased use of alternatives to mercury</li> </ul>	Number of community Change Agents engaged
5.1.3.3 Holding community meetings/ barazas, dialogues and outreach	ST	NEMA	MoH, Development Partners, MGLSD, LGs, CSO (ACEMP, UNACOH, ACCC, AAU), MoLG	73,440,000	19,584	GoU, Devt Partners						<ul style="list-style-type: none"> <li>- Improved feedback on challenges faced by ASG miners, and local stakeholders</li> <li>- Increased awareness on the dangers of mercury use, alternatives and pollution mitigation measures</li> </ul>	Number of community meetings/ barazas and dialogues held
5.1.3.4 Developing and producing spot messages and jingles	ST		MoICT, MoH, Development Partners, MGLSD, LGs, Development Partners, MoLG	226,000,000	60,267	GoU, Devt Partners						<ul style="list-style-type: none"> <li>- Increased information sharing on the dangers of mercury and how to cater for personal protection</li> <li>- Reduced mercury use</li> <li>- Increased use of PPEs</li> <li>- Increased use of alternatives to mercury</li> </ul>	Number of spot messages and jingles produce
5.1.3.5 Training of ASGMs on early detection of mercury poisoning/pollution/contamination and response mechanism	ST	NEMA	MoH, Development Partners, MGLSD, LGs, Development Partners, MoLG	198,600,000	52,960	GoU, Devt Partners						<ul style="list-style-type: none"> <li>- Developed personal emergency response plan</li> <li>- Increased medical checkups by ASG miners</li> </ul>	Number of ASGM trained on early detection of mercury poisoning/pollution/contamination and response mechanism



	5.1.3.6 Popularising existing chemicals regulations, OSHE regulations, formulating bye-laws and ordinances against poor OSHE practices at ASGM sites	ST	NEMA	MWE, MGLSD, MoLG, LGs	—	—	—								<ul style="list-style-type: none"> <li>- Increased adherence to OSHE standards</li> <li>- Prosecution of culprits at a local level</li> <li>- An ASGM community health surveillance, safety and health program set up</li> </ul>	<ul style="list-style-type: none"> <li>Number of bye-law and ordinances formed against poor OSHE practices in the ASGM districts</li> <li>Number of offenders prosecuted</li> </ul>
				<b>Subtotal</b>	<b>1,192,540,000</b>	<b>318,011</b>										
	<b>5.1.4 Enhancing inter-sectoral coordination in the management of mercury use in ASGM</b>															
	5.1.4.1 Undertaking MDAs joint inspections and monitoring/ surveillance of health/ public health related aspects of the ASGM sites	ST	NEMA	DGSM, MWE, MGLSD, MoH, LGs, MoLG	669,600,000	178,560	GoU, Devt Partners								<ul style="list-style-type: none"> <li>- Improved knowledge sharing</li> </ul>	<ul style="list-style-type: none"> <li>Number of joint inspections and monitoring/ surveillance of health/ public health related aspects of the ASGM sites undertaken</li> </ul>
				<b>Subtotal</b>	<b>669,600,000</b>	<b>178,560</b>										
	<b>5.1.5 Supporting ASGM communities to observe OSHE practices</b>															
	5.1.5.1 Training ASGMs on use of mercury vapour capture tools including retorts	MLT	NEMA	MGLSD, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	186,600,000	49,760	GoU, Devt Partners								<ul style="list-style-type: none"> <li>- Reduction in mercury emissions</li> </ul>	<ul style="list-style-type: none"> <li>Number of ASGMs trained on use of mercury vapour capture tools including retorts</li> </ul>
	5.1.5.2 Training ASGMs on use of PPEs during gold extraction and processing	MLT	MGLSD	NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	186,600,000	49,760	GoU, Devt Partners								<ul style="list-style-type: none"> <li>- Improvement in OSHE standards at ASGM sites</li> </ul>	<ul style="list-style-type: none"> <li>Number of ASGMs trained on use of PPEs during gold extraction</li> </ul>
	5.1.5.3 Demonstrating to ASGM mitigation measures for dust pollution	MLT	NEMA	MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	186,600,000	49,760	GoU, Devt Partners								<ul style="list-style-type: none"> <li>- Reduced silicosis at ASGM sites</li> <li>- Reduced dust pollution at ASGM sites</li> </ul>	<ul style="list-style-type: none"> <li>Number of demonstration on mitigation measures for dust pollution held</li> </ul>

		5.1.5.4 Training miners on containment of mercury effluent	MLT	NEMA	MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	186,600,000	49,760	GoU, Devt Partners						- Reduced environmental pollution from inefficient management of mercury effluent	Number of miners trained on containment of mercury effluent
		5.1.5.5 Demonstrating to ASGMs mercury-free processing methods including minimal mercury use technologies for gold processing	MLT	NEMA	DGSM, Development Partners, MWE, NEMA, CSOs (ACEMP, UNACOH, ACCC, AAU)	186,600,000	49,760	GoU, Devt Partners						- Reduction in mercury use in ASGM	Number of ASGMs taking part in the demonstration on mercury-free processing methods
		5.1.5.6 Engaging mine landlords on sustainable mine operations	MLT	NEMA	DGSM, Development Partners, MWE, NEMA, CSOs (ACEMP, UNACOH, ACCC, AAU)	40,250,000	10,733	GoU, Devt Partners						- Reduced environmental pollution/degradation - Increased mine restoration - Reduced OSHE hazards	Number of landlords engaged in sustainable mine operations
		5.1.5.7 Developing a reporting/ feedback mechanism from sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries on inspected/monitored indicators related to water catchments, water bodies, flora and fauna for pollution risks at ASGM sites	MLT	NEMA	MWE, MAAIF, DGSM, MGLSD, MoLG, MDAs	8,000,000	2,133	GoU, Devt Partners						- Improved interagency cooperation and reporting - Increased innovations in NAP implementation mechanisms	Number of reports submitted from the different sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries
		5.1.5.8 Enforcing public health, OSHE laws and regulations at ASGM sites	MLT	MGLSD, NEMA, MoH, LGs, MoLG	NEMA, MoH	427,200,000	113,920	GoU, Devt Partners						- Increased ASGM adherence to public health and OSHE standards	Number of ASGM sites following the OSHE laws and regulations
					<b>Subtotal</b>	<b>1,408,450,000</b>	<b>375,586</b>								

<b>6. To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024</b>	<b>6.1 Strategies to prevent the exposure of vulnerable populations, particularly children, women of child-bearing age, pregnant mothers and nursing mothers to mercury used in ASGM (As required by point 1(i) of the Annex C of the Minamata Convention)</b>	<b>6.1.1 Undertaking community outreach programmes to emphasise the risks vulnerable populations face in and around mine sites</b>												
		6.1.1.1 Carrying out sensitisation campaigns, dialogues and meetings with vulnerable populations	MLT	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD	740,900,000	197,573	GoU, Devt Partners					- Increased knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use	Number of sensitisation campaigns, dialogues and meetings conducted with vulnerable populations
		6.1.1.2 Developing an informative documentary on the dangers of mercury to human health and environment and screening the documentary in ASGM camps, communities and national televisions	MLT	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD	30,000,000	8,000	GoU, Devt Partners					- Increased knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use	A documentary produced and published
		6.1.1.3 Developing the capacities of ASGMs on mining practices that will prevent exposure of vulnerable populations to mercury	MLT	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD	124,400,000	33,173	GoU, Devt Partners					- Reduced exposure of vulnerable populations to mercury emissions and releases	Number of ASGMs trained on mining practices that will prevent exposure of vulnerable populations to mercury
		6.1.1.4 Facilitating ASGM local exchange visits in regard to knowledge transfer and practices related to mercury-free technology and safe practices	MLT	NEMA	DGSM, MoGLSD, Development Partners	78,960,000	21,056	GoU, Devt Partners					- Increased adoption of mercury-free technologies	Number of exchange visits conducted
					<b>Subtotal</b>	<b>974,260,000</b>	<b>259,802</b>							
<b>6.1.2 Introducing alternative income generating activities to vulnerable groups to reduce gold mining pressure where options to mercury may be difficult to adopt</b>														

		6.1.2.1 Training women, youth and elderly miners on alternative income generating activities, entrepreneurship, business, record keeping and financial management	MLT	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD (for programs such as Youth Livelihood Programme, Uganda Women Entrepreneurship Programme, Green Jobs and Policy guidance of the different demographics among others	355,620,000	94,832	GoU, Devt Partners						- Increase in the number of women, youth and elderly miners adopting alternative income generating activities - Improved women, youth and elderly miners' livelihoods due to enhanced income generation	Number of women, youth and elderly ASGMs trained in alternative income generating activities, entrepreneurship, business, record keeping and financial management
		6.1.2.2 Supporting vulnerable groups to access funds and other support from government and development partners to engage in alternative, healthier and economic livelihoods	MLT	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD	100,000,000	27,027	GoU, Devt Partners						- Increase in the number of women, youth and elderly miners adopting alternative income generating activities - Improved livelihoods of vulnerable populations - Reduced exposure of vulnerable populations to mercury emissions and releases	Number of vulnerable groups accessing funds to engage in alternative, healthier and economic livelihoods
		6.1.2.3 Facilitating vulnerable groups to form groups, associations or cooperatives and SACCOs	MLT	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD	130,000,000	35,135	GoU, Devt Partners						- Increased finances to acquire equipment and practice safer gold mining and processing methods - Increased access to financial mechanisms to enable adoption of best available practices and technologies - Improved livelihoods of vulnerable populations	Number of vulnerable persons groups, associations or cooperatives and SACCOs

		6.1.2.4 Engaging Private Sector Foundation and other business incubation initiatives to train the youth, elderly and women in alternative SMEs	MLT	NEMA	PSF, OWC, ADB, MSC, DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD	110,000,000	29,730	GoU, Devt Partners							- Increase in the number of women, youth and elderly miners adopting alternative income generating activities - Improved livelihoods of vulnerable populations - Reduced exposure of vulnerable populations to mercury emissions and releases	Number of youth, elderly and women trained in alternative SMEs
		6.1.2.5 Developing a curriculum at all levels of higher education including secondary, tertiary and vocational institutions to train learners, youth and elderly persons and certificate courses to equip learners with OSHE skills and safer mining practices, among others	MLT	MoES	NEMA, MGSLD, DGSM, MoLG, Development Partners, MGLS	21,000,000	5,600	GoU, Devt Partners							- Better skills being used in the ASGM sector - A sustainable ASGM sector	Number of secondary, tertiary and vocational institutions adopting the curriculum on OSHE skills and safer mining practices, among others
					<b>Subtotal</b>	<b>716,620,000</b>	<b>192,324</b>									
<b>6.1.3 Formulating policies protecting vulnerable populations including reducing foetal and infant exposure to mercury contamination, from mercury emissions and releases</b>																

		6.1.3.1 Developing bye-laws and ordinances prohibiting the following: -Children, expectant and nursing mothers from engaging in gold processing with mercury - Taking toddlers to mining sites where mercury is used without its containment areas; -Prohibiting mercury storage in homes -Prohibiting processing of gold in and around residential areas, mining camps and public places - Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained	MLT	MoLG	MoJCA,NEMA, MGSLD, DGSM, , Development Partners, MGLSD	88,400,000	23,573										- Reduced exposure of vulnerable populations to mercury emissions and releases - Confined gold processing with mercury - Reduced mercury use at ASGM sites - Increased adoption of alternative gold processing methods with mercury	Number of bye-laws and ordinances developed in the ASGM districts on: -Children, expectant and nursing mothers from engaging in gold processing with mercury -Taking toddlers to mining sites where mercury is used without its containment areas; -Prohibiting mercury storage in homes -Prohibiting processing of gold in and around residential areas, mining camps and public places - Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained
		6.1.3.2 Updating the National ASM Management Strategy to encompass strategies to reduce and where possible combat the exposure of vulnerable populations to mercury emissions and releases	MLT	DGSM	NEMA, MGSLD, DGSM, MoLG, Development Partners, MGLSD	120,000,000	32,432	GoU, Devt Partners									- Reduced exposure of vulnerable populations to mercury use	The addition of strategies to reduce and where possible combat the exposure of vulnerable populations to mercury emissions and releases to the National ASM Management Strategy
					<b>Subtotal</b>	<b>208,400,000</b>	<b>56,005</b>											
<b>6.1.4 Implementing labour and mining regulations prohibiting child labour in ASGM</b>																		

	6.1.4.1 Strengthening enforcement of existing child labour laws	MLT	MGLSD	LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development Partners	427,200,000	113,920	GoU, Devt Partners							- Reduced child labour in ASGM activities	Percentage reduction in child labour in ASGM
	6.1.4.2 Formulating bye-laws and ordinances against child labour at ASGM sites	MLT	LGs	MoJCA, MGLSD, MoLG, MoES, MoJCA, PMPU, MFA, Development Partners	–	–	–							- Reduction in the number of children participating in ASGM activities	Number of bye-laws and ordinances formulated against child labour in ASGM
	6.1.4.3 Enforcing the ICGLR standards that prohibit mine site owners and mineral exporters sourcing their gold from mine sites that employ children	MLT	DGSM	MGLSD, LGs MoLG, MoES, MoJCA, PMPU, MFA, Development Partners	834,000,000	222,400	GoU, Devt Partners							- Reduced number of children engaging in ASGM activities	Percentage reduction in child labour
	6.1.4.4 Carrying out regular monitoring to ensure that child labour laws are adhered to by ASGM	MLT	MGLSD	MIA, MFA, DGSM, Development Partners	–	–								- Reduction in the number of children engaging in ASGM	Percentage reduction in child labour
	6.1.4.5 Committing parents in mining camps to take their children to school, including taking advantage of UPE and USE programmes	MLT	MoES	NEMA, LGs, MoLG, MoJCA, PMPU, MFA, Development Partners	101,320,000	27,018.67	GoU, Devt Partners							- Reduced number of children participating in ASGM - Increase in the number of children going to school	Percentage reduction in child labour
	6.1.4.6 Supporting the construction of schools closer to designated mining camps and areas	MLT	MoES	NEMA, DGSM, MoLG, MoH, MoLG, Development Partners	250,000,000	66,666.67	GoU, Devt Partners							- Reduction in the number of children participating in ASGM - Increase in the number of children going to school	Number of schools constructed close to designated mining camps and areas
				<b>Subtotal</b>	<b>1,612,520,000</b>	<b>430,005</b>									
	<b>6.1.5 Developing accurate perceptions of miners and national stakeholders on the levels of mercury contamination in environmental samples</b>														

		6.1.5.1 Assessing levels of mercury contamination in soil, water, land, fish, breast milk for ASGM and infants whose mothers work in gold mines	MLT	NEMA	MWE, MoH, MGLSD, Development Partners	56,100,000	16,028.57	GoU, Devt Partners							- ASGMs, health workers, policy makers and government institutions aware of the gravity of mercury pollution in humans and environmental media - Increased behavioural change in miners with regard to mercury use	Number of reports disseminated on mercury pollution in humans and environmental media	
					<b>Subtotal</b>	<b>56,100,000</b>	<b>16,028.57</b>										
<b>7. To develop market based mechanisms for the promotion of reduced mercury use by 2024</b>	<b>7.1 Strategies for instituting market based mechanisms for promoting reduced mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>7.1.1 Establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations</b>															
		7.1.1.1 Committing financial institutions to extend credit facilities to ASG miners with evidence of zero mercury use in gold processing	ST	MoFPED	MoTIC, MoLG, UNBS, Customs, CSOs, LGs, DGSM, NEMA, Development Partners	61,950,000	16,520	GoU, Devt Partners								- Increased access of ASG miners to credit - Increased adoption of mercury-free technologies - Reduced mercury use, emissions and releases at ASGM sites	Number of ASGMs receiving credit from finance institutions
		7.1.1.2 Instituting disincentives on mercury importation and incentives on mercury-free technologies and products	ST	MFPEP	URA, MoTIC, NEMA, Development Partners, MoLG	8,150,000	2,173	GoU, Devt Partners								- Increased importation of mercury alternatives	Percentage reduction in mercury use in the ASGM sector
		7.1.1.3 Certifying gold mining and processing methods	ST	DGSM	NEMA, UNBS, Development Partners, MoTIC, Development Partners, MoLG	85,000,000	22,667	GoU, Devt Partners								- Reduction in mercury use in ASGM - Increased value for gold processed with mercury-free methods	Number of ASGM sites adhering to certification processes
					<b>Subtotal</b>	<b>155,100,000</b>	<b>41,360</b>										
		<b>7.1.2 Establishing market standards to determine mercury-free gold</b>															
7.1.2.1 Monitoring and inspecting ASG mine sites and border points for mercury use and trade	ST	URA	MoTIC, DGSM, UNBS, LGs, NEMA, Development Partners, MoLG	64,600,000	17,227	GoU, Devt Partners									- Reduction in mercury use and its illegal importation	Percentage reduction in mercury use	



		7.1.2.2 Enforcing OECD and ICGLR standards on gold mining and trade such as the implementation of the ICGLR ASM gold strategy and the Regional Certification Mechanism standards	ST	DGSM	MIA, MFA, MGLSD, NEMA, Development Partners, MoLG	256,000,000	68,267	GoU, Devt Partners							- Reduced mercury use in ASGM - Decreased child labour	Percentage reduction in mercury use
		7.1.2.3 Committing national refineries on incentivising mercury-free gold	ST	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG	5,350,000	1,427	GoU, Devt Partners							- Reduced mercury use in ASGM - Increased adoption of mercury-free technologies - Imposing high taxes on gold produced with mercury - Reduced sale of gold produced with mercury	Percentage increase in mercury-free gold produced by ASGMs
		7.1.2.4 Committing local gold buyers on buying gold produced with mercury-free methods	ST	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG	5,350,000	1,427	GoU, Devt Partners							- Reduced purchase price for gold produced without mercury - Reduced mercury use in ASGM - Increased adoption of mercury-free technologies	Percentage reduction in mercury use
		7.1.2.5 Committing ASG miners to disincentivise purchase of gold produced with mercury	ST	MoFPED	URA, NEMA, DGSM, Development partners, MoLG	–	–								- Increased sales price for gold produced without mercury and reduced sales price for gold produced with mercury - Reduced mercury use in ASGM - Increased adoption of mercury-free technologies	Percentage increase in mercury free gold produced by ASGMs
		7.1.2.6 Benchmarking international practices on market incentives and exploring possibilities to adapt them to Uganda's context	ST	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG	160,000,000	43,243	GoU, Devt Partners							- Instituted national policies enabling adoption on market incentives - Adopted international practices on market incentives	The benchmarking report developed and published

		7.1.2.7 Undertaking a pilot study on implementing lessons learnt from international practices on market incentives	ST	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG	250,000,000	67,568	GoU, Devt Partners						- Developed and customised models for best practices	Number of ASGMs involved in pilot study	
		7.1.2.8 Updating/ developing a legal framework to provide for legally registered ASGMs access to financial credits	ST	DGSM	MoFPED, NEMA, MoGLD, MoTIC, Development Partners, MoLG	8,350,000	2,227	GoU, Devt Partners						- Increased number of ASGMs accessing credit - A sustainable ASGM sector	Number of ASGMs accessing financial credit	
					<b>Subtotal</b>	<b>749,650,000</b>	<b>201,386</b>									
<b>8. To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030</b>	<b>8.1 Strategies to provide alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>8.1.1 Supporting the adoption of mercury-free gold mining practices and technologies</b>														
		8.1.1.1 Sensitising miners on mercury-free technologies, costs and benefits	ST	DGSM	NEMA, Development Partners, CSOs (ACEMP, UNACOH, AAU, ACCC) MoFPED, DGSM, MoGLD, MoTIC, MoLG	32,240,000	8,597.33	GoU, Devt Partners							- Increased adoption of international best practice and technologies	Number of demonstration sites constructed on alternative technologies and best practices in gold mining and processing
		8.1.1.2 Constructing demonstration and piloting sites do demonstrate alternative technologies and best practices in mining and processing in ASGM sector	ST	DGSM	Development Partners, CSOs (ACEMP, UNACOH, AAU, ACCC) MoFPED, NEMA, MoGLD, MoTIC, Development Partners, MoLG	70,400,000	18,773.33	GoU, Devt Partners							- Increased adoption of international best practice and mercury-free technologies across the country - Challenges with adoption of safer methods addressed	Number of demonstration sites constructed on alternative technologies and best practices in gold mining and processing
		8.1.1.3 Training the judicial officers and law enforcement agencies on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade	ST	NEMA	MoJCA, Development Partners, MoLG	10,850,000	2,893.33	GoU, Devt Partners							- Enhanced monitoring of ASGM sites - Increased adherence to OSHE laws, regulations, ordinances and bye-laws	Number of judicial and law enforcement officers trained on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade
						<b>Subtotal</b>	<b>113,490,000</b>	<b>30,263.99</b>								

9. To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030	9.1 To facilitate OSH observance at ASGM sites	<b>9.1.1 Enhancing the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector</b>												
		9.1.1.1 Equipping the Department of OSH, NEMA, DSGM, UNBS with the tools to carry out standard/comprehensive inspections	ST	MGLSD	NEMA, MoLG, MoH, Development Partners, LGs, MoLG	96,000,000	25,600.00	GoU, Devt Partners					- Increased effectiveness in monitoring ASGM sites for observance of OSH standards mercury	
		9.1.1.2 Training district labour officers and other inspectors to monitor ASGM activities in ASGM districts	ST	MGLSD	NEMA, MoLG, MoH, Development Partners, LGs, MoLG	91,500,000	24,400.00	GoU, Devt Partners					- Improved monitoring and reporting on ASGM activities - Enhanced capacity to carry out health surveillance in order to identify the early exposure of miners to Hg - Increased adherence to OSHE laws, regulations, ordinances and bye-laws	Number of district labour officers and inspectors trained to monitor ASGM activities
		<b>9.1.2 Establishing OSH standards and practices at ASGM mine sites</b>												
		9.1.2.1 Setting up regional demonstration sites for OSH best practices in ASGM	ST	MGLSD	NEMA, Development Partners, MoLG, MoH, LGs	70,400,000	18,773.33	GoU, Devt Partners					- Increased observance of OSH practices at ASGM sites - Improved health and environment standards at ASGM sites	Number of ASGM sites observing OSH best practices
		9.1.2.2 Updating/drafting guidelines for OSH implementation at ASM/ASGM sites and training mines inspectors on how to use the OSH Guidance tool kit	ST	MGLSD	NEMA, Development Partners, MoLG, MoH, LGs, MoLG	45,000,000	12,000.00	GoU, Devt Partners					- Improved monitoring, inspection and surveillance of ASGM sites by inspectors and health workers - Increased adherence to OSHE laws, regulations, ordinances and bye-laws	Number of mines inspectors trained on the OSH guidance toolkit
			<b>Subtotal</b>	<b>187,500,000</b>	<b>50,000.00</b>									
10. To develop and enforce an ASGM environment management strategy by 2030	10.1 An environment management strategy for ASGM related operations	<b>10.1.1 Facilitating ASGM's adherence to environmentally friendly mining practices, including restorative measures</b>												
		10.1.1.1 Developing environmental management guidelines for ASGM operations and activities	ST	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	45,000,000	12,000	GoU, Devt Partners					- Improved environmental standards in the ASGM sector - Targeted monitoring of ASGM sites by inspectors	Number of ASGM sites observing environmental standards

		10.1.1.2 Training ASGMs, LGs, health officers, among others on existing environmentally friendly methods and best practices	ST	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	411,600,000	109,760.00	GoU, Devt Partners							- Efficient monitoring of environmental standards in the ASGM sector - Improved observance of environmental standards in the ASGM sector	Number of ASGMs, LGs, health officer, among others trained on existing environmentally friendly methods and best practices
		10.1.1.3 Carrying out community awareness meetings on sustainable gold mining	ST	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	199,500,000	53,200	GoU, Devt Partners							- Increased knowledge on mercury and the dangers it poses to the environment - Increased adherence of miners to environmental standards - Reduced environmental hazards at ASGM sites	Number of community awareness meetings held
		10.1.1.4 Increasing monitoring frequency of ASGM operations	ST	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	438,000,000	116,800	GoU, Devt Partners							- Reduced environmental degradation	Number of monitoring visits conducted at ASGM sites
		10.1.1.5 Strengthening the capacity of key stakeholders including minerals police, environment police to monitor ASGM activities	ST	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	3,200,000	853.33	GoU, Devt Partners							- Reduced environmental degradation	Number of key stakeholders, minerals police and environment police trained to monitor ASGM activities
		10.1.1.6 Supporting ASG miners in restoring previously degraded abandoned sites	ST	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	1,000,000,000	266,667	GoU, Devt Partners							- Reduction in environmental degradation - Improved environmental rehabilitation and proper mine closure	Number of abandoned ASGM sites restored
		110.1.1.7 Committing miners to environmental restoration and proper waste including rock waste disposal as a prerequisite to approval of a license application	MLT	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	213,600,000	56,960	GoU, Devt Partners							- Reduced environmental degradation - Improved environmental rehabilitation - Improved waste disposal practices	Number of ASGM mine sites observing environmental restoration and proper waste disposal

		10.1.1.8 Establishing demonstration sites at mercury-free mine sites to demonstrate shafts and pits construction	MLT	DGSM	NEMA, MWE, DSGM, MoLG, LGs, Development partners	90,400,000	24,106.67	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Reduced mine collapse and loss of lives</li> <li>- Reduced vegetation loss</li> <li>- Reduced soil erosion</li> <li>- Reduction in environmental degradation</li> <li>- Improved environmental rehabilitation</li> </ul>	Number of demonstration sites set up to demonstrate shafts and pits construction
		10.1.1.9 Preparing, publishing and continuously updating geological maps to be used as reference by ASGMs	MLT	DGSM	NEMA, MWE, DSGM, MoLG, LGs, Development Partners	13,600,000	4,945.45	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Reduction in environmental degradation that is caused by ASGMs exploring different areas</li> <li>- Reduced vegetation loss</li> </ul>	Percentage reduction in migratory ASGMs
		10.1.1.10 Defining the level of ESIA to be undertaken by various ASGM categories/ structures	MLT	NEMA	DGSM, MWE, DSGM, MoLG, LGs, Development Partners	20,000,000	5405.4	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Improved environmental standards in the ASGM sector</li> </ul>	Number of ASGMs carrying out ESIA's
		110.1.1.11 Formulating/ reviewing policies to ensure that Location Licences are issued after environmental assessments have been undertaken; mining leases for vast pieces of land are issued after environment and social impact assessments subjected to public hearing	MLT	NEMA	DGSM, MWE, DSGM, MoLG, LGs, Development Partners, UWA, NFA	10,000,000	2702.7	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Improved environmental standards in the ASGM sector</li> <li>- Reduction in environmental degradation caused by ASGM</li> </ul>	Number of environmental assessments, ESIA's and public hearings conducted before awarding of ASGM rights

		10.1.1.12 Equipping MDAs, including NEMA, LGs, MGLSD with tools for early detection of mercury contamination in environmental samples including air, land and water	MLT	NEMA	Development Partners, UNBS, DGSM, MWE, DSGM, MoLG, LGs, UWA, NFA	128,000,000	34,133.33	GoU, Devt Partners							- Efficient and continuous monitoring of environmental standards in the ASGM sector - Improved environmental standards in the ASGM sector	Number of tools received by different MDAs to enable early detection of mercury contamination in environmental samples including air, land and water
		10.1.1.13 Formulating and instituting fines for non-compliance of ASMs/ASGMs to environmental standards	MLT	MoJCA	Development Partners, UNBS, DGSM, MWE, DSGM, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH	50,000,000	13513.5	GoU, Devt Partners							- Improved environmental standards in the ASGM sector	Number and amounts of fines
		10.1.1.14 Carrying out joint sectoral monitoring of ASGM sites	MLT	NEMA	Development Partners, UNBS, DGSM, MWE, DSGM, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development partners	210,600,000	56,160	GoU, Devt Partners							- Improved interagency coordination on monitoring of ASGM sites - Efficient and continuous monitoring of environmental standards in the ASGM sector	Number of joint sectoral monitoring visits conducted
		10.1.1.15 Extending public utilities including portable water and electricity to gazetted ASGM sites	MLT	MWE	MEMD, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	250,000,000	66,666.67	GoU, Devt Partners							- Improved labour standards at ASGM sites - Improved OSHE standards at ASGM sites - Reduced oil spillages at ASGM sites - Reduced waterborne diseases at ASGM sites - Reduced use of LPG gas - Reduced operational costs at ASGM sites	Number of ASGM sites equipped with public utilities
					<b>Subtotal</b>	<b>3,083,500,000</b>	<b>823,874</b>									
		<b>10.1.2 Strengthening the conservation of protected areas</b>														
		10.1.2.1 Strengthening the capacity of Environment Protection Police Force (EPPF) and Police Minerals Police Unit (PMPU) to carry out their mandate	MLT	NEMA	MFA, MEMD, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	612,000,000	163,200	GoU, Devt Partners							- Effective monitoring of environmental standards in the ASGM sector - Reduction in environmental degradation caused by ASGM - Victims prosecuted for noncompliance to OSHE laws and regulations	Number of EPPF and PMPU officials trained to carry out their mandate

		10.1.2.2 Holding public hearings before allocating mining leases on extensive pieces of land including protected areas	MLT	NEMA	MWE, DGSM, LGs, NEMA, UWA, NFA, Development Partners, MoLG	88,000,000	23,466.67	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Increased participation of community members in issuance of mineral licences</li> <li>- Reduced environmental degradation in protected areas</li> <li>- Sustainable biodiversity conservation</li> <li>- Reduced encroachment on protected areas</li> <li>- Reduced human wildlife conflicts</li> </ul>	Number of public hearings held before the allocation of mining leases on extensive pieces of land
		10.1.2.3 Holding stakeholder engagements to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas	MLT	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, UWA, NFA	80,000,000	21,333.33	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Increased participation of stakeholders in decisions made in the sector</li> <li>- Reduction of encroachment on protected areas</li> <li>- Reduction in environmental degradation in protected areas</li> <li>- Reduced human wildlife conflicts</li> </ul>	Number of stakeholder engagements held to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas
		10.1.2.4 Inspecting and monitoring ASGM activities in protected areas	MLT	NEMA	MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA	265,200,000	70,720	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Increased adherence to OSHE laws and regulations in protected areas</li> <li>- Reduced environmental degradation of protected areas</li> <li>- Reduced human wildlife conflicts</li> <li>- Compliance to conditions in ESIA's/Environment Certificate of Approval for all types of licences including small-scale mining licences and artisanal mining licences issued in and outside protected areas</li> </ul>	Number of ASGM sites observing environmental standards in protected areas

	10.1.2.5 Updating geological maps with protected areas' layers to indicate where the protected areas are situated so as to prevent licensing of these areas without prior stakeholder consultations	MLT	DGSM	NEMA, MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA	10,000,000	2,666.67	GoU, Devt Partners								- Reduced encroachment of protected areas - Reduced environmental degradation in protected area - Reduced human wildlife conflicts - Environmentally certified ASGM operations	Number of ESIA's and stakeholder consultations conducted prior to awarding licences in protected areas
	10.1.2.6 Assessing the impact of upstream and downstream ASGM activities (wetlands, water bodies)	MLT	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA, DWRM	140,000,000	37,333.33	GoU, Devt Partners								- Contamination of upstream and downstream media from ASGM activities mitigated/minimised - Developed monitoring indicators for upstream and downstream ASGM activities - Early detection of mercury contamination upstream and downstream - Effectively monitored environmental standards in and around water bodies - Reduced environmental degradation from ASGM operations	Percentage reduction in impact of upstream and downstream ASGM activities in wetlands and water bodies
				<b>Subtotal</b>	<b>1,195,200,000</b>	<b>318,720</b>										
	<b>10.1.3 Minimising Greenhouse Gas emissions from ASGM activities</b>															
	10.1.3.1. Committing ASGM site landlords to planting trees on site	MLT	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	213,600,000	56,960	GoU, Devt Partners								- Increased reforestation after mine closure - Increased carbon sinks enabling carbon dioxide sequestration	Number of ASGM landlords planting trees on ASGM sites



		10.1.3.2. Restricting tree cutting and open cast mining at ASGM sites	MLT	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	2,250,000	600	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Minimised deforestation at ASGM sites</li> <li>- Increased adoption of shaft mining where source of gold ore is hard rock</li> <li>- Sustained carbon sinks coverage enabling carbon dioxide sequestration</li> <li>- Reduced deforestation at ASGM sites</li> <li>- Reduced alteration of ecosystems (e.g. river morphology that could increase flood risks)</li> </ul>	Percentage reduction in open cast mining
		10.1.3.3. Training miners on construction of concrete shafts	MLT	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partner, NFA, DWRM	4,600,000	1,226.67	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Reduced use of timber for shaft construction</li> <li>- Reduced emissions of greenhouse gases from decomposing timber</li> </ul>	Number of miners trained on construction of concrete shafts
		10.1.3.4. Training ASGM site restaurant managers on existing alternatives to fuel wood and energy saving technologies	MLT	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	2,850,000	760.00	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Reduced use of fuelwood</li> <li>- Increased adoption of energy saving cook stoves</li> <li>- Reduced deforestation</li> <li>- Reduced emissions of greenhouse gases</li> </ul>	Number of ASGM site restaurant managers trained on existing alternatives to fuelwood and energy saving technologies
		10.1.3.5. Extending electricity to ASGM camps as well as host communities	MLT	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	250,000,000	66,666.67	GoU, Devt Partners							<ul style="list-style-type: none"> <li>- Reduced greenhouse gas emissions</li> <li>- Reduced fuelwood consumption</li> <li>- Reduced heavy carbon energy sources such as diesel commonly used at ASGM sites</li> </ul>	Percentage increase in electrification of ASGM areas and communities

		10.1.3.6. Training ASGMs and community members on climate change, impacts, and potential mitigation and adaptation actions they can take to reduce contributions to and impacts of climate change	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	43,300,000	11,546.67	GoU, Devt Partners							- Reduced greenhouse gas emissions - Reduced environmental degradation caused by ASGM	Number of ASGM and community members trained on climate change, impacts, and potential mitigation and adaptation actions
					<b>Subtotal</b>	<b>516,600,000</b>	<b>137,760</b>									
		<b>10.1.4 Improve institutional environmental planning</b>														
		10.1.4.1 Carrying out a Strategic Environment Assessment for the ASGM sector	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	17,000,000	4,533.33	GoU, Devt Partners							- Policies, plans or programmes having environment concerns in the ASGM sector integrated -Reduced cumulative effects of environment concerns in the ASGM sector - Sustainable decision making alongside economic and social considerations	A Strategic Environmental Assessment carried out and published
					<b>Subtotal</b>	<b>17,000,000</b>	<b>4,533.33</b>									
<b>11. To continuously raise awareness and sensitisation on mercury use in the ASGM sector and its dangers</b>	<b>11.1 Strategies for providing information to artisanal and small-scale miners and affected communities (As required by point 1(j) of the Annex C of the Minamata Convention)</b>	<b>11.1.1 Development of a Communication Strategy</b>														
		11.1.1.1. Developing a communication strategy	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	43,200,000	11,520	GoU, Devt Partners							- Targeted communication made to national stakeholders and ASG miners - Documented dissemination strategies ensuring a wider public reach - Increased public knowledge on mercury and its dangers	A communication strategy developed and published

	11.1.1.2 Developing targeted messages and holding targeted stakeholder meetings in regard to effects of mercury on human health and environment, existing alternatives and mitigation measures	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	26,000,000	6,933	GoU, Devt Partners								- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	Number of stakeholder meetings held on the effects of mercury on human health and environment, existing alternatives and mitigation measures
				<b>Subtotal</b>	<b>69,200,000</b>	<b>18,453</b>										
	<b>11.1.2 Documenting and dissemination of information on mercury use and its dangers</b>															
	11.1.2.1 Developing and translating (into local languages) IEC Materials on effects of mercury on human health and environment and BATs	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	433,500,000	115,600	GoU, Devt Partners								- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	Number of IEC materials developed and disseminated
				<b>Subtotal</b>	<b>433,500,000</b>	<b>115,600</b>										
	<b>11.1.3 Implementation and dissemination of information on mercury use and dangers</b>															
	11.1.3.1 Holding public meetings to disseminate information on effects of mercury on human health and environment and BATs in collaboration with ASGMs	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	250,000,000	66,667	GoU, Devt Partners								- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	Number of publicity meetings held on effects of mercury on human health and environment and BATs
	11.1.3.2 Disseminating information on the impacts of mercury on human health and environment and adoption of BATs through media	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	1,360,000,000	362,667	GoU, Devt Partners								- Increased public knowledge and wide dissemination of information on mercury and its dangers - Increased adoption of BATs	Number of media stations publishing information on effects of mercury on human health and environment and BATs

		11.1.3.3 Holding Training of Trainers on impacts of mercury on human health and environment and BATs	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	411,600,000	109,760.00	GoU, Devt Partners							- Continuous information sharing on the dangers of mercury on human health and environment - A sustainable ASGM sector with reduced and eventual elimination of mercury use - Sustainability of ASGM good practices ascertained	Number of trainings and workshops held with Change Agents on human health and environment and BATs
		11.1.3.4 Developing an ASGM platform for sharing information with national stakeholders and miners and also serving as a feedback loop	MLT	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners	6,500,000	1,733	GoU, Devt Partners							- Efficient information sharing, increased public knowledge and wide dissemination of information on mercury and its dangers enhanced	Number of ASGMs and different stakeholders subscribing to the ASGM platform
		11.1.3.5 Documenting, popularising and disseminating of good ASGM practices	MLT	NEMA	Development partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	2,021,200,000	538,986.67	GoU, Devt Partners							- Increased public knowledge and wide dissemination of information on mercury and its dangers - Adoption of good mining practices and standards	Number of reports and studies conducted and published on good ASGM practices
		11.1.3.6 Developing the capacity of media houses and other communication channels to monitor and relay information on ASGM operations and good practices	MLT	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	45,400,000	12,106.67	GoU, Devt Partners							- Efficient information sharing across the country - Increased public knowledge and wide dissemination of information on mercury and its dangers	Number of media reporters trained to monitor and relay information on ASGM operations and good practices
		11.1.3.7 Undertake ASGM technical officers exposure visits to countries with ASGM good practices	MLT	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	312,000,000	83,200	GoU, Devt Partners							-Increased public knowledge and wide dissemination of information on mercury and its dangers -Technical officers in the ASGM sector knowledgeable about safe practices of gold mining	Number of technical officers involved in exchange visits
					<b>Subtotal</b>	<b>4,406,700,000</b>	<b>1,175,120</b>									
		<b>11.1.4 Instituting an information sharing platform for disseminating mining information</b>														

		11.1.4.1 Setting up an information dissemination system including cadaster related information	MLT	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	8,000,000	2,133	GoU, Devt Partners							-Ease of access to information by ASGMs and feedback -Increased public knowledge and wide dissemination of information on mercury and its dangers -Improved collaborations between the ASG Miners and institutions in charge of the sector	Number of miners accessing information on the ASGM sector
		11.1.4.2 Develop a database for suppliers and local fabricators of ASGM/ASM mining equipment	MLT	NEMA	Private sector, Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT, UMA	7,250,000	1,933	GoU, Devt Partners							-A comprehensive database of suppliers and local fabricators of ASGM/ASM mining equipment -Adoption of mercury-free tools and technologies -A comprehensive data base of suppliers and local fabricators of mercury free mining equipment established	Number of suppliers and local fabricators of ASGM/ASM mining equipment registered on the database
					<b>Subtotal</b>	<b>15,250,000</b>	<b>4,066</b>									

*-Activities: 4.1.3.5 will be implemented under 4.1.3.4; 4.1.3.6 will be implemented under 4.1.3.4; 5.1.3.6 will be implemented under 5.1.5; 6.1.4.2 will be implemented under 6.1.3.1; 6.1.4.4 will be implemented under 6.1.4.3 and 7.1.2.5 will be implemented under 7.1.2.4*

## 12. Resource Mobilisation Strategy

This section looks at resource mobilisation and identification of resources that will aid the implementation of the NAP. It shows the resources the different MDAs are willing to contribute in kind i.e. human resource, field vehicles and equipment. As the NAP is rolled out, part of the mobilisation strategy is to target a budget line in each of MDAs specific votes to aid the implementation of the NAP. Resources will also be raised through the fines imposed on illegal activity in ASGM, auctions and corporate social responsibility.

In addition to the resource and potential resource partners mentioned in the table 29, the NAP National Coordination Mechanism will undertake a yearly exercise to fundraise from potential partners, who include but are not limited to: United Nations Children’s Fund (UNICEF), World Health Organisation (WHO), United Nations Industrial Development Organisation (UNIDO), United Nations Development Programme (UNDP), UN Environment, Common Market for Eastern and Southern Africa (COMESA), United States Agency for International Development (USAID), International Labour Organisation (ILO), and the Danish Government, Trademark East Africa (TMEA). Others are: Action Aid Uganda (AAU), Africa Centre for Energy and Mineral Policy (ACEMP), National Association of Professional Environmentalists (NAPE), Vocal Rights (Women in Mining) Innovation Fund, Uganda Investment Authority (UIA), Catholic Relief Services, Somero Uganda, Impact Facility, Uganda Cleaner Production Centre (UCPC), Private Sector Foundation (PSF) and the Academia. These institutions were identified as they have funded several activities that tie into the NAP goal, objectives and implementation.

The budget for each intervention activity has been incorporated to provide for further fundraising by the various activity leads for the achievement of the NAP objectives. The detailed budget is contained in Annex VI of this NAP.

Table 29: Resource Mobilisation Strategy

Objective	Strategy	Intervention Actions/ Activities	Implementation Level	Responsible Authority	Implementing Partner	Budget (USD)	Source of Funding		Name of Resource/ Potential Resource Partners	Funding Period	Description
							GoU/ MDAs	Dev partners			
<b>1. To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024</b>	<b>1.1 Actions to eliminate worst practices (As required by point 1(b) of the Annex C of the Minamata Convention)</b>	<b>1.1.1 Elimination of whole ore amalgamation</b>									
		1.1.1.1 Holding sensitisation campaigns on mercury use and its dangers	Local Government	NEMA	DGSM, MWE, LGs, MoLG, Development Partners, MGLSD, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)	159,200.00	9200	150,000.00	NEMA	2020 - 2024	—

		1.1.1.2 Developing and producing communication materials to illustrate the disadvantages of whole ore amalgamation and other worst practices and solutions	Local Government	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)	13,520.00	3,520	10,000.00	NEMA	2020 - 2021	-
		1.1.1.3. Conducting demonstrations on alternative methods to mercury use, for example, use of gravitational methods and cyanide technologies	Local Government	DGSM	NEMA, LGs, Development Partners, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE)	42,133.33	7466.67	34.666.66	NEMA	2020	To be incorporated into NEMA's programming
		1.1.1.4. Instituting a collaborative mechanism between ASG miners and suppliers including technicians of equipment that requires little to no mercury use in gold processing	National and Local Government	NEMA	Private sector, Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, EMLI, NAPE), UMA	2702.7	702.7	2000	—	2020 - 2021	—
		1.1.1.5. Developing Bye-laws and Ordinances against ASG miner engagement in worst practices	Local Government	MoLG	LGs, NEMA, MoJCA	10,000.00	10,000.00	—	MoJCA	2020 - 2021	To be incorporated into MoJCA's programming
		1.1.1.6. Developing ASGM popularised guidelines on sustainable gold mining and processing	National	DGSM	NEMA, LGs, MoLG	600.00	600.00	—	DGSM	2020	To be incorporated into the Directorate's programming
		<b>1.1.2 Elimination of open burning of amalgam or processed amalgam</b>									

		1.1.2.1 Demonstrating to miners existing mercury containment tools/technologies including retorts and fume hoods	Local Government	NEMA	Development Partners, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE)	21,066.67	1,066.67	20,000		2020	To be incorporated into NEMA's programming
		1.1.2.2 Incentivising the acquisition of alternative methods to gold processing with mercury	National	NEMA	DGSM, Development Partners, Private sector, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE)	1,066.67	—	1066.67		2020	—
		1.1.2.3. Distributing of mercury containment tools/ technologies including mercury-free processing technologies to ASGMs	National	NEMA	DGSM, Development Partners, the private sector, LGs, MoLG, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), UMA	50,666.67	666.67	50,000		2020	—
<b>1.1.3 Elimination of burning of amalgam in residential areas</b>											
		1.1.3.1 Facilitating the establishment of designated gold processing units at each ASGM mine site	National, Local Government	NEMA	DGSM, MGLSD, Development Partners, LGs, MoLG	40,000.00	5,000.00	35,000.00		2020 – 2021	—
		1.1.3.2 Updating environmental regulations to incorporate restrictions on open burning of amalgam in residential areas and mining camp sites	National	MoJCA	MWE, NEMA, LGs, MoLG	2702.7	702.7	2000		2020	—
<b>1.1.4 Elimination of cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury</b>											



		1.1.4.1 Training small to medium scale gold miners on handling, storage and decontaminating mercury containing tailings	Local Government	NEMA	Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), the private sector, LGs, MoLG	8,426.67	1493.33	6930.34	NEMA	2020	To be incorporated into NEMA's programming
		1.1.4.2 Developing a collaborative mechanism between medium to large scale mining companies and ASGMs as part of CSR to develop ASGM technical capacities	National	DGSM	NEMA, Development Partners, CSOs (ACEMP, AAU, UNACOH, ACCC, NAPE), the private sector, MoLG	1,173.33	173.33	1,000		2020	—
		1.1.4.3 Committing medium to large scale gold processors to adequately transport, handle, store mercury containing tailings and dispose of mercury containing waste after cyanidation processing with mercury containing tailings	Local government	NEMA	MWE, DGSM, LGs, ACEMP, AAU, UNACOH, ACCC	2,133.33	—	2,133.33		2020	—
	<b>1.2 Strategies for promoting the reduction of emissions, releases, and risks of exposure to mercury (As required by point 1(e) of the Annex C of the Minamata Convention)</b>	<b>1.2.1 Assessing existing minimal mercury use to mercury-free technologies for gold processing by ASGMs</b>									
		1.2.1.1 Benchmarking mercury-free technologies including associated costs and benefits of these technologies	National, Local Government	NEMA	DGSM, CSOs (ACEMP, UNACOH, NAPE), MoLG, LG, UNCST, UMA	12,400.00	400	12,000.00			2020

		1.2.1.2 Training of local masons and fabricators in producing retorts, mercury capture hoods, construction of mercury effluent containment structures, among others	Local government	NEMA	Development Partners, LGs, the private sector, ACEMP, AAU, UNACOH, ACCC, UMA, MoLG	13,013.33	746.67	12,266.67	NEMA	2020 - 2021	To be incorporated into NEMA's programming
<b>1.2.2 Supporting the use of mercury-free and mercury-capture technologies</b>											
		1.2.2.1 Training ASG Miners on mercury effluent and emissions containment tools and technologies	Local government	NEMA	MoLG, Development Partners, LGs, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), UNCST, UMA	13,013.33	746.67	12,266.67	NEMA	2020 – 2021	To be incorporated into NEMA's programming
		1.2.2.2 Integrating miner needs into Local and national government planning and budgeting programmes and projects	National, local government	NEMA	OWC, ADB, MSC, LGs, ACEMP, UNACOH, ACCC, the private sector, MoLG, DLGs	34,666.67	–	34,666.67		2020 – 2030	–
		1.2.2.3 Carrying out formal and informal education in institutions and mining communities in regard to mercury effects on human health and environment and mitigating such effects	National	MoH	MoES, NEMA, schools, universities vocational institutions, DGSM	21,333.33	–	21,333.33		2020	–
		1.2.2.4 Updating the curriculum of public vocational institutions to cover ASM/ASGM trainings on sustainable gold extraction, processing and fabrication of tools/equipment	National	DGSM	MoES, NEMA, universities, vocational institutions	27027.01	2027.01	25000		2020	–

		<b>1.2.3 Establishing a safe waste disposal programme in the ASGM sector</b>									
		1.2.3.1 Training ASGMs in safe waste disposal methods, waste/effluent treatment and recycling and mercury containing tailings containment	National, Local government	NEMA	DGSM, MoLG, MWE, LGs, UNACOH, CSOs (ACEMP)	20,373.33	1493.33	18,880	DGSM, MWE	2020 - 2021	To be incorporated into DGSM and MWE programming, who will provide facilitators
<b>2. To facilitate the formalisation of the ASGM sector by 2024</b>	<b>2.1 Steps to facilitate formalisation or regulation of the ASGM sector (As required by point 1(c) of the Annex C of the Minamata Convention)</b>	<b>2.1.1 Developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities</b>									
		2.1.1.1 Reviewing relevant laws/regulations to incorporate provisions of ASGM/ASM formalisation strategies	National level	NEMA, DGSM	MoLG, Development Partners, LGs, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), MoTC, MGLSD	453	4,000	—	DGSM	2020	Currently being undertaken by DGSM
		2.1.1.2 Formulating ordinances and by-laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations	Local government	MoJCA	DGSM, NEMA, LGs, DGSM, MoLG, Development Partners, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE), MoTC, MGLSD	10,000	1000	9000	MoJCA	2020	To be incorporated into the Ministry's programming
		2.1.1.3 Developing monitoring guidelines for ASM/ASGM activities	National	NEMA	LGs, MoLG, MGLSD, DGSM	600	100	500	NEMA	2020	To be incorporated into NEMA's programming
		2.1.1.4 Reviewing and improving the efficiency of the licensing system to provide for categories of ASGM operations and ascertaining viability of dormant mineral licenses	National	DGSM	NEMA, LGs, DGSM, MoLG, Development Partners, the private sector, UIA	7,120	2120	5000	DGSM	2020	To be incorporated into DGSM's programming
		<b>2.1.2 Building the capacity of ASGMs and extension staff to manage the ASGM sector</b>									

		2.1.2.1 Carrying out research on best ASGM practices and technologies in ASGM sector	National	Academia	DGSM, Development Partners, Academia, UNCST, UMA	15,200.00	–	15,200.00		2020	–
		2.1.2.2 Carrying out inspectors and ASGM miners' capacity needs assessment in regard to managing the ASGM sector	National, Local Government	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD	15,200.00	–	15,200.00		2020	–
		2.1.2.3 Training of ASGM Trainers and youth miners on best ASGM practices and technologies	National, Local Government	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE)	41,600.00	1493.33	40,106.67	NEMA, DGSM	2020	To be incorporated into DGSM or NEMA's programming
		2.1.2.4 Training of inspectors on ASGM activity monitoring, ASGM protocols, standards and regulations	National, Local Government	NEMA	DGSM, Development Partners, LGs, MoLG, MGLSD, CSOs (ACEMP, ACEMP, AAU, UNACOH, NAPE)	87,680	2,240	85,440	DGSM, NEMA	2020, 2025	To be incorporated into DGSM or NEMA's programming
		2.1.2.5	Developing mobile applications for cell phones to enhance information sharing among miners and between miners and inspectors/MDAs and private sector	National	MICT	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD	19,600	1,600	18,000	2020	–
		2.1.2.6	Train responsible officers in management of mercury	National	NEMA	URA, MoTIC, MWE, MGLSD, MoH, UNBS, UBOS		17,280	373	16,907	NEMA, URA
		<b>2.1.3 Forming, defining and strengthening ASGM associations, companies and cooperatives</b>									
		2.1.3.1 Training ASGMs on rules and procedures for forming associations, cooperatives and companies	National, local government	MoTiC	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD	13,973	467	13,506	MoTIC	2020	To be incorporated into MoTIC's programming

		2.1.3.2 Registering of ASGM associations, cooperatives, companies	National, local government	DGSM	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC	2,000	500	1,500		2020	–
		2.1.3.3 Establishing a national ASGM umbrella association or network	National	DGSM	LGs	4,347	347	347		2020	
<b>2.1.4 Facilitating miners to access financial credit</b>											
		2.1.4.1 Reviewing financial regulations to provide for ASGM associations, cooperatives and companies access to credit schemes	National	MFPED	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC	5,867	867	5,000		2020	–
		2.1.4.2 Holding engagements between ASGMs and financial institutions	National	MFPED	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC	21,200	21,200	-		2020	–
<b>2.1.5 Geo-prospecting and zoning of ASGM mining areas</b>											
		2.1.5.1 Collecting geological data and gazettement areas for ASGM operations	National, local government	DGSM	NEMA, UWA, NFA, MoLHUD, MoLG	1,867	1,867	–	DGSM	2020 – 2021	Currently ongoing and being undertaken by DGSM
		2.1.5.2 Cancellation of dormant licences	National, local government	DGSM	NEMA, UWA, NFA, MoLHUD, MoLG	1351.3	1351.3	–	DGSM	2020 – 2030	This is part of DGSM's mandate
<b>2.1.6 Undertake a national biometric registration and mapping of all ASGM value chain key players</b>											
		2.1.6.1 Carrying out a baseline survey of ASG households, actors along the ASGM value chain and location of ASGM operations	National, local government	DGSM	LGs, MoLG	15,200.00	1200	14,000.00		2020	

		2.1.6.2 Undertaking the biometric registration of ASGMs	National	DGSM	LGs, MoLG	10,667	10,667	–	DGSM	2020 - 2021	This is ongoing and was launched in March, 2019 with initial registration to commence in November 2019 and end by June 2020
		2.1.6.3 Benchmarking of best practice in the formation of ASGM associations, companies and cooperatives	National	DGSM	NEMA, DGSM, Development Partners, LGs, MoLG, MGLSD, MoTC, MFPED	7,733.33	–	7,733.33		2020	–
		2.1.6.4 Establishing gazetted buying centres for gold	Regional	DGSM	NEMA, Development Partners, the private sector, MoLG	4,000,000.00	–	4,000,000		2021	–
<b>3. To strengthen stakeholder engagement in the implementation of the NAP</b>	<b>3.1 Strategies for involving stakeholders in the implementation and continuing development of the plan (As required by point 1(g) of the Annex C of the Minamata Convention)</b>	<b>3.1.1 Establishing a Multi-stakeholders' Working Group responsible for the implementation of the NAP</b>									
		–									
		3.1.1.1 Undertaking the mapping of national stakeholders to form a post National Action Plan implementation working group	National, regional, local government	NEMA	–Development Partners, the private sector, MDAs, CSOs, Academia	10,186.67	1,186.67	9,000		2020	–
		3.1.1.2 Defining the post National Action Plan implementation working group terms of reference, their interest and potential contributions in reviewing and implementing the NAP	National, regional, local government	NEMA	DGSM, MoLG	1351.4	1351.4	–	NEMA	2020	The ToRs will be developed by NEMA
		3.1.1.3 Establishing and updating of a national database of ASGM stakeholders (inclusive of regional stakeholders)	National, Regional, Local government	NEMA	–Development Partners, MDAs, NGO board, CBOs, LGs, MoLG	3,200	1200	2000		2020 - 2030	

		3.1.1.4 Creating synergies with other projects being implemented by sectors, CSOs, private sector and other stakeholders in line with the NAP	National, Regional, Local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	72,000	12,000	60,000		2020 - 2030	
		3.1.1.5 Tracking, monitoring and evaluating implementation of NAP interventions/ activities	National, Regional, Local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	402,880	12,880	30,000		2020 - 2030	
		3.1.2 Enhancing information sharing among key stakeholders									
		3.1.2.1 Holding periodic stakeholder review meetings to review the NAP	National, Regional, Local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	165,333	5,333	160,000		2020 - 2030	
		3.1.2.2 Holding community barazas to share information on strategies to reduce mercury emissions and releases and obtain feedback	Local government	NEMA	Multi-stakeholders' Working Group, MDAs, NGO board, CBOs, LGs, Development Partners, MoLG	72,000	12,000	60,000	72,000		2020 - 2030
<b>4. To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024</b>	<b>4.1 Strategies for managing trade and preventing diversion of mercury and mercury compounds (As required by point 1(f) of the Annex C of the Minamata Convention)</b>	<b>4.1.1 Development of a mercury trade tracking system</b>									
		4.1.1.1 Developing and updating of a data base of key players in mercury trade and authorised traders in unlisted MAPs	National, Local government levels	MoTIC	URA, NEMA, UNBS, MoLG	2,453	453	2,000		2020	

		4.1.1.2 Documenting imported un listed and listed MAPs and restricting (introducing penalties against them) importation of all listed MAPs	National	URA	MoTIC, NEMA, MoLG	540.54	540.54	—	MoTIC	2020 – 2030	This will be incorporated in the programming of MoTIC
		4.1.1.3 Undertaking surveillance of porous borders and ASGM sites to track illegal mercury trade	National, local government	URA	LGs, NEMA, MoTIC, MoLG	320,000	20,000	300,000		2020 - 2030	
		4.1.1.4 Training of communities and ASG miners to serve as whistle blowers for smuggled mercury	Local government	NEMA	LGs, DGSM, MGLSD, MoLG	5,933	467	5,466	NEMA	2020	
		4.1.1.5 Undertaking studies to assess mercury pathways/ trade routes to effectively roll out strategies that manage mercury trade	National	URA	LGs, NEMA, MGLSD, MoLG	12,000	1000	11,000		2020	
		4.1.1.6 Training police and judiciary on prosecution of victims engaging in illegal mercury trade	National	MoJCA	NEMA, LGs, DGSM, MoLG	6,320	187	6,133	MoJCA	2020	Contribution will be made by MoJCA through conducting the training
<b>4.1.2 Strengthening institutional capacity in detecting and analysing samples for mercury</b>											
		4.1.2.1 Procuring and equipping inspectors with tools for detecting mercury on site	National, local government level	NEMA	Development partners, Private sector, URA, MoTIC, MWE, MGLSD, MoH, UNBS, UBOS, MoLG	27,920	—	27,920		2020, 2023	
		4.1.2.2 Equipping laboratories with tools for testing mercury in samples	National	NEMA	Academia, DGAL, Development partners, the private sector, URA, UNBS, MoES, MoLG	1,333,333	—	1,333,333		2020	



		4.1.2.3 Accrediting government laboratories to analyse mercury	National	NEMA	Academia, DGAL, Development partners, the private sector, URA, UNBS, MoES, MoLG	27,027	–	27,027		2020	
		4.1.2.4 Developing institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste	National	NEMA	MWE, MGLSD, MoH, Development Partners, MoLG	600	100	500	NEMA	2020	The guidelines will be developed by NEMA
		4.1.2.5 Developing a mercury spill contingency plan for use by mercury traders, institutions and ASGMs	National	NEMA	MWE, MGLSD, MoH, Development partners, MoLG	18,133	–	18,133		2020	
<b>4.1.3 Strengthen regional cooperation and cross-border inter-agency collaboration on the tracking of mercury</b>											
		4.1.3.1 Developing a single window importation platform to track mercury trade over the entire value chain	National	MoTIC	URA, NEMA, MoTIC, Development partners, MoLG	16,533	3,733	12,800	URA	2020 – 2030	The single window platform has already been developed and will be maintained by URA
		4.1.3.2 Training customs officers at border points to be able to identify mercury, register mercury and MAPs traders	National, Local government	NEMA	URA, MoTIC, Development partners, MoLG	9,440	5,600	3,840	URA	2020, 2022, 2024, 2026, 2028	To be incorporated into URA's programming
		4.1.3.3 Benchmarking best practices, standards and case studies from other countries	National	NEMA	URA, MoTIC, Development partners, MoLG	4,533	–	4,533			
		4.1.3.4 Developing a regional collaborative mechanism in tracking and managing smuggled mercury and MAPs	National	URA	MoTIC, NEMA Development partners, MoLG	5,600	600	5,000		2020	

		4.1.3.5 Establishing regional disincentives in mercury trade in mercury trade	National	URA	MoTIC, NEMA, Development partners, MoLG	–	–			2020	This will be undertaken under activity 4.1.3.4	
		4.1.3.6 Developing a collaborative mechanism among regional and national mercury traders to consider trade in alternatives to mercury for gold processing	National, Local government	NEMA	MoTIC, URA, Development Partners, LGs, MoLG, DGSM, URA, UIA, Eastern and Southern African Countries	–	–			2020	This will be undertaken under activity 4.1.3.4	
<b>5. To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024</b>	<b>5.1 Implementation of a Public Health Strategy on the exposure of artisanal and small-scale gold miners and their communities to mercury (As required by point 1(h) of the Annex C of the Minamata Convention)</b>	<b>5.1.1 Carrying out the situational analysis of public health concerns in the ASGM sector</b>										
		5.1.1.1 Reviewing the Public Health Strategy to ensure that all ASGM health related concerns have been incorporated	National	MoH	NEMA, MGLSD, MEMD, MUSPH, CSOs (ACEMP, UNACOH), LGs, MoLG	3,973	–	3,973			2020	
		5.1.1.2 Carrying out a baseline survey of the extent of public health concerns in the ASGM sector	National	MoH	NEMA, MUSPH, MGLSD, MoLG	84,213	4,213	80,000			2020	
		5.1.1.3 Disseminating survey results to national and local stakeholders	National	NEMA	MoH, MGLSD, MUSPH, ACEMP, UNACOH, ACCC, AAU, LGs, MoLG	267	–	267			2020 – 2021	
		5.1.1.4 Sharing of information at regional and international platforms or forums	National	NEMA	MoH, LGs, Development Patners, MGLSD, DGSM, MoLG	41,666.67	11,666.67	30,000			2020, 2021, 2026	
		<b>5.1.2 Building the capacity of health care workers, VHTs on the health effects of mercury, diagnosis and treatment of the same and equipping health facilities including health centre IIs &amp; IIIs with diagnostic tools</b>										

		5.1.2.1. Training health care workers and Village Health Teams on the effects of mercury and how to diagnose and treat mercury related complications at the earliest time possible	National	MoH	NEMA, MGLSD, LGs, Development partners, MoLG	160,760	1,400	159,360	MoH	2020, 2023, 2026	The trainings will be conducted by MoH officers
		5.1.2.2. Drafting Standard Operating Procedures and guidelines	National	MoH	NEMA, MGLSD, LGs, Development partners, MoLG	600	600	–	MoH	2020	
		5.1.2.3 Equipping health workers / health centres with diagnostic tools and equipment as well as medicine (chelators )	National, Local Government	NEMA	MoH, Development partners, MGLSD, LGs , MoLG	85,000	–	85,000		2020	
<b>5.1.3 Raising awareness of ASGMs and surrounding communities on the dangers of mercury in gold extraction and alternatives including pollution mitigation measures</b>											
		5.1.3.1 Developing and disseminating customised/ popular versions of IEC materials	National, Regional, Local government	NEMA	MoH, Development partners, MGLSD, LGs, MoLG	98,800	8,800	90,000		2020, 2023, 2026	
		5.1.3.2 Disseminating of information through use of community Change Agents	Local government	NEMA	MoH, Development partners, MGLSD, LGs, MoLG	86,400	6,400	80,000		2020 - 2022	
		5.1.3.3 Holding community meetings/barazas, dialogues and outreach	Local government	NEMA	MoH, Development partners, MGLSD, LGs, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU) , MoLG	19,584	6,720	12,864	NEMA, LGs, CSOs (ACEMP, UNACOH, ACCC, AAU)	2020 - 2021, 2024	CSOs have been key in undertaking community outreach on mercury use and its dangers
		5.1.3.4 Developing and producing spot messages and jingles	National, Local government	NEMA	MoICT, MoH, Development partners, MGLSD, LGs, Development Partners, MoLG	60,267	10,267	50,000		2020 – 2021	

		5.1.3.5 Training of ASGMs on early detection of mercury poisoning/pollution/contamination and response mechanism	Local government	NEMA	MoH, Development Partners, MGLSD, LGs, Development Partners, , MoLG	52,960	1,120	51,840	NEMA	2020, 2023, 2026	To be incorporated into NEMA's programming
		5.1.3.6 Popularising existing chemicals regulations, OSHE regulations, formulating bye-laws and ordinances against poor OSHE practices at ASGM sites	National, Local government	NEMA	MWE, MGLSD, MoLG, LGs	–	–		NEMA	2020, 2023, 2026	The chemical and OSHE regulations will be popularised during the activities under 5.1.5
<b>5.1.4 Enhancing inter-sectoral coordination in the management of mercury use in ASGM</b>											
		5.1.4.1 Undertaking MDAs joint inspections and monitoring/ surveillance of health/ public health related aspects of the ASGM sites	National, Local government	NEMA	DGSM, MWE, MGLSD, MoH, LGs, MoLG	178,560	8,560	170,000		2020 - 2030	
<b>5.1.5 Supporting ASGM communities to observe OSHE practices</b>											
		5.1.5.1 Training ASGMs on use of mercury vapour capture tools including retorts	Local government	NEMA	MGLSD, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	49,760	1,120	48,640	NEMA	2020, 2023, 2026	To be incorporated into NEMA's programming
		5.1.5.2 Training ASGMs on use of PPEs during gold extraction and processing	Local government	MGLSD	NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	49,760	1,400	48,360	NEMA	2020, 2023, 2026	To be incorporated into NEMA's programming
		5.1.5.3 Demonstrating to ASGM mitigation measures for dust pollution	Local government	NEMA	MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	49,760	1,400	48,360	NEMA	2020, 2023, 2026	To be incorporated into NEMA's programming

		5.1.5.4 Training miners on containment of mercury effluent	Local government	NEMA	MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	49,760	1,120	48,640	NEMA	2020, 2023, 2026	To be incorporated into NEMA's programming
		5.1.5.5 Demonstrating to ASGMs mercury-free processing methods including minimal mercury use technologies for gold processing	Local government	NEMA	DGSM, Development Partners, MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	49,760	1,120	48,640	NEMA	2020, 2023, 2026	To be incorporated into NEMA's programming
		5.1.5.6 Engaging mine landlords on sustainable mine operations	National, Local government	NEMA	DGSM, Development Partners, MWE, NEMA, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU)	10,733	733	10,000		2020	
		5.1.5.7 Developing a reporting/ feedback mechanism from sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries on inspected/monitored indicators related to water catchments, water bodies, flora and fauna for pollution risks at ASGM sites	National, local government	NEMA	MWE, MAAIF, DGSM, MGLSD, MoLG, MDAs	2,133	133	2,000		2020	
		5.1.5.8 Enforcing public health, OSHE laws and regulations at ASGM sites	Local government	MGLSD, NEMA, MoH, LGs, MoLG	NEMA, MoH	113,920	13,920	100,000		2020 - 2030	

6. To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024	6.1 Strategies to prevent the exposure of vulnerable populations, particularly children, women of child-bearing age, pregnant mothers and nursing mothers to mercury used in ASGM (As required by point 1(i) of the Annex C of the Minamata Convention)	<b>6.1.1 Undertaking community outreach programmes to emphasise the risks vulnerable populations face in and around mine sites</b>									
		6.1.1.1 Carrying out sensitisation campaigns, dialogues and meetings with vulnerable populations	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD	197,573	7,573	190,000		2020 – 2022	
		6.1.1.2 Developing an informative documentary on the dangers of mercury to human health and environment and screening the documentary in ASGM camps, communities and national televisions	National and Local Government level	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD	8,000	1,000	7,000		2020	
		6.1.1.3 Developing the capacities of ASGMs on mining practices that will prevent exposure of vulnerable populations to mercury	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MoH, MGLSD	33,173	747	32,426	NEMA, CSOs (ACEMP, UNACOH, ACCC, AAU)	2020, 2023	To be incorporated into NEMA and different CSO's programming
		6.1.1.4 Facilitating ASGM local exchange visits in regard to knowledge transfer and practices related to mercury-free technology and safe practices	Local government	NEMA	DGSM, MoGLSD, Development Partners	21,056	–	21,056		2021	
		<b>6.1.2 Introducing alternative income generating activities to vulnerable groups to reduce gold mining pressure where mercury free gold processing methods may be costly to adopt</b>									

		6.1.2.1 Training women, youth and elderly miners on alternative income generating activities, entrepreneurship, business, record keeping and financial management	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD (for programmes such as Youth Livelihood Programme, Uganda Women Entrepreneurship programme, Green Jobs and Policy guidance of the different demographics among others)	94,832	1,120	93,712	NEMA	2020 – 2021, 2023	To be incorporated into NEMA's programming
		6.1.2.2 Supporting vulnerable groups to access funds and other support from government and development partners to engage in alternative, healthier and economic livelihoods	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD	27,027	2,027	25,000	NEMA	2020	To be incorporated into NEMA's programming
		6.1.2.3 Facilitating vulnerable groups to form groups, associations or cooperatives and SACCOs	Local government	NEMA	DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD	35,135	5,135	30,000		2020	
		6.1.2.4 Engaging Private Sector Foundation (PSF) and other business incubation initiatives to train the youth, elderly and women in alternative SMEs	National, Local government	NEMA	PSF, OWC, ADB, MSC, DGSM, MoLG, Development Partners, CSOs (ACEMP, UNACOH, ACCC, AAU), MGLSD	29,730	730	29,000		2020	—

		6.1.2.5 Developing a curriculum at all levels of higher education including secondary, tertiary and vocational institutions to train learners, youth and elderly persons and certificate courses to equip learners with OSHE skills and safer mining practices, among others	National	MoES	NEMA, MGSLD, DGSM, MoLG, Development Partners, MGLS	5,600	600	5,000		2020	—
<b>6.1.3 Formulating policies protecting vulnerable populations including reducing foetal and infant exposure to mercury contamination, from mercury emissions and releases</b>											
		6.1.3.1 Developing bye-law and ordinances prohibiting the following: - Taking toddlers to mining sites where mercury is used without its containment areas; - Prohibiting mercury storage in homes - Prohibiting processing of gold in and around residential areas and mining camps and public places - Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained	National, Local government	MoLG,	NEMA, MGSLD, MoJCA, DGSM, Development Partners, MGLSD	23,573	10,000	13,573		2020	To be incorporated into MoJCA's programming



		6.1.3.2 Updating the National ASM Management Strategy to encompass strategies to reduce and where possible combat the exposure of vulnerable populations to mercury emissions and releases	National	DGSM	NEMA, MGSLD, DGSM, MoLG, Development Partners, MGLSD	32,432	2,432	30,000		2020	–
<b>6.1.4 Implementing labour and mining regulations prohibiting child labour in ASGM</b>											
		6.1.4.1 Strengthening enforcement of existing child labour laws	National, Local government	MGLSD	LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development partners	113,920	13,920	100,000		2020 – 2030	
		6.1.4.2 Formulating bye-laws and ordinances against child labour at ASGM sites	National, Local government	MoJCA	MGLSD, LGs, MoLG, MoES, MoJCA, PMPU, MFA, Development Partners	–	–	–		2020	To be undertaken together with activity 6.1.3.1
		6.1.4.3 Enforcing the ICGLR standards that prohibit mine site owners and mineral exporters sourcing their gold from mine sites that employ children	National	DGSM	MGLSD, LGs MoLG, MoES, MoJCA, PMPU, MFA, Development Partners	222,400	22,400	200,000		2020 – 2030	–
		6.1.4.4 Carrying out regular monitoring to ensure that child labour laws are adhered to by ASGM	Local government	MGLSD	MIA, MFA, DGSM, Development Partners	–	–	–		2020 – 2030	To be undertaken together with activity 6.1.4.3
		6.1.4.5 Committing parents in mining camps to take their children to school including taking advantage of UPE and USE programmes	Local government	MoES	NEMA, LGs, MoLG, MoJCA, PMPU, MFA, Development Partners	27,018.67	7,018.67	27,000		2020 – 2021	–

		6.1.4.6 Supporting the construction of schools closer to designated mining camps and areas	National level	MoES	NEMA, DGSM, MoLG, MoH, MoLG, Development Partners	66,666.67	–	66,666.67		2021	–
		<b>6.1.5 Developing accurate perceptions of miners and national stakeholders on the levels of mercury contamination in environmental samples</b>									
		6.1.5.1 Assessing levels of mercury contamination in soil, water, land, fish, breast milk for ASGM and infants whose mothers work in gold mines	National, Local government	NEMA	MWE, MoH, MGLSD, Development Partners	16,028.57	2000	14,028.57		2020	–
<b>7. To develop market based mechanisms for the promotion of reduced mercury use by 2024</b>	<b>7.1 Strategies for instituting market-based mechanisms for promoting reduced mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>7.1.1 Establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations</b>									
		7.1.1.1 Committing financial institutions to extend credit facilities to ASGM miners with evidence of zero mercury use in gold processing	National	MoFPED	MoTIC, MoLG, UNBS, Customs, CSOs, LGs, DGSM, NEMA, Development partners	16,520	6,520	10,000		2020	–
		7.1.1.2 Instituting disincentives on mercury importation and incentives on mercury-free technologies and products	National	URA	MoTIC, NEMA, Development Partners, MoLG	2,173	173	2,000		2020	–
		7.1.1.3 Certifying gold mining and processing methods	National	DGSM	NEMA, UNBS, Development partners, MoTIC, Development Partners, MoLG	22,667	20,000	22,667		2020, 2022, 2024, 2026, 2028	–
		<b>7.1.2 Establishing market standards to determine mercury-free gold</b>									
		7.1.2.1 Monitoring and inspecting ASGM mine sites and border points for mercury use and trade	Local government	URA	MoTIC, DGSM, UNBS, LGs, NEMA, Development Partners, MoLG	17,227	17,227	–		2020 – 2030	–

		7.1.2.2 Enforcing OECD and ICGLR standards on gold mining and trade such as the implementation of the ICGLR ASM gold strategy and the Regional Certification Mechanism standards.	National, Local government	DGSM	MIA, MFA, MGLSD, NEMA, Development Partners, MoLG	68,267	8,267	60,000		2020 - 2030	–
		7.1.2.3 Committing national refineries on incentivising mercury-free gold	National	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG	1,427	1,427	–		2020	–
		7.1.2.4 Committing local gold buyers on buying gold produced with mercury-free methods	Local government	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG	1,427	1,427	–		2020	–
		7.1.2.5 Committing local gold buyers to dis-incentivise purchase of gold produced with mercury	Local government	MoFPED	URA, NEMA, DGSM, Development Partners, MoLG	–	–	–		2020	To be undertaken together with 7.1.2.4
		7.1.2.6 Benchmarking international practices on market incentives and exploring possibilities to adapt them to Uganda's context	National	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG	43,243	–	43,243		2020	–
		7.1.2.7 Undertaking a pilot study on implementing lessons learnt from international practices on market incentives	National	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG	67,568	–	67,568		2021	–
		7.1.2.8 Updating/developing a legal framework to provide for legally registered ASGMs access to financial credits	National	NEMA	MoFPED, DGSM, MoGLD, MoTIC, Development Partners, MoLG	2,227	227	2,000		2020	–

<b>8. To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030</b>	<b>8.1 Strategies to provide alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>8.1.1 Supporting the adoption of mercury-free gold mining practices and technologies</b>									
		8.1.1.1 Sensitising miners on mercury-free technologies, costs and benefits	Local government	NEMA	Development partners, CSOs (ACEMP, UNACOH, AAU, ACCC) MoFPED, DGSM, MoGLD, MoTIC, MoLG	8,597.33	597.33	8000		2020, 2024	—
		8.1.1.2 Constructing demonstration and piloting sites to demonstrate alternatives technologies and best practices in gold mining and processing in ASGM sector	National	NEMA	Development Partners, CSOs (ACEMP, UNACOH, AAU, ACCC) MoFPED, DGSM, , MoLG MoGLD, MoTIC, Development Partners, MoLG	18,773.33	773.33	18,000		2021 - 2022	—
		8.1.1.3 Training the judicial officers and law enforcement agencies on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade	National	MoJCA	NEMA, Development Partners, MoLG	2,893.33	93.33	2,800	MoJCA	2020	To be incorporated into MoJCA
<b>9. To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030</b>	<b>9.1 To facilitate OSH observance at ASGM sites</b>	<b>9.1.1 Enhancing the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector</b>									
		9.1.1.1 Equipping the Department of OSH, NEMA, DGSM, UNBS with the tools to carry out standard/comprehensive inspections	National, Local government	NEMA	MGLSD, MoLG, MoH, Development Partners, LGs, MoLG	25,600.00	—	25,600		2020, 2025	—
		9.1.1.2 Training district labour officers and other inspectors to monitor ASGM activities in ASGM districts	Local government	MGLSD	NEMA, MoLG, MoH, Development Partners, LGs, MoLG	24,400.00	560.00	23,940	MGLSD	2020, 2023, 2026	To be incorporated into MGLSD's programming
		<b>9.1.2 Establishing OSH standards and practices at ASGM mine sites</b>									

		9.1.2.1 Setting up regional demonstration sites for OSH best practices in ASGM	Regional	MGLSD	NEMA, Development Partners, MoLG, MoH, LGs	18,773.33	–	18,773.33		2021 – 2022	
		9.1.2.2 Updating/ drafting guidelines for OSH implementation at ASM/ ASGM sites and training mines inspectors on how to use the OSH Guidance tool kit	National	MGLSD	NEMA, Development Partners, MoLG, MoH, LGs, MoLG	12,000	600	11,400	MGLSD	2020	The guidelines will be developed by MGLSD
<b>10. To develop and enforce an ASGM environment management strategy by 2030</b>	<b>10.1 An environment management strategy for ASGM related operations</b>	<b>10.1.1 Facilitating ASGM's adherence to environmentally friendly mining practices including restorative measures</b>									
		10.1.1.1 Developing environmental management guidelines for ASGM operations and activities	National	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	12,000	600	11,400	NEMA, MWE	2020	The guidelines will be developed by MWE and NEMA
		10.1.1.2 Training ASGMs, LGs, health officers, among others, on existing environmentally friendly methods and best practices	National, Regional, Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	109,760.00	2,240.00	107,520	NEMA, MWE	2020, 2023, 2026	To be incorporated into NEMA and MWE's programming
		10.1.1.3 Carrying out community awareness meetings on sustainable gold mining	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	53,200	3,200	50,000		2020 – 2022	–
		10.1.1.4 Increasing monitoring frequency of ASGM operations	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	116,800	100,000	16,800		2020 – 2030	–
		10.1.1.5 Strengthening the capacity of key stakeholders including minerals police, environment police to monitor ASGM activities	National, local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	853.33	186.67	666.66	NEMA	2020	To be incorporated into NEMA's programming

		10.1.1.6 Supporting ASG miners in restoring previously degraded abandoned sites	Local government	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	266,667	66,667	200,000		2020 – 2024	–
		10.1.1.7 Committing miners to environmental restoration and proper waste including rock waste disposal as a prerequisite to approval of a license application	National	NEMA	MWE, DSGM, MoLG, LGs, Development Partners	56,960	–	56,960		2020 – 2030	–
		10.1.1.8 Establishing demonstration sites at mercury-free mine sites to demonstrate shafts and pits construction	Local government	DGSM	MWE, NEMA, DSGM, MoLG, LGs, Development Partners	24,106.67	4,106.67	–		2021 – 2022	–
		10.1.1.9 Preparing, publishing and continuously updating geological maps to be used as reference by ASGMs	National	DGSM	NEMA, MWE, DSGM, MoLG, LGs, Development Partners	4,945.45	4,945.45	–		2021 – 2022	–
		10.1.1.10 Defining the level of ESIA to be undertaken by various ASGM categories/structures	National	NEMA	DGSM, MWE, DSGM, MoLG, LGs, Development Partners	5405.4	5405.4	–	NEMA, DGSM	2020	–

		10.1.1.11 Formulating/reviewing policies to ensure that Location Licences are issued after environmental assessments have been undertaken; mining leases for vast pieces of land are issued after environment and social impact assessments subjected to public hearing	National	NEMA	DGSM, MWE, DSGM, MoLG, LGs, Development Partners, UWA, NFA	2702.7	702.7	2000	NEMA, DGSM	2020	This has been catered for in the Mining and Mineral Bill, 2019
		10.1.1.12 Equipping MDAs including NEMA, LGs, MGLSD with tools for early detection of mercury contamination in environmental samples including air, land and water	National	NEMA	Development Partners, UNBS, DSGM, MWE, DSGM, MoLG, LGs, UWA, NFA	34,133.33	–	34,133.33		2020, 2025	–
		10.1.1.13 Formulating and instituting fines for non-compliance of ASMs/ASGMs to environmental standards	National	MoJCA	Development Partners, UNBS, DSGM, MWE, DSGM, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH	13513.5	3513.5	10,000	MoJCA	2020 – 2030	These fines will be instituted as ordinances and bye-laws are developed
		10.1.1.14 Carrying out joint sectoral monitoring of ASGM sites	National	NEMA	Development Partners, UNBS, DSGM, MWE, DSGM, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	56,160	56,160	–		2020 – 2030	–

		10.1.1.15 Extending public utilities including portable water and electricity to gazetted ASGM sites	National	MWE	MEMD, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	66,666.67	6,666.67	60,000		2021 - 2022	—
		<b>10.1.2 Strengthening the conservation of protected areas</b>									
		10.1.2.1 Strengthening the capacity of Environment Protection Police Force and Police Minerals Police Unit to carry out their mandate	National	NEMA	MFA, MEMD, MoLG, LGs, UWA, NFA, Police, MoJCA, NEMA, MoH, Development Partners	163,200	3,200	163,00		2020 – 2030	—
		10.1.2.2 Holding public hearings before allocating mining leases on extensive pieces of land including protected areas	Local government	NEMA	MWE, DGSM, LGs, NEMA, UWA, NFA, Development Partners, MoLG	23,466.67	3,466.67	20,000		2020 – 2030	—
		10.1.2.3 Holding stakeholder engagements to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, UWA, NFA	21,333.33	1,333.33	20,000		2020 - 2024	—
		10.1.2.4 Inspecting and monitoring ASGM activities in protected areas	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA	70,720	30,000	40,720		2020 – 2030	—



		10.1.2.5 Updating geological maps with protected areas' layers to indicate where the protected areas are situated so as to prevent licensing of these areas without prior stakeholder consultations	Local government	DGSM	NEMA, MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA	2,000	666.67	–	DGSM	2020 - 2030	This will be undertaken by DGSM
		10.1.2.6 Assessing the impact of upstream and downstream ASGM activities (wetlands, water bodies)	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners UWA, NFA, DWRM	37,333.33	7,333.33	30,000		2020	–
<b>10.1.3 Minimising Greenhouse Gas emissions from ASGM activities</b>											
		10.1.3.1 Committing ASGM site landlords to planting trees on site	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development partners, NFA, DWRM	56,960	6,960	50,000		2020 - 2030	–
		10.1.3.2 Restricting tree cutting and open cast mining at ASGM sites	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	600	600	-	NEMA	2020 – 2030	This will be undertaken during monitoring activities
		10.1.3.3 Training miners on construction of concrete shafts	Local government	NEMA	NEMA, MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	1,226.67	226.67	1,000		2021	–
		10.1.3.4 Training ASGM site restaurant managers on existing alternatives to fuelwood and energy saving technologies	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	760.00	60	700.00		2021	–
		10.1.3.5 Extending electricity to ASGM camps as well as host communities	Local government	NEMA	MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	66,666.67	–	66,666.67		2021 - 2022	–

		10.1.3.6 Training ASGMs and community members on climate change, impacts, and potential mitigation and adaptation actions they can take to reduce contributions to and impacts of climate change	Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	11,546.67	1,546.67	10,000		2020 - 2021	—
<b>10.1.4 Improve institutional environmental planning</b>											
		10.1.4.1 Carrying out a Strategic Environment Assessment for the ASGM sector	National, Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM	4,533.33	4,533.33	—		2020	
<b>11. To continuously raise awareness and sensitisation on mercury use in the ASGM sector and its dangers</b>	<b>11.1 Strategies for providing information to artisanal and small-scale miners and affected communities (As required by point 1(j) of the Annex C of the Minamata Convention)</b>	<b>11.1.1 Development of a Communication Strategy</b>									
		11.1.1.1 Developing a communication strategy	Regional, National, Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development partners, NFA, DWRM, UWA	11,520	520	11,00		2020	—
		11.1.1.2 Developing targeted messages and holding targeted stakeholder meetings in regard to effects of mercury on human health and environment, existing alternatives and mitigation measures	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	6,933	933	6,900		2020	—
<b>11.1.2. Documenting and dissemination of information on mercury use and its dangers</b>											

		11.1.2.1 Developing and translating IEC materials on effects of mercury on human health and environment and BATs	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	115,600	600	115,000		2020 - 2030	—
		<b>11.1.3. Implementation and dissemination of information on mercury use and dangers</b>									
		11.1.3.1 Holding meetings for publicity ASG miners to disseminate information on effects of mercury on human health and environment and BATs	Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	66,667	667	66,000		2020 - 2030	—
		11.1.3.2 Procuring media services to disseminate information on effects of mercury on human health and environment and BATs	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	362,667	—	362,667		2020 – 2030	—
		11.1.3.3 Holding Training of Trainers/ Change Agents workshops on effects of mercury on human health and environment and BATs	Local government	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners, NFA, DWRM, UWA	109,760.00	2,240.00	107,520.00	NEMA	2020, 2023, 2026	This activity will be conducted by NEMA
		11.1.3.4 Developing an ASGM platform for sharing information with national stakeholders and miners and also serving as a feedback loop	National	NEMA	MWE, NFA, LGs, CSOs (ACEMP, AAU, ACCC), MWE, DGSM, LGs, MoLG, Development Partners,	1,733	733	1,000		2020	—

		11.1.3.5 Documenting, popularising and disseminating of good ASGM practices	National, Regional, Local government	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	538,986.67	8,986.67	530,000		2020 - 2030	—
		11.1.3.6 Developing the capacity of media houses and other communication channels to monitor and relay information on ASGM operations and good practices	National	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	12,106.67	2,106.67	10,000		2020, 2025	—
		11.1.3.7 Undertake ASGM technical officers exposure visits to countries with ASGM good practices	National	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	83,200	—	83,200		2021, 2026	—
<b>11.1.4 Instituting an information sharing platform for disseminating mining information</b>											
		11.1.4.1 Setting up an information dissemination system including cadaster related information	National, regional, Local government	NEMA	Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT	2,133	133	2,000		2020	—
		11.1.4.2 Develop a database for suppliers and local fabricators of ASGM/ASM mining equipment	National	NEMA	Private sector, Development Partners, CSOs (ACEMP, UNACOH, ACCC), MoICT, UMA	1,933	133	1,800		2020 - 2030	—

Activities: 4.1.3.5 will be implemented under 4.1.3.4; 4.1.3.6 will be implemented under 4.1.3.4; 5.1.3.6 will be implemented under 5.1.5; 6.1.4.2 will be implemented under 6.1.3.1; 6.1.4.4 will be implemented under 6.1.4.3 and 7.1.2.5 will be implemented under 7.1.2.4

## 13. Evaluation Mechanism

As indicated in the Minamata Convention, the evaluation of the National Action Plan will take place every three years and at the end of implementation in 2030. This section shows the evaluation mechanism and the indicators that will be used to monitor and evaluate the progress of the implementation of NAP.

The evaluation mechanism for the NAP will serve two functions: First, periodic assessment of project implementation and performance of activities; and second, evaluation of their results in terms of relevance, effectiveness and impact in promoting the adoption of mercury-free technologies. The evaluation system of the NAP will provide answers on the progress and impact made by the NAP, the National Coordination Mechanism and the implementing partners in achieving the NAP's targets.

**Project Performance:** Performance evaluation will assess the NAP's success in achieving the outputs with the inputs provided and activities conducted. The NAP will be monitored closely by the National Coordination Mechanism through semi-annual reports, annual reports, and technical reports. Moreover, regular technical supervision missions and back-to-office reports will be provided as required to enhance success; as well as guidance notes and feedbacks on reports.

**Project Impact:** Evaluation of the NAP's success in achieving its outcomes will be monitored continuously throughout its implementation. The performance indicators found in the evaluation mechanism will guide the evaluation of the action plan results and impacts. To do so, reliable baseline data will be collected at start of the project activities, and impact data will be collected when appropriate during the project implementation.

Both the performance and impact evaluation will contribute to improving decision making and implementation of the NAP, by keeping the action plan on track towards achieving the outcomes, environmental and development objectives, and by integrating lessons learned into planning. Details of evaluation mechanism are indicated in table 30.

**Table 30: Evaluation Mechanism.**

Objective	Strategy	Intervention Actions/ Activities	Purpose	Performance Indicators	Baseline	Target	Reporting period & reporting institution	Means of verification	Source of information	Assumptions /notes	
<b>1. To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024</b>	<b>1.1 Actions to eliminate worst practices (As required by point 1(b) of the Annex C of the Minamata Convention)</b>	<b>1.1.1 Elimination of whole ore amalgamation</b>									
		1.1.1.1 Holding sensitisation campaigns on mercury use and its dangers	- To increase knowledge on the dangers of mercury on human health and the environment	Number of sensitisation campaigns held	–	4,770	2024, NEMA	Reports on the campaigns will be submitted by the implementers	Radio and Television logs	The target audiences predominantly listen to national and local radio and television	
		1.1.1.2 Developing and producing communication materials to illustrate the disadvantages of whole ore amalgamation and other worst practices and solutions	- To reduce mercury emissions and releases from ASGM activities - To increase knowledge on efficient gold concentration methods	Number of communication materials published and disseminated	–	100,000	2021, NEMA	The different implementers will report on how many IEC materials have been published and distributed	Distribution lists	The IEC materials are the best way of visually communicating the message to the target audiences	
		1.1.1.3. Conducting demonstrations on alternative methods to mercury use, for example, by using gravitational methods and cyanide technologies	- To increase adoption of mercury free technologies	Number of miners participating in the demonstrations	59 <sup>*75</sup>	1,000	2020, NEMA	Reports will be written on every demonstration activity held	Activity reports, Attendance lists	The miners will be willing to implement lessons from the demonstrations at their own mining sites	
		1.1.1.4. Instituting a collaborative mechanism between ASGM miners and suppliers including technicians of equipment that requires little to no mercury use in gold processing	- To increase adoption of mercury-free technologies - To increase ASGM knowledge on local fabricators/ sources of mineral processing equipment	Number of ASGMs accessing equipment that requires little to no mercury use in gold processing	–	1,000	2021, NEMA	During monitoring the collaborations formed will be reported on	Activity reports, Monitoring reports	Local suppliers and technicians will be willing to collaborate with the ASGMs	
		1.1.1.5. Developing bye-laws and Ordinances against ASGM miner engagement in worst practices	- To reduce the use of worst practices by the miners	Number of bye-laws and ordinances developed in the ASGM districts*	–	75	2021, MoJCA	Quarterly follow ups will be made by the NAP implementation team	Local Government Reports	The district local governments will be willing to develop the bye-laws and ordinances and enforce their implementation	

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		1.1.1.6. Developing ASGM popularised guidelines on sustainable gold mining and processing	- To increase adoption of sustainable gold mining and processing standards	The published guidelines on sustainable gold mining and processing	—	1	2020, DGSM		The published guidelines	The target audience will read the guidelines and be willing to abide by them
<b>1.1.2. Elimination of open burning of amalgam or processed amalgam</b>										
		1.1.2.1 Demonstrating to miners existing mercury containment tools/technologies including retorts and fume hoods	- To reduce exposure of persons in and around the mines to mercury emissions and releases	Number of miners trained in mercury containment tools/ technologies	—	1000	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, Attendance/ Registration lists	The miners will participate in the demonstrations, uptake the lessons and implement them at their own mining sites
		1.1.2.2 Incentivising the acquisition of alternative methods to gold processing with mercury	- To increase miners' acquisition of reduced use to mercury-free technologies	Number of miners using alternative methods to gold processing with mercury	59 <sup>*76</sup>	1,000	2020,	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	The miners will be willing to transition to mercury-free technologies
		1.1.2.3. Distributing of mercury containment tools/ technologies including mercury-free processing technologies to ASGMs	- To reduce mercury emissions and releases from ASGM sector - To increase recycling of mercury	Number of mercury containment tools/ technologies distributed	—	2,000	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	The miners will be willing to transition to mercury-free technologies
<b>1.1.3 Elimination of burning of amalgam in residential areas</b>										
		1.1.3.1 Facilitating the establishment of designated gold processing units at each ASGM mine site	- To reduce exposure of miner and miner work force to mercury emissions and releases	Number of ASGM mine sites with a designated gold processing unit	—	82	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	The miners will be willing to have a designated gold processing unit at each site

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		1.1.3.2 Updating environmental regulations to incorporate restrictions on open burning of amalgam in residential areas/ settlements/ dwellings/ mining camp sites	- To reduce exposure of communities and miners to mercury emissions and releases	The updated environmental regulations	—	1	2020, MoJCA	Quarterly follow ups will be made to establish the status of the regulations	Monitoring reports, NAP working group meeting reports	The regulations will be implemented by the relevant authorities
<b>1.1.4 Elimination of cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury</b>										
		1.1.4.1 Training small to medium scale gold miners on handling, storage and decontaminating mercury containing tailings	-To facilitate adequate handling, storage and disposal of waste containing mercury	Number of ASGMs trained in handling, storage and decontaminating mercury containing	—	200	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, Attendance/ Registration lists	The miners will participate in the training
		1.1.4.2 Developing a collaborative mechanism between medium to large scale mining companies and ASGMs as part of CSR to develop ASGM technical capacities	- To decrease the use of mercury contaminated tailings - To increase knowledge transfer from medium to large scale mining companies to ASGMs	Number of private mining companies engaging the ASGMs	—	10	2020, NEMA	Quarterly follow ups will be made	Activity reports	The medium to large scale mining companies will be willing to collaborate with the ASGMs
		1.1.4.3 Committing medium to large scale gold processors to adequately transport, handle, store mercury containing tailings and dispose of mercury containing waste after cyanidation processing with mercury containing tailings	- To reduce leaching of mercury contaminated tailings - To facilitate adequate handling, storage and disposal of waste containing mercury	Number of medium to large scale gold processors adequately transporting, handling, storing mercury containing tailings and disposing of mercury containing waste	—	50	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	The medium to large scale gold processors will be willing to commit to proper transport, handling, storage of mercury containing tailings and disposal of mercury containing waste



<b>1.2 Strategies for promoting the reduction of emissions, releases, and risks of exposure to mercury (As required by point 1(e) of the Annex C of the Minamata Convention)</b>	<b>1.2.1 Assessing existing minimal mercury use to mercury-free technologies for gold processing by ASGMs</b>									
	1.2.1.1 Benchmarking mercury-free technologies including associated costs and benefits	- To facilitate targeted acquisition of gold processing technologies/ equipment by ASGMs	A benchmarking study report	–	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	The benchmarking study	The areas selected for the benchmarking study will serve as adequate learning points for Uganda's the Team will transfer learnings to Uganda's ASGM	
	1.2.1.2 Training of local masons and fabricators in producing retorts, mercury capture hoods, construction of mercury effluent containment structures, among others	- To increase production of mercury capture tools - To improve design of gold processing areas - To improve containment of mercury containing waste	Number of local masons and fabricators trained in producing retorts, mercury capture hoods, construction of mercury effluent containment structures, among others	–	200	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Local masons and fabricators will be positive in starting a local fabricating chain for mercury containment tools and mercury waste facilities	
	<b>1.2.2 Supporting the use of mercury-free and mercury capture technologies</b>									
	1.2.2.1 Training ASG miners on mercury effluent and emissions containment tools and technologies	- To increase adoption of mercury effluent and emissions containment tools and technologies - To reduce mercury emissions and releases at ASGM sites	Number of ASGM trained in and emissions containment tools and technologies	–	200	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training	
1.2.2.2 Integrating miner needs into local and national government planning and budgeting programmes and projects	- To facilitate ASG miners accessing finance to afford the methods they currently consider expensive - ASGMs benefiting from small grants programmes and revolving funds/ microfinance schemes	Number of ASGMs receiving funds or small grants	–	500	2030, NEMA	Annual follow up on budgets, votes and programmes	National and local budgets	Institutions will be willing to incorporate programmes towards the elimination of mercury use and its dangers		

		1.2.2.3 Carrying out formal and informal education in institutions and mining communities regarding mercury effects on human health and environment and mitigating such effects	- To increase knowledge on dangers of mercury use and alternatives to mercury use	Number of people engaged in the education on mercury effects on human health and environment and mitigating such effects	—	100	2020, MoES	Quarterly follow ups will be made	Curriculum from institutions, monitoring reports	Education institutions will be flexible enough to accept courses on mercury use and its dangers
		1.2.2.4 Updating the curriculum of public vocational institutions to cover ASM/ASGM trainings on sustainable gold extraction, processing and fabrication of tools/equipment	-To facilitate public vocational institutes awarding certificates and diplomas to miners	Number of public vocational institutions offering trainings on sustainable gold extraction and processing methods	—	10	2020, MoES	Quarterly follow ups will be made	Curriculum from vocational institutions, monitoring reports	Vocational institutions will be willing to include curriculum on sustainable gold extraction and processing methods on their syllabus
<b>1.2.3 Establishing a safe waste disposal programme in the ASGM sector</b>										
		1.2.3.1 Training ASGMs in safe waste disposal methods, waste/effluent treatment and recycling and mercury containing tailings containment	- To establish safer waste disposal methods in ASGM	Number of ASGMs trained in safe waste disposal methods, waste/effluent treatment and recycling and mercury containing tailings containment	—	640	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training
<b>2. To facilitate the formalisation of the ASGM sector by 2024</b>	<b>2.1 Steps to facilitate formalisation or regulation of the ASGM sector (As required by point 1(c) of the Annex C of the Minamata Convention)</b>	<b>2.1.1 Developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities</b>								
		2.1.1.1 Reviewing relevant laws/ regulations to incorporate provisions of ASGM/ ASM formalisation strategies	To create an enabling environment for ASGM/ ASM to operate -To improve ASG miner organisation -To enhance access to financial credit by ASG miners -To increase acquisition of mining licences by ASMs/ASGMs -To reduce ASM/ASGM and medium to large scale miner conflicts	Incorporation of ASGM formalisation strategies in the relevant laws and regulations	—	3	2020, NEMA, DGSM	Quarterly follow ups will be made	The published law	There will be political will to review relevant laws and regulations

	2.1.1.2 Formulating ordinances and bye-laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations	- To increase adherence of ASG miners to environment and natural resources laws/regulations	Number of ordinance and bye-law laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations formulated	—	15	2020, MoJCA	Quarterly follow up with the district local governments	Local government reports	The district local governments will be willing to develop the ordinances.
	2.1.1.3 Developing monitoring guidelines for ASM/ASGM activities	- To improve monitoring of ASGM activities by MDAs	The monitoring guidelines developed	—	1	2020, NEMA	Quarterly follow up with the lead implementer	The published guidelines	NEMA will develop and publish the monitoring guidelines
	2.1.1.4 Reviewing and improving the efficiency of the licensing system to provide for categories of ASGM operations and ascertaining viability of dormant mineral licenses	- To facilitate ease of acquiring ASGM licences - Cancellation of dormant licences -To license ASGMS according to their legal organisations/ categories -To put in place an online mineral license application system	Number of ASGMS awarded licences	—	50	2020, DGSM	Quarterly follow up with the lead implementer	DGSM reports, monitoring reports	In order to facilitate ASGMS acquiring dormant licences, the licensing system will be reviewed
	<b>2.1.2 Building the capacity of ASGMs and extension staff to manage the ASGM sector</b>								
	2.1.2.1 Carrying out research on best ASGM practices and technologies in ASGM sector	-To improve technology efficiencies	Percentage uptake of best ASGM practices and technologies in ASGM sector	—	40%	2020, Academia	Monitoring and evaluation of the progress of NAP implementation	The published research study report, monitoring reports	The study will be conducted to encourage the reduction of mercury in ASGM
	2.1.2.2 Carrying out Inspectors and ASG miner capacity needs assessment in regard to managing the ASGM sector	-To identify inspectors' capacity needs to manage the ASGM sector	An Inspectors and ASG miner capacity needs assessment report	—	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	An assessment report	The study will be undertaken to identify the gaps and areas of intervention

	2.1.2.3 Training of ASGM Trainers and youth miners on best ASGM practices and technologies	- To increase the adoption of best available practices and technologies - To increase awareness of miners on best ASGM practices and alternative technologies	Number of ASGM trainers and youth miners trained on best ASGM practices and technologies	—	640	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The miners will participate in the training
	2.1.2.4 Training of inspectors on ASGM activity monitoring, ASGM protocols, standards and regulations	- To improve monitoring and reporting of ASGMs activities by inspectors - To increase awareness of inspectors on best ASGM practices and alternative technologies	Number of inspectors trained on ASGM activity monitoring, ASGM protocols, standards and regulations	—	600	2025, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ Registration lists	Inspectors from different institutions will participate in the training
	2.1.2.5 Developing mobile applications for cell phones to enhance information sharing among miners and between miners and inspectors/MDAs and private sector	- To improve efficiency in inquiries and feedback	Number of miners successfully using the mobile application	—	500	2020, MoICT	Quarterly follow up with the lead implementer	MoICT reports, Monitoring reports	The Ministry of ICT will be willing to develop the application to enable information sharing
	2.1.2.6 Train responsible officers in management of mercury	- To facilitate efficient management of mercury use and trade in Uganda	Number of officers trained in management of mercury	—	120	2025, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The officers will participate in the training as it aids them to efficiently manage mercury in Uganda
	<b>2.1.3 Forming, strengthening and defining ASGM Associations, companies and cooperatives</b>								
	2.1.3.1 Training ASGMs on rules and procedures for forming associations, cooperatives and companies	- To increase the number of ASGM opting for associations	Number of ASGMs trained on rules and procedures for forming associations, cooperatives and companies	—	500	2020, MoTIC	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The miners will participate in the training
	2.1.3.2 Registering of ASGM associations, cooperatives, companies	- To increase the number of fully registered and functioning ASGM associations, cooperatives and companies	Number of ASGM associations, cooperatives, companies fully registered under the NAP	—	150	2020,	Certificates of registration will be confirmed during monitoring and evaluation	District local government reports, Monitoring reports	The ASGMs will be willing to register associations, cooperatives and companies

		2.1.3.3 Establishing a national ASGM umbrella association or network	- To increase information sharing	A national ASGM umbrella association	—	1	2020, DGSM	The certificate of registration will be confirmed	Monitoring reports	The ASGMs will be willing to register a national ASGM association
<b>2.1.4 Facilitating miners to access financial credit</b>										
		2.1.4.1 Reviewing financial regulations to provide for ASGM associations, cooperatives and companies access to credit schemes	- To facilitate banking institutions to lend associations, cooperatives and companies	Provision for access to credit by ASGMs in the financial regulations	—	1	2020, MoFPED	Quarterly follow up with the lead implementer	Review meeting reports	ASGM is a growing sector that is stifled by, among other things, the lack of finances. MoFPED will be willing to review financial regulations to provide for the sector
		2.1.4.2 Holding engagements between ASGMs and financial institutions	- To enable miners and ASGM associations to access finance and affordable alternative technologies	Number of engagements held between ASGMs and financial institutions	—	5	2020, MoFPED	Quarterly follow up with the lead implementer	Meeting reports, attendance/ participants lists	There will be a willingness by the ASGMs to engage the financial institutions to access finance
<b>2.1.5 Geo-prospecting and zoning of ASGM mining areas</b>										
		2.1.5.1 Collecting geological data and gazetting areas for ASGM operations	- To reduce the migrating of ASGM	Number of areas gazetted for ASGM	—	25	2020, DGSM	Monitoring and evaluation of the progress of NAP implementation	DGSM reports, monitoring reports	In order to formalise the ASGM sector, DGSM will gazette areas for ASGM operations
		2.1.5.2 Cancellation of dormant licences	- To reduce the number of dormant mineral/ mining licences -To enable the re-allocation of licences to ASGM operations	Number of dormant licences cancelled	—	100	2030, DGSM	Quarterly follow up with the lead implementer	DGSM reports, monitoring reports	DGSM will cancel dormant licences in order to open them up for ASGMs who can apply for them
<b>2.1.6 Undertake a national biometric registration and mapping of all ASGM value chain key players</b>										
		2.1.6.1 Carrying out a baseline survey of ASG households, actors along the ASGM value chain and location of ASGM operations	- To put in place ASGM sector specific data and information	A baseline survey report	—	1	2020, DGSM	Quarterly follow up with the lead implementer	The published baseline study report, Evaluation reports	A survey will be undertaken to ascertain the location and number of the different ASGM actors

		2.1.6.2 Undertaking the biometric registration of ASGMs (launched in March, 2019 to commence in November 2019 and end by June 2020)	- To enable the tracking of ASG miners and their operations	Number of ASGMs registered	—	30,000	2021, DGSM	Quarterly follow up with the DGSM	Biometric registration database	ASGMs across Uganda will be willing to get registered
		2.1.6.3 Benchmarking of best practice in the formation of ASGM associations, companies and cooperatives	- To facilitate the adoption of best practices	Number of ASGM associations, companies or cooperatives registered	29	150	2020, DGSM	Quarterly follow up with the lead implementer	The published benchmarking study report	To aid the formalisation of ASGM, the best practice of formation of associations will be necessary
		2.1.6.4 Establishing gazetted buying centres for gold	- To encourage the use of mercury-free technologies	Number of buying centres gazetted	—	5	2020, DGSM	Monitoring and evaluation of the progress of NAP implementation	DGSM reports, activity reports, monitoring reports	The existence of gold buying centres will actually have an impact on mercury use in ASGM
<b>3. To strengthen stakeholder engagement in the implementation of the NAP</b>	<b>3.1 Strategies for involving stakeholders in the implementation and continuing development of the plan (As required by point 1(g) of the Annex C of the Minamata Convention)</b>	<b>3.1.1 Establishing a Multi-stakeholders' Working Group responsible for the implementation of the NAP</b>								
		3.1.1.1 Undertaking the mapping of national stakeholders to form a National Action Plan implementation working group	- To establish a comprehensive database of the stakeholders in place	Number of national working group members	30	45	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity report, mapping study report	A study will be undertaken in order to map out the relevant stakeholders to make up the NAP working group
		3.1.1.2 Defining the post National Action Plan implementation working group terms of references, their interest and potential contributions in reviewing and implementing the NAP	- To enable smooth implementation of the National Action Plan leading to the eventual elimination of mercury	Development of the terms of references for the national working group	—	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity reports, monitoring reports	For the NAP working group will be efficient in their work and adhere to the developed ToRs
		3.1.1.3 Establishing and updating of a national database of ASGM stakeholders (inclusive of regional stakeholders)	- To enhance the national and regional collaborative mechanism	Number of stakeholders captured on the national ASGM stakeholder database	—	1,000	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Online database, monitoring reports	In order to efficiently formalise the ASGM sector, a national database is necessary

		3.1.1.4 Creating synergies with other projects being implemented by sectors, CSOs, private sector and other stakeholders in line with the NAP	- To enhance collaboration among different agencies, institutions and organisations in reducing mercury use and emissions in Uganda	Number of collaborations between different stakeholders	—	15	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, participants lists showing the different stakeholders attending, Monitoring reports	The different stakeholders will be willing to commit to working together to create the required synergy
		3.1.1.5 Tracking, monitoring and evaluating implementation of NAP interventions/ activities	- To enhance the monitoring of NAP implementation	Percentage achievement of NAP goal	—	70%	2024, NEMA	Monitoring and evaluation of the progress of NAP implementation	NAP working group meeting reports, monitoring and evaluation reports	The NAP working group will submit quarterly monitoring and evaluation reports
<b>3.1.2 Enhancing information sharing among key stakeholders</b>										
		3.1.2.1 Holding periodic stakeholder review meetings to review the NAP	- To improve information sharing on NAP implementation	Number of stakeholder review meetings held	—	40	2030, NEMA	Monitoring and evaluation of the progress of NAP implementation	Review meeting reports, attendance lists	There will be need to hold periodic stakeholder review meetings so as to evaluate the implementation of the NAP
		3.1.2.2. Holding community barazas to share information on strategies to reduce mercury emissions and releases and obtain feedback	- To enhance knowledge on mercury and its dangers	Number of community barazas held	—	10	2030, NEMA		Activity reports, list of participants	Barazas will need to be held to reach a wider audience
<b>4. To build and strengthen institutional capacity for management of the mercury value chain and use in ASGM by 2024</b>	<b>4.1 Strategies for managing trade and preventing diversion of mercury and mercury compounds (As required by point 1(f) of the Annex C of the Minamata Convention)</b>	<b>4.1.1 Development of a mercury trade tracking system</b>								
		4.1.1.1 Developing and updating of a data base of key players in mercury trade and authorised traders in unlisted MAPs	- To enable efficient information exchange among traders and institutions - To reduce the smuggling of mercury	Number of key players in mercury and MAP trade captured on the database	—	1,000	2020, MoTIC	Monitoring and evaluation of the progress of NAP implementation	The developed database, Monitoring reports	The database will be up to date and serve as a real time reference point for information on of key players in mercury trade and authorised traders in unlisted MAPs

		4.1.1.2 Documenting imported unlisted and listed MAPs and restricting (introducing penalties against them) importation of all listed MAPs	- To reduce the importation and trade of listed MAPs - To reduce trade in mercury contained in MAPs	Introduction of penalties against the importation of listed MAPs	—	1	2020, URA	Monitoring and evaluation of the progress of NAP implementation	Report documenting the MAPs	The penalties will deter importation of listed and unlisted MAPs
		4.1.1.3 Undertaking surveillance of porous borders and ASGM sites to track illegal mercury trade	- To reduce the illegal trade in mercury	Number of mercury trade routes intercepted	—	15	2030, URA	Monitoring and evaluation of the progress of NAP implementation. Surveillance officers will submit quarterly reports	Activity reports	Relevant lead agencies will be willing to commit additional resources to surveil current and potential routes along the borders to curb mercury trade
		4.1.1.4 Training of communities and ASG miners to serve as whistle blowers for smuggled mercury	- To reduce and eventually eliminate mercury use by ASGMs	Number of communities and ASG miners trained to serve as whistleblowers	—	150	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The community members will participate in the training
		4.1.1.5 Undertaking studies to assess mercury pathways/ trade routes to effectively roll out strategies that manage mercury trade	- To reduce illegal trade in mercury - To reduce and eventually eliminate mercury use by ASGMs	Number of mercury trade routes intercepted	—	15	2030, URA	Monitoring and evaluation of the progress of NAP implementation	A map of trade routes, study report	The assessment of the mercury trade routes and pathways will be comprehensive
		4.1.1.6 Training police and judiciary on prosecution of suspects engaging in illegal mercury trade	- To facilitate efficiency in the judicial system on prosecuting cases against mercury	Number of police and judiciary trained on prosecution of suspects engaging in illegal mercury trade	—	100	2020, MoJCA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The police and judiciary will participate in the training and be positive enough to implement the lessons acquired in their day to day work
		<b>4.1.2 Strengthening institutional capacity in detecting and analyzing samples for mercury</b>								
		4.1.2.1 Procuring and equipping inspectors with tools for detecting mercury on site	- To enable the quick detection of mercury and seizure of consignments	Number of inspectors equipped with tools for detecting mercury on site	—	160	2023, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	Procurement of tools will translate into using the tools to aid the elimination of mercury use



		4.1.2.2 Equipping laboratories with tools for testing mercury in samples	- To ensure reliable and valid results	Number of laboratories equipped with tools for testing mercury in samples	—	5	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	Stakeholders will take advantaged of the enhanced laboratory capacity to conduct more tests
		4.1.2.3 Accrediting government laboratories to analyse mercury	- To ensure reliable, valid and certified results	Number of government laboratories accredited to analyse mercury	—	5	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	List of accredited laboratories	Stakeholders will take advantaged of the enhanced laboratory capacity to conduct more tests
		4.1.2.4 Developing institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste	- To enable efficient mercury waste management	Institutional and ASGM guidelines for handling, transportation, storage, stabilisation of mercury waste developed	—	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation. The developed and published guidelines	Activity reports	NEMA will develop these guidelines as they are essential to proper mercury waste management
		4.1.2.5 Developing a mercury spill contingency plan for use by mercury traders, institutions and ASGMs	- To enable efficient mercury management along the value chain	A mercury spill contingency plan developed	—	1	2020, NEMA	Quarterly follow up with the lead implementer The developed and published plan.	Activity reports	ASGMs and other stakeholders will appreciate the Contingency Plan and make it part of their operational policies and procedures
<b>4.1.3 Strengthen regional cooperation and cross-border inter-agency collaboration on the tracking of mercury</b>										
		4.1.3.1 Developing a single window importation platform to track mercury trade over the entire value chain	- To reduce the illegal mercury trade and restrict of mercury importation	A single window platform developed and fully functioning	—	1	2020, URA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	The single window importation platform will ease access to information
		4.1.3.2 Training customs officers at border points to be able to identify mercury, register mercury and MAPs traders	- To enable efficient management of trade in mercury and mercury added products	Number of customs officers trained to identify mercury, register mercury and MAPs traders trained	—	300	2028, URA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Officers will participate in the training

		4.1.3.3 Benchmarking best practices, standards and case studies from other countries	- To establish references for best practices, standards and case studies	A benchmarking study report produced and printed	—	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	A benchmarking study report	Benchmarking will promote best practice in ASGM
		4.1.3.4 Developing a regional collaborative mechanism in tracking and managing smuggled mercury and MAPs	- To enable efficient cross boundary management of the trade of mercury and mercury added products	Number of mercury consignments and MAPs intercepted	—	10	2020, URA	Quarterly follow up with the lead implementer	URA reports, monitoring reports	There will be willingness to develop a collaborative mechanism in order to curb mercury trade
		4.1.3.5 Establishing regional disincentives in mercury trade	- To reduce trade in mercury	Percentage reduction in illegal mercury trade	15,000 kgs* <sup>77</sup>	70%	2024, URA	Quarterly follow up with the lead implementer	URA reports, monitoring reports	URA will be willing to establish disincentives for mercury trade
		4.1.3.6 Developing a collaborative mechanism among regional and national mercury traders to consider trade in alternatives to mercury for gold processing	- To reduce mercury supply and trade for gold processing	Percentage reduction in illegal mercury trade	15,000 kgs* <sup>78</sup>	70%	2024, NEMA	Quarterly follow up with the lead implementer	Activity reports, monitoring reports	In order to curb mercury trade, there will be need to establish a regional and national collaborative mechanism among mercury traders
<b>5. To review and implement a Public Health Strategy on exposure, diagnosis and treatment of mercury related complications in ASGM by 2024</b>	<b>5.1 Implementation of a Public Health Strategy on the exposure of artisanal and small-scale gold miners and their communities to mercury (As required by point 1(h) of the Annex C of the Minamata Convention)</b>	<b>5.1.1 Carrying out the situational analysis of public health concerns in the ASGM sector</b>								
		5.1.1.1 Reviewing the Public Health Strategy to ensure that all ASGM health related concerns have been incorporated	- To develop a plan to address public health concerns in place	A review report published and presented to the relevant authorities	—	1	2020, MoH	Quarterly follow up with the lead implementer The developed and published review report	Periodic evaluation reports.	There will be need to review the current public strategy so assess if it provides for ASGMs concerns
		5.1.1.2 Carrying out a baseline survey of the extent of public health concerns in the ASGM sector	- To increase knowledge on the extent of public health concerns surrounding the ASGM sector	A baseline survey report produced and published	—	1	2020, MoH	Quarterly follow up with the lead implementer, published baseline survey report	Activity reports, monitoring reports	There will be need to undertake a baseline survey of the extent of public health concerns in the ASGM sector
		5.1.1.3 Disseminating survey results to national and local stakeholders	-To increase national stakeholder perception on the severity and extent of public health concerns	Number of survey reports published and disseminated	—	500	2021, NEMA	Quarterly follow up with the lead implementer	Distribution lists	The public, government and different stakeholders will be interested to know the results of the baseline survey

\* NEMA, 2019, National Overview of the Artisanal And Small Scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices

\* NEMA, 2019, National Overview of the Artisanal And Small Scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices

		5.1.1.4 Sharing of information at regional and international platforms or forums	- To enhance collaboration in finding solutions to identified public health concerns	Number of meetings held at regional and international level	–	7	2026, NEMA	Quarterly follow up with the activity lead implementer	Meeting reports	The different stakeholders will share information in their domains to facilitate joint actions
		<b>5.1.2 Building the capacity of health care workers, VHTs on the health effects of mercury, diagnosis and treatment of the same and equipping health facilities including health centre IIs &amp; IIIs with diagnostic tools</b>								
		5.1.2.1. Training health care workers and Village Health Teams on the effects of mercury and how to diagnose and treat mercury-related complications at the earliest time possible	- To enable early diagnosis and treatment of mercury-related complications	Number of health care workers and VHT members trained on the effects of mercury and how to diagnose and treat mercury-related complications	–	2,100	2026, MoH	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Health workers will participate in the training
		5.1.2.2. Drafting Standard Operating Procedures (SOPs) and guidelines	- To enable early and efficient diagnosis and treatment of mercury related complications	The SOPs and guidelines drafted and published	–	1	2020, MoH	Quarterly follow up on implementation	The published SOPs	SOPs will be drafted and published by MoH
		5.1.2.3 Equipping health workers / health centres with diagnostic tools and equipment as well as medicine (chelators )	- To enable efficient diagnosis and treatment of mercury-related complications	Number of health workers /health centres equipped with diagnostic tools and equipment as well as medicine	–	17	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	Availability of diagnostic tools, equipment and medicine will enhance capacity of medical practioners to treat mercury poisoning
		<b>5.1.3 Raising awareness of ASGMs and surrounding communities on the dangers of mercury use in gold extraction and alternative including pollution mitigation measures</b>								
		5.1.3.1 Developing and disseminating customised/ popular versions of IEC materials	- To increase awareness on the dangers of mercury use, alternatives and pollution mitigation measures	Number of IEC materials developed and disseminated	–	150,000	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	The IEC materials will be disseminated to the target audiences who will be in turn willing to implement the messages
		5.1.3.2 Disseminating of information through use of community Change Agents	- To increase awareness on the dangers of mercury use, alternatives and pollution mitigation measures	Number of community Change Agents engaged	–	90	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation. Contracts with the community agents	Activity report, monitoring reports	Community members will be willing to act as Change Agents and carry the message of the NAP

		5.1.3.3 Holding community meetings/ barazas, dialogues and outreach	- To improve feedback on challenges faced by ASG miners, and local stakeholders	Number of community meetings/ barazas and dialogues held	–	12	2024, NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity reports, attendance/ registration lists	There will be need to carry out outreach at the community level
		5.1.3.4 Developing and producing spot messages and jingles	- To increase information sharing on the dangers of mercury and how to cater for personal protection	Number of spot messages and jingles produced	–	4380	2021, NEMA	Quarterly data will be collected from the radio stations	Radio station logs	Spot messages and jingles will be published on different radio stations
		5.1.3.5 Training of ASGMs on early detection of mercury poisoning/pollution/contamination and response mechanism	- To enable the development of personal emergency response plan	Number of ASGM trained on early detection of mercury poisoning/ pollution/ contamination and response mechanism	–	1,200	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training
		5.1.3.6 Popularising existing chemicals regulations, OSHE regulations, formulating bye-laws and ordinances against poor OSHE practices at ASGM sites	- To increase adherence to OSHE standards	Number of bye-law and ordinances formed against poor OSHE practices in the ASGM districts	–	17	2020, NEMA	Quarterly data will be collected from the lead implementing partner	District local government reports, monitoring reports	There will be need to popularise the OSHE regulations and formulate ordinances so as to ensure better OSHE standards at ASGM mine sites
<b>5.1.4 Enhancing inter-sectoral coordination in the management of mercury use in ASGM</b>										
		5.1.4.1 Undertaking MDAs joint inspections and monitoring/ surveillance of health/ public health related aspects of the ASGM sites	- To improve knowledge sharing	Number of joint inspections and monitoring/ surveillance of health/ public health related aspects of the ASGM sites undertaken	–	40	2030, NEMA	Quarterly data will be collected from the radio stations	Monitoring reports	Joint monitoring and inspections will combat mercury use in ASGM
<b>5.1.5 Supporting ASGM communities to observe OSHE practices</b>										
		5.1.5.1 Training ASGMs on use of mercury vapor capture tools including retorts	- To reduce mercury emissions	Number of ASGMs trained on use of mercury vapor capture tools including retorts	–	1,200	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training and be willing to implement the lessons therefrom

		5.1.5.2 Training ASGMs on use of PPEs during gold extraction and processing	- To facilitate the improvement of OSHE standards at ASGM sites	Number of ASGMs trained on use of PPEs during gold extraction and processing	—	1,500	2026, MGLSD	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training and be willing to implement the lessons therefrom
		5.1.5.3 Demonstrating to ASGM mitigation measures for dust pollution	- To reduce silicosis and dust pollution at ASGM sites	Number of demonstration on mitigation measures for dust pollution held	—	1,500	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will be willing to implement the lessons in their operations
		5.1.5.4 Training miners on containment of mercury effluent	- To reduce environmental pollution from inefficient management of mercury effluent	Number of miners trained on containment of mercury effluent	—	1,200	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training and be willing to implement the lessons therefrom.
		5.1.5.5 Demonstrating to ASGMs mercury-free processing methods including minimal mercury use technologies for gold processing	- To reduce mercury use in ASGM	Number of ASGMs taking part in the demonstration on mercury-free processing methods	—	1,200	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will be willing to implement the lessons in their operations
		5.1.5.6 Engaging mine landlords on sustainable mine operations	- To reduce environmental pollution/ degradation - To increase mine restoration	Number of landlords engaged on sustainable mine operations	—	250	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity reports	Landlords will have enough control over the miners to implement learnings on mining operations on their land
		5.1.5.7 Developing a reporting/ feedback mechanism from sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries on inspected/monitored indicators related to water catchments, water bodies, flora and fauna for pollution risks at ASGM sites	- To improve interagency cooperation and reporting	Number of reports submitted from the different sectors in charge of water, agriculture, minerals, environment, academia, research and fisheries	—	7	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Sector reports, monitoring reports	There will be need to develop a reporting and feedback mechanism which involves different sectors

		5.1.5.8 Enforcing public health, OSHE laws and regulations at ASGM sites	- To increase ASGM adherence to public health and OSHE standards	Number of ASGM sites following the OSHE laws and regulations	0* <sup>79</sup>	82	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	There will be willingness to conduct monitoring exercises in order to enforce better standards in the ASGM sector	
<b>6. To prevent exposure of vulnerable populations, particularly children, women of child-bearing age and nursing mothers to mercury used in the ASGM sector by 2024</b>	<b>6.1 Strategies to prevent the exposure of vulnerable populations, particularly children, women of child-bearing age, pregnant mothers and nursing mothers to mercury used in ASGM (As required by point 1(i) of the Annex C of the Minamata Convention)</b>	<b>6.1.1 Undertaking community outreach programmes to emphasise the risks vulnerable populations face in and around mine sites</b>									
		6.1.1.1 Carrying out sensitisation campaigns, dialogues and meetings with vulnerable populations	- To increase knowledge on mercury containment methods/ pollution mitigation methods, mercury dangers and alternatives to mercury use	Number of sensitisation campaigns, dialogues and meetings conducted with vulnerable populations	—	405	2022, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, participants lists, radio logs and distribution lists	There will be willingness among the NAP implementation partners to conduct sensitisation campaigns and dialogues in order to curb exposure of vulnerable persons to mercury	
		6.1.1.2 Developing an informative documentary on the dangers of mercury to human health and environment and screening the documentary in ASGM camps, communities and national televisions	- To increase knowledge on mercury containment methods/pollution mitigation methods, mercury dangers and alternatives to mercury use	A documentary produced and published	—	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation. The published documentary.	Activity reports	The documentary will influence ASGMs and related stakeholders to reduce mercury use in mining operations	
		6.1.1.3 Developing the capacities of ASGMs on mining practices that will prevent exposure of vulnerable populations to mercury	- To reduce the exposure of vulnerable populations to mercury emissions and releases	Number of ASGMs trained on mining practices that will prevent exposure of vulnerable populations to mercury	—	800	2023, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will be able to implement the learnings to improve their own mining operations	
		6.1.1.4 Facilitating ASGM local exchange visits in regard to knowledge transfer and practices related to mercury-free technology and safe practices	- To increase adoption of mercury-free technologies	Number of exchange visits conducted	—	4	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Exchange visits reports	Exchange visits will expose miners to best practice that they can then apply at their own mining operations	
		<b>6.1.2 Introducing alternative income generating activities to vulnerable groups to reduce gold mining pressure where mercury free gold processing methods may be costly to adopt</b>									

\*<sup>79</sup> NEMA, 2019, National Overview of the Artisanal And Small Scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices

		6.1.2.1 Training women, youth and elderly miners on alternative income generating activities, entrepreneurship, business, record keeping and financial management	- To increase the number of women, youth and elderly miners adopting alternative income generating activities	Number of women, youth and elderly ASGMs trained in alternative income generating activities, entrepreneurship, business, record keeping and financial management	–	720	2023, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Women, youth and elderly miners will be willing to participate in the training and apply the learnings
		6.1.2.2 Supporting vulnerable groups to access funds and other support from government and development partners to engage in alternative, healthier and economic livelihoods	- To increase in the number of women, youth and elderly miners accessing funds and engaging in alternative, healthier and economic livelihoods	Number of vulnerable groups accessing funds to engage in alternative, healthier and economic livelihoods	–	10	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, activity reports	Vulnerable persons will be willing to engage different stakeholders to access funds
		6.1.2.3 Facilitating vulnerable groups to form groups, associations or cooperatives and SACCOs	- To increase access to financial mechanisms to enable adoption of best available practices and technologies by vulnerable populations	Number of vulnerable persons groups, associations or cooperatives and SACCOs	–	25	2020, NEMA	Quarterly follow up on implementation	Activity reports	Vulnerable persons will be willing to form associations or cooperatives and SACCOs so as to ease their access to funds
		6.1.2.4 Engaging Private Sector Foundation (PSF) and other business incubation initiatives to train the youth, elderly and women in alternative SMEs	- To increase the number of women, youth and elderly miners adopting alternative income generating activities	Number of youth, elderly and women trained in alternative SMEs	–	100	2020, NEMA	Reports from the trainings will be submitted to the NAP implementation team	Training reports, attendance/ registration lists	Private Sector Foundation and other business incubation initiatives will be willing to train the youth, elderly and women in alternative SMEs

		6.1.2.5 Developing a curriculum at all levels of higher education including secondary, tertiary and vocational institutions to train learners, youth and elderly persons and certificate courses to equip students with OSHE skills and safer mining practices, among others	- To facilitate the practice of better skills in the ASGM sector	Number of secondary, tertiary and vocational institutions adopting the curriculum on OSHE skills and safer mining practices, among others	–	10	2020, MoES	Quarterly follow up on implementation	MoES reports, monitoring reports	MoES will be willing to develop a curriculum on OSHE skills and safer mining practices so as to ensure sustainable mining
<b>6.1.3 Formulating policies protecting vulnerable populations including reducing foetal and infant exposure to mercury contamination, from mercury emissions and releases</b>										
		6.1.3.1 Developing bye-laws and ordinances prohibiting the following: - Children, expectant and nursing mothers from engaging in gold processing with mercury - Taking toddlers to mining sites where mercury is used without its containment areas; - Prohibiting mercury storage in homes - Prohibiting processing of gold in and around residential homes/ settlements/ dwellings, mining camps and public places - Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained	- To reduce the exposure of vulnerable populations to mercury emissions and releases	Number of bye-laws and ordinances developed in the ASGM districts on: - Children, expectant and nursing mothers from engaging in gold processing with mercury - Taking toddlers to mining sites where mercury is used without its containment areas; - Prohibiting mercury storage in homes - Prohibiting processing of gold in and around residential homes/ settlements/ dwellings, mining camps and public places	–	75	2020, MoJCA	Quarterly follow up on implementation	Monitoring reports	There will be need to develop bye-laws and ordinances at the local government level to enable efficient regulation of mercury use



				- Sale of edibles including food at ASGM sites where mercury emissions and releases are not contained						
		6.1.3.2 Updating the National ASM Management Strategy to encompass strategies to reduce and where possible combat the exposure of vulnerable populations to mercury emissions and releases	- To reduce the exposure of vulnerable populations to mercury use	The addition of strategies to reduce and where possible combat the exposure of vulnerable populations to mercury emissions and releases to the National ASM Management Strategy	—	1	2020, DGSM	Quarterly follow up on implementation	The National ASM Management Strategy. Monitoring reports.	It will be necessary to include vulnerable populations in the National ASM Management Strategy as they are also affected by the ASM activities
<b>6.1.4 Implementing labour and mining regulations prohibiting child labour in ASGM</b>										
		6.1.4.1 Strengthening enforcement of existing child labour laws	-To reduce child labour in ASGM activities	Percentage reduction in child labour in ASGM	20-30%* <sup>80</sup>	0%	2030, MGLSD	Quarterly follow up on implementation	Monitoring reports	Child labour laws can be applied to reduce child labour in ASGM
		6.1.4.2 Formulating bye-law and ordinances against child labour at ASGM sites	- To reduce the number of children participating in ASGM activities	Number of bye-law and ordinances formulated against child labour in ASGM	—	17	2020, MoJCA	Quarterly follow up on implementation	Monitoring reports	Ordinances and bye-law will actively reduce child labour in ASGM
		6.1.4.3 Enforcing the ICGLR standards that prohibit mine site owners and mineral exporters sourcing their gold from mine sites that employ children	- To reduce the number of children engaging in ASGM activities	Percentage reduction in child labour	20-30%* <sup>81</sup>	0%	2030, DGSM	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports, DGSM reports	Enforcement of standards will reduce child labour in ASGM

\* <sup>80</sup> Pact Global UK, Alliance for Responsible Mining, 2018, The Economic Contributions of Artisanal and Small-Scale Mining in Uganda: Gold and Clay

\* <sup>81</sup> Pact Global UK, Alliance for Responsible Mining, 2018, The Economic Contributions of Artisanal and Small-Scale Mining in Uganda: Gold and Clay

		6.1.4.4 Carrying out regular monitoring to ensure that child labour laws are adhered to by ASGM	- To reduce the number of children engaging in ASGM	Percentage reduction in child labour	20-30%* <sup>82</sup>	0%	2030, MGLSD	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	There will be willingness to conduct monitoring exercises to reduce child labour in ASGM
		6.1.4.5 Committing parents in mining camps to take their children to school including taking advantage of UPE and USE programmes	- To reduce the number of children engaging in ASGM - To increase the number of children going to school	Percentage reduction in child labour	20-30%* <sup>83</sup>	0%	2030, MoES	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports, school administration lists	Parents will follow through their commitments to take the children to school
		6.1.4.6 Supporting the construction of schools closer to designated mining camps and areas	- To increase in the number of children going to school	Number of schools constructed close to designated mining camps and areas	—	5	2021, MoES	Quarterly follow up on NAP implementation	Monitoring reports, activity reports	The closer the schools, the more likely the children will attend classes
<b>6.1.5 Developing accurate perceptions of miners and national stakeholders on the levels of mercury contamination in environmental samples</b>										
		6.1.5.1 Assessing levels of mercury contamination in soil, water, land, fish, breast milk for ASGM and infants whose mothers work in gold mines	- To increase awareness of the gravity of mercury pollution in humans and environmental media among ASGMs, health workers, policy makers and government institutions	Number of reports disseminated on mercury pollution in humans and environmental media	—	500	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation. The assessment study report	Monitoring reports, activity reports	Findings of the study will discourage the use of mercury
<b>7. To develop market based mechanisms for the promotion of reduced mercury use by 2024</b>	<b>7.1 Strategies for instituting market based mechanisms for promoting reduced mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>7.1.1 Establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations</b>								
		7.1.1.1 Committing financial institutions to extend credit facilities to ASG miners with evidence of zero mercury use in gold processing	- To increase access of ASG miners to credit	Number of ASGMs receiving credit from finance institutions	—	50	2020, MoFPED	Monitoring and evaluation of the progress of NAP implementation.	Monitoring reports	There will be willingness of financial institutions to extend ASMS credit facilities

\*<sup>82</sup> Pact Global UK, Alliance for Responsible Mining, 2018, The Economic Contributions of Artisanal and Small-Scale Mining in Uganda: Gold and Clay

\*<sup>83</sup> Pact Global UK, Alliance for Responsible Mining, 2018, The Economic Contributions of Artisanal and Small-Scale Mining in Uganda: Gold and Clay

		7.1.1.2 Instituting disincentives on mercury importation and incentives on mercury-free technologies and products	- To increase the importation of mercury alternatives	Percentage reduction in mercury use in the ASGM sector	15,000 kgs* <sup>84</sup>	70%	2024, URA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	There will be need to disincentivise mercury importation
		7.1.1.3 Certifying gold mining and processing methods	- To enable reduction in mercury use in ASGM	Number of ASGM sites adhering to certification processes	—	82	2022, DGSM	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports, DGSM reports	There will be need to certify gold mining processes so as to discourage mercury use
		<b>7.1.2 Establishing market standards to determine mercury-free gold</b>								
		7.1.2.1 Monitoring and inspecting ASGM sites and border points for mercury use and trade	- To reduce mercury use and its illegal importation	Percentage reduction in mercury use	15,000 kgs* <sup>85</sup>	70%	2024, URA	Monitoring and evaluation of the progress of NAP implementation.	Monitoring reports	Lead agencies will commit the resources to monitor and inspect ASGM sites and border points to curb mercury trade
		7.1.2.2 Enforcing OECD and ICGLR standards on gold mining and trade such as the implementation of the ICGLR ASM gold strategy and the Regional Certification Mechanism standards.	- To reduce mercury use in ASGM	Percentage reduction in mercury use	15,000 kgs* <sup>86</sup>	70%	2024, DGSM	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	There will be need and willingness to enforce OECD and ICGLR standards to reduce the use of mercury in ASGM
		7.1.2.3 Committing national refineries on incentivising mercury-free gold	- To reduce the sale of gold produced using mercury	Percentage increase in mercury-free gold produced by ASGMs	—	70%	2024, MoFPED	Quarterly follow up on NAP implementation	Monitoring reports	There will be willingness among refineries to incentivise mercury-free gold
		7.1.2.4 Committing local gold buyers on buying gold produced with mercury free methods	- To increase the adoption of mercury free technologies	Percentage reduction in mercury use	15,000 kgs* <sup>87</sup>	70%	2024, MoFPED	Quarterly follow up on NAP implementation	Monitoring reports	There will be a reduction in mercury use due to the local gold buyers committing to buying mercury free gold
		7.1.2.5 Committing ASG miners to disincentivise purchase of gold produced with mercury	- To increase the sales price for gold produced without mercury and reduce the sales price for gold produced with mercury	Percentage increase in mercury free gold produced by ASGMs	1,930* <sup>88</sup>	70%	2024, MoFPED	Quarterly follow up on NAP implementation	Monitoring reports	There will be an increase in mercury-free gold produced due to the willingness of local gold buyers committing to disincentivise gold produced using mercury

\*84, \*85, \*85, \*86, \*87, \*88 NEMA, 2019, National Overview of the Artisanal And Small Scale Gold Mining (ASGM) Sector, including Baseline Estimates of Mercury Use and Practices

		7.1.2.6 Benchmarking international practices on market incentives and exploring possibilities to adapt them to Uganda's context	- To institute national policies enabling adoption on market incentives	The benchmarking report developed and published	—	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation. The benchmarking study report.	Activity reports, monitoring reports	The report will inform relevant lead agencies' actions on adopting best practice	
		7.1.2.7 Undertaking a pilot study on implementing lessons learnt from international practices on market incentives	- To increase the adoption of mercury-free technologies - To develop and customise models for best practices	Number of ASGMs involved in pilot study	0	100	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation. The pilot study report	Activity reports, monitoring reports.	The report will inform relevant lead agencies' actions on adopting best practice	
		7.1.2.8 Updating/develop a legal framework to provide for legally registered ASGMs access to financial credits	- To increase the number of ASGMs accessing credit	Number of ASGMs accessing financial credit	—	50	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation.	Activity reports, monitoring reports	There will be willingness to develop a legal framework that will provide ASGMs access to financial credit which will allow them transition to mercury-free technologies.	
<b>8. To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030</b>	<b>8.1 Strategies to provide alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)</b>	<b>8.1.1 Supporting the adoption of mercury-free gold mining practices and technologies</b>									
		8.1.1.1 Sensitising miners on mercury-free technologies, costs and benefits	- To increase the adoption of international best practice and technologies	Number of miners sensitised on mercury free technologies, costs and benefits	59*89	640	2024, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, attendance/ registration lists	The miners will participate in the sensitisation which will enable them transition to mercury free technologies	
		8.1.1.2 Constructing demonstration and piloting sites to demonstrate alternatives technologies and best practices in gold mining and processing in ASGM sector	- To increase the adoption of international best practice and mercury-free technologies across the country	Number of demonstration sites constructed on alternatives technologies and best practices in gold mining and processing	1	5	2022, NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity report	Demonstration sites will encourage the transition to mercury-free technologies and build the capacity of the miners to apply them	

\*89, Trained by UNACOH and NAPE

		8.1.1.3 Training the judicial officers and law enforcement agencies on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade	- To facilitate an increase in adherence to the OSHE laws, regulations, ordinances and bye-law	Number of judicial and law enforcement officers trained on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade	–	40	2020, MoJCA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The judicial and law enforcement officers will participate in the training and apply learnings therefrom
<b>9. To develop, sensitise and enforce occupational, safety and health standards in the ASGM sector by 2030</b>	<b>9.1 To facilitate OSH observance at ASGM sites</b>	<b>9.1.1 Enhancing the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector</b>								
		9.1.1.1 Equipping the Department of OSH, NEMA, DGSM, UNBS with the tools to carry out standard/ comprehensive inspections	- To enable increased effectiveness in monitoring ASGM sites for observance of OSH standards mercury	Number of tools supplied to the Department of OSH, NEMA, DGSM, UNBS tools to carry out standard/ comprehensive inspections	–	30	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	Mercury detection equipment will be used by the responsible institutions to curb mercury use in ASGM
	9.1.1.2 Training district labour officers and other inspectors to monitor ASGM activities in ASGM districts	- To improve monitoring and reporting on ASGM activities	Number of district labour officers and inspectors trained to monitor ASGM activities	–	180	2026, MGLSD	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The labour officers and inspectors will participate in the training and apply learnings in their day to day work	
	<b>9.1.2 Establishing OSH standards and practices at ASGM mine sites</b>									
		9.1.2.1 Setting up regional demonstration sites for OSH best practices in ASGM	- To increase observance of OSH practices at ASGM sites	Number of ASGM sites observing OSH best practices	–	5	2022, MGLSD	Monitoring and evaluation of the progress of NAP implementation	Training reports, Attendance/ registration lists	The ASGMs will participate in the demonstrations and trainings and apply the learnings at their own mine sites
		9.1.2.2 Updating/ drafting guidelines for OSH implementation at ASM/ ASGM sites and training mines inspectors on how to use the OSH Guidance tool kit	- To improve the monitoring, inspection and surveillance of ASGM sites by inspectors and health workers	Number of mines inspectors trained on the OSH guidance toolkit	–	1	2020, MGLSD	Quarterly follow up on NAP implementation. The developed and published guidelines	Monitoring reports	Guidelines will be necessary in order to improve OSH standards at mine sites

<b>10. To develop and enforce an ASGM environment management strategy by 2030</b>	<b>10.1 An environment management strategy for ASGM related operations</b>	<b>10.1.1 Facilitating ASGM's adherence to environmentally friendly mining practices including restorative measures</b>								
		10.1.1.1 Developing environmental management guidelines for ASGM operations and activities	- To improve the environmental standards in the ASGM sector	Number of ASGM sites observing environmental standards	—	82	2020, NEMA	Quarterly follow up on NAP implementation. Developed and published guidelines	Monitoring reports	Adherence to the guidelines by ASGM actors will improve the environment standards in ASGM
		10.1.1.2 Training ASGMs, LGs, health officers among others on existing environmentally friendly methods and best practices	- To enable efficient monitoring of environmental standards in the ASGM sector	Number of ASGMs, LGs, health officers among others trained on existing environmentally friendly methods and best practices	—	960	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	ASGMs, LGs and health officers will participate in the training on environmental standards
		10.1.1.3 Carrying out community awareness meetings on sustainable gold mining	- To increased knowledge and awareness on mercury and the dangers it poses to the environment	Number of community awareness meetings held	—	38	2022, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, Attendance/ Registration lists	Community members will attend the awareness meetings and disseminate or even apply the learnings therefrom
		10.1.1.4 Increasing monitoring frequency of ASGM operations	- To reduce environmental degradation	Number of monitoring visits conducted at ASGM sites	—	200	2030, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	Monitoring will identify gaps and support ASGM actors to reduce environmental degradation
		10.1.1.5 Strengthening the capacity of key stakeholders including minerals police, environment police to monitor ASGM activities	- To reduce environmental degradation	Number of key stakeholders, minerals police and environment police trained to monitor ASGM activities	—	50	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	The two Forces will apply the learnings in their work to enhance monitoring of ASGM
		10.1.1.6 Supporting ASG miners in restoring previously degraded abandoned sites	- To reduce environmental degradation	Number of abandoned ASGM sites restored	—	20	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports, activity reports	Miners will be positive about restoration of abandoned ASGM sites

		10.1.1.7 Committing miners to environmental restoration and proper waste including rock waste disposal as a prerequisite to approval of a license application	- To improve environmental rehabilitation - To improve waste disposal practices	Number of ASGM mine sites observing environmental restoration and proper waste disposal	—	82	2020, NEMA	Quarterly follow up on NAP implementation partners	Monitoring reports	This will encourage miners to commit to environmental restoration
		10.1.1.8 Establishing demonstration sites at mercury-free mine sites to demonstrate shafts and pit construction	- To reduce mine collapse and loss of lives - To reduce vegetation loss - To reduce soil erosion	Number of demonstration sites set up to demonstrate shafts and pit construction	—	5	2022, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	The demonstration sites will encourage miners to transition to mercury-free technologies
		10.1.1.9 Preparing, publishing and continuously updating geological maps to be used as reference by ASGMs	- To reduce environmental degradation that is caused by ASGMs exploring different areas	Percentage reduction in migratory ASGMs	—	50%	2024, DGSM	Quarterly follow up on NAP implementation partners	DGSM reports, Monitoring reports	Published maps will be available to miners to guide them on where to mine thereby reducing their migratory nature and environmental degradation
		10.1.1.10 Defining the level of ESIA to be undertaken by various ASGM categories/ structures	- To enable improved environmental standards in the ASGM sector	Number of ASGMs carrying out ESIA	—	10	2020, NEMA	Quarterly follow up on NAP implementation partners	DGSM reports, monitoring reports	ASGMs will be more willing to undertake ESIA
		10.1.1.11 Formulating/ reviewing policies to ensure that Location Licences are issued after environmental assessments have been undertaken; mining leases for vast pieces of land are issued after environment and social impact assessments subjected to public hearing	- To enable improved environmental standards in the ASGM sector	Number of environmental assessments, ESIA and public hearings conducted before awarding of ASGM rights	—	10	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	NEMA reports, activity reports from public hearings, monitoring reports	There will be less environmental degradation when ESIA are conducted and public hearings are held

		10.1.1.12 Equipping MDAs including NEMA, LGs, MGLSD with tools for early detection of mercury contamination in environmental samples including air, land and water	- To enable efficient and continuous monitoring of environmental standards in the ASGM sector	Number of tools received by different MDAs to enable early detection of mercury contamination in environmental samples including air, land and water	—	40	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	Mercury detection equipment will be appropriately used to curb mercury use in ASGM
		10.1.1.13 Formulating and instituting fines for non-compliance of ASMs/ASGMs to environmental standards	- To enable improved environmental standards in the ASGM sector	Formulation of fines for non-compliance	—	1	2020, MoJCA	Quarterly follow up on NAP implementation partners	Monitoring reports, MoJCA reports	Fines will force ASMs and ASGMs adhere to the environmental standards
		10.1.1.14 Carrying out joint sectoral monitoring of ASGM sites	- To improve interagency coordination on monitoring of ASGM sites	Number of joint sectoral monitoring visits conducted	—	40	2030, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	Joint sectoral monitoring will improve coordination and lead to more efficient monitoring of ASGM sites
		10.1.1.15 Extending public utilities including portable water and electricity to gazetted ASGM sites	- To improved labour standards at ASGM sites	Number of ASGM sites equipped with public utilities	—	5	2020, MWE	Quarterly follow up on NAP implementation partners	Reports from responsible MDA's	Responsible institutions will have the resources to extend public utilities to gazetted ASGM sites
		<b>10.1.2 Strengthening the conservation of protected areas</b>								
		10.1.2.1 Strengthening the capacity of environment protection police force and police minerals protection unit to carry out their mandate	- To enable effective monitoring of environmental standards in the ASGM sector	Number of EPPF and PMPU officials carrying out monitoring of the ASGM sector	—	340	2030, NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity reports, monitoring reports	Constant monitoring will lead to reduced environmental degradation and ASGMs will uphold the environment standards



		10.1.2.2 Holding public hearings before allocating mining leases on extensive pieces of land including protected areas	- To increase the participation of community members in issuance of mineral licences	Number of public hearings held before the allocation of mining leases on extensive pieces of land	–	40	2030, MoJCA	Monitoring and evaluation of the progress of NAP implementation	Reports from public hearings	Views of the public will be considered before allocating mining leases on extensive pieces of land including protected areas
		10.1.2.3 Holding stakeholder engagements to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas	- To increase the participation of stakeholders in decisions made in the sector	Number of stakeholder engagements held to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas	–	10	2024, NEMA	Quarterly follow up on NAP implementation partners	Meeting reports, attendance lists	Different stakeholders will be willing to collaborate to promote the coexistence existence of ASGM activities with biodiversity in protected areas
		10.1.2.4 Inspecting and monitoring ASGM activities in protected areas	- To reduce environmental degradation of protected areas	Number of ASGM sites observing environmental standards in protected areas	–	82	2020, MWE	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	Monitoring will curtail environmental damage caused by ASGM
		10.1.2.5 Updating geological maps with protected areas' layers to indicate where the protected areas are situated so as to prevent licensing of these areas without prior stakeholder consultations	- To reduce the encroachment of protected areas	Number of ESIA's and stakeholder consultations conducted prior to awarding licences in protected areas	–	10	2020, DGSM	Quarterly follow up on NAP implementation partners	Monitoring reports	DGSM will update geological maps which will prevent licensing of protected areas without prior stakeholder consultations
		10.1.2.6 Assessing the impact of upstream and downstream ASGM activities (wetlands, water bodies)	- To minimise the contamination of upstream and downstream media from ASGM activities	Percentage reduction in impact of upstream and downstream ASGM activities in wetlands and water bodies	–	70%	2024, NEMA	The published assessment report	Activity report	The report of the impact of ASGM activities upstream and downstream will encourage miners to practice sustainable mining methods
		<b>10.1.3 Minimising Greenhouse Gas emissions from ASGM activities</b>								
		10.1.3.1. Committing ASGM site landlords to planting trees on site	- To increased reforestation after mine closure	Number of ASGM landlords planting trees on ASGM sites	–	50	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	Landlords will be willing to commit to planting trees on site thus increasing reforestation

		10.1.3.2. Restricting tree cutting and open cast mining at ASGM sites	- To minimise deforestation at ASGM sites	Percentage reduction in open cast mining	—	70%	2024, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	Miners will be willing to use methods that do not affect the vegetation thus minimising deforestation
		10.1.3.3. Training miners on construction of concrete shafts	- To reduce the use of timber for shaft construction	Number of miners trained on construction of concrete shafts	—	50	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners will participate in the training and apply the learnings thereafter
		10.1.3.4. Training ASGM site restaurant managers on existing alternatives to fuel wood and energy saving technologies	- To reduce the use of fuelwood and increase the adoption of energy saving techniques	Number of ASGM site restaurant managers trained on existing alternatives to fuelwood and energy saving technologies	—	50	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Site restaurant managers will participate in the training and apply the learnings
		10.1.3.5. Extending electricity to ASGM camps as well as host communities	- To reduce the use of heavy carbon energy sources such as diesel commonly used at ASGM sites	Percentage increase in electrification of ASGM areas and communities	—	10%	2022, NEMA	Quarterly follow up on NAP implementation partners	Reports from responsible MDAs	The responsible institutions will be willing to extend electricity to ASGM camps and surrounding communities
		10.1.3.6. Training ASGMs and community members on climate change, impacts, and potential mitigation and adaptation actions they can take to reduce contributions to and impacts of climate change	- To reduce greenhouse gas emissions	Number of ASGM and community members trained on climate change, impacts, and potential mitigation and adaptation actions	—	500	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Miners and community members will participate in the training and apply the learnings thereafter
		<b>10.1.4 Improve institutional environmental planning</b>								

		10.1.4.1 Carrying out a Strategic Environment Assessment for the ASGM sector	<ul style="list-style-type: none"> <li>-To ensure that policies, plans or programmes have environment concerns in the ASGM sector integrated</li> <li>-To reduce cumulative effects of environment concerns in the ASGM sector</li> <li>- To ensure sustainable decision making alongside economic and social considerations</li> </ul>	A Strategic Environmental Assessment carried out and published	–	1	2020, NEMA	Quarterly follow up on NAP implementation partners	Activity report, monitoring report	The Strategic Environment Assessment will inform policy, programming and planning
<b>11.1.1 Development of a Communication Strategy</b>										
		11.1.1.1 Developing a communication strategy	<ul style="list-style-type: none"> <li>-To increase public knowledge on mercury and its dangers</li> <li>-To make targeted communication to national stakeholders and ASG miners</li> <li>-To document and disseminate strategies for ensuring a wide public outreach</li> </ul>	A communication strategy developed and published	–	1	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Monitoring reports	The communication strategy will increase public knowledge on the dangers of mercury use
		11.1.1.2 Developing targeted messages and holding targeted stakeholder meetings in regard to effects of mercury on human health and environment, existing alternatives and mitigation measures	<ul style="list-style-type: none"> <li>- To increase public knowledge and ensure wide dissemination of information on mercury and its dangers</li> </ul>	Number of stakeholder meetings held on the effects of mercury on human health and environment, existing alternatives and mitigation measures	–	4	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, monitoring reports	Targeted messages will reach the target audience
<b>11.1.2. Documenting and dissemination of information on mercury use and its dangers</b>										

		11.1.2.1 Developing and translating (into local languages) IEC materials on effects of mercury on human health and environment and BATs	- To increase public knowledge and ensure wide dissemination of information on mercury and its dangers	Number of IEC materials developed and disseminated	–	20,000	2020, NEMA	Quarterly follow up on NAP implementation	Distribution lists	IEC materials will inform the targeted audience as planned
<b>11.1.3. Implementation and dissemination of information on mercury use and its dangers</b>										
		11.1.3.1 Holding public meetings to disseminate information on effects of mercury on human health and environment and BATs in collaboration with ASGMs	- To increase public knowledge and ensure wide dissemination of information on mercury and its dangers	Number of publicity meetings held on effects of mercury on human health and environment and BATs	–	50	2030, NEMA	Monitoring and evaluation of the progress of NAP implementation	Meeting reports, activity report	The targeted audience will attend the meetings and uptake the information that will be disseminated
		11.1.3.2 Disseminating information on the impacts of mercury on human health and environment and adoption of BATs through media	- To increase public knowledge and ensure wide dissemination of information on mercury and its dangers	Number of media stations publishing information on effects of mercury on human health and environment and BATs	–	4	2020, NEMA	Monitoring and evaluation of the progress of NAP implementation	Television and radio station logs, monitoring reports	Media stations will be willing to carry information on the dangers of mercury use which will increase public knowledge on the topic
		11.1.3.3 Holding Training of Trainers on impacts of mercury on human health and environment and BATs	- To enable continuous information sharing on the dangers of mercury use - To continuously share information on the dangers of mercury on human health and environment - To ensure a sustainable ASGM sector with reduced and eventual elimination of mercury use - To ensure sustainability of ASGM good practices	Number of trainings and workshops held with Change Agents on human health and environment and BATs	–	12	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Community members will be willing to take on the role of Change Agents

		11.1.3.4 Developing an ASGM platform for sharing information with national stakeholders and miners and also serving as a feedback loop	- To enable efficient information sharing, increased public knowledge and wide dissemination of information on mercury and its dangers	Number of ASGMs and different stakeholders subscribing to the ASGM platform	–	2,000	2020, NEMA	Quarterly follow up on NAP implementation	Platform posts	There will be willingness from ASGMs and other stakeholders to join a platform that provides information
		11.1.3.5 Documenting, popularising and disseminating of good ASGM practices	- To increase public knowledge and ensure wide dissemination of information on mercury and its dangers	Number of bulletins published and disseminated on good ASGM practices	–	1,000,000	2030, NEMA	Monitoring and evaluation of the progress of NAP implementation	Distribution lists	Bulletins will be published annually and disseminated widely
		11.1.3.6 Developing the capacity of media houses and other communication channels to monitor and relay information on ASGM operations and good practices	- To enable efficient information sharing across the country	Number of media reporters trained to monitor and relay information on ASGM operations and good practices	–	100	2025, NEMA	Monitoring and evaluation of the progress of NAP implementation	Training reports, attendance/ registration lists	Media reporters will participate in the training and apply the learnings in their day to day work
		11.1.3.7 Undertaking ASGM technical officers' exposure visits to countries with ASGM good practices	- To increase public knowledge and ensure wide dissemination of information on mercury and its dangers - To increase knowledge among technical officers in the ASGM sector about safe practices of gold mining	Number of technical officers involved in exchange visits	–	20	2026, NEMA	Monitoring and evaluation of the progress of NAP implementation	Exposure visit reports, attendance/ participants lists	Technical officers will be willing to participate in the exposure visits where they will learn and adapt best practice
		<b>11.1.4 Instituting an information sharing platform for disseminating mining information</b>								
		11.1.4.1 Setting up an information dissemination system including cadaster related information	- To facilitate the ease of access to information by ASGMs and feedback -To I-increase public knowledge and wide dissemination of information on mercury and its dangers -To improve collaborations between the ASG Miners and institutions in charge of the sector	Number of miners accessing information on the ASGM sector	–	30,000	NEMA	Monitoring and evaluation of the progress of NAP implementation	Activity reports, monitoring reports	The dissemination system will aid with information flow and to close the gap between stakeholders and will be widely used

		11.1.4.2 Develop a database for suppliers and local fabricators of ASGM/ASM mining equipment	<ul style="list-style-type: none"> <li>- To facilitate the adoption of mercury-free tools and technologies</li> <li>- To develop a comprehensive database of suppliers and local fabricators of ASGM/ASM mining equipment</li> <li>- A comprehensive data base of suppliers and local fabricators of mercury free processing equipment</li> </ul>	Number of suppliers and local fabricators of ASGM/ ASM mining equipment registered on the database	–	200	2021, NEMA	Monitoring and evaluation of the progress of NAP implementation	Database logs and statistics, monitoring reports	The database will serve as a link between ASGMs and fabricators and aid the transition to mercury free technologies
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\* ASGM districts: Kisoro in Kigezi Region, Bushenyi, Buhweju and Ibanda in Ankole Region, Kassanda and Kyegegwa in Central Region, Bugiri, Busia and Namayingo in the Eastern Region, and Kotido, Kaabong, Moroto, Amudat, Nakapiripirit, Nabilatuk, Bukwo in Karamoja Region.

-Denotes that Activities: 4.1.3.5 will be implemented under 4.1.3.4; 4.1.3.6 will be implemented under 4.1.3.4; 5.1.3.6 will be implemented under 5.1.5; 6.1.4.2 will be implemented under 6.1.3.1; 6.1.4.4 will be implemented under 6.1.4.3 and 7.1.2.5 will be implemented under 7.1.2.4

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# Annexes

## Annex I: Gold Concentration and Mercury free Technologies

There are various mercury-free technologies used worldwide including Uganda as detailed below:

### 1.0 Concentration methods

#### Vortex

Vortexes can help to enhance concentration. During the final step of producing a high grade concentrate, vortexes are particularly good at capturing fine gold. Water enters a 30-50cm bowl at a laterally angle from a hose causing the water to rotate creating a whirl-pool which drains out through an elevated hole in the centre. Concentrate is placed into the bowl and the spinning water suspends light particles, while heavier particles (e.g. gold) are left behind. Vortexes are very cheap and simple to operate.<sup>90</sup> However, they require clean clear water which may not be readily available at a number of ASGM sites.

#### Spiral concentrators

Spiral concentrators can help to enhance concentration. They are specialised pans with spiral grooves on their surface, mounted on a tilted axis. They can be useful to work concentrates from many kilogrammes down to a few hundred grams.<sup>91</sup> The concentrate produced by a spiral concentrator may be suitable for zero-mercury treatments such as direct smelting. Typically, a small motor run by a battery turns the pan, and water showers the spirals. Concentrates are added to the bottom of the pan using a small scoop. Heavy minerals are carried upwards in the spirals as water washes lighter minerals back down. Heavy particles like gold remain in the spirals and are lifted up to drop through a hole in the centre of the pan into a cup.

#### Shaking tables

Shaking tables are slightly inclined with a trough along the lower edge, and slightly raised ridges along their length. The mineral feed and water are added along the high edge of the table, and a motor is used to shake the table. The inclination, water flow and shaking result in particle movement along the table towards the lowest corner. Light particles are more easily washed over the ridges than heavy particles separating them along the table and creating a heavy gold rich concentrate.

#### Centrifuges

A centrifuge consists of a rotating bowl that has a series of ridges that trap gold as the bowl spins. Force applied to the feed material (milled ore, heavy mineral concentrate, alluvial sands, etc.) can be 50 to 200 times the force of gravity, providing more effective separation of gold from lighter minerals than systems that depend on gravity only. Ore is usually fed into the concentrating bowl in a slurry of 60-75% water (40-25% solids). Inside the bowl, material moves upwards as the bowl spins, and heavy minerals including gold are trapped between the ridges while light minerals flow up and out of the bowl, ejected as tailings.

For small-scale centrifuges an operating cycle typically lasts 0.5 to 2 hours, after which the concentrate must be cleaned out of the bowl from between ridges. Centrifuges come in a variety of designs and cost ranges, with more expensive designs having better engineering and, therefore, higher efficiencies and throughput capacities. Generally, centrifugal concentrating requires:

<sup>90</sup> UNEP, 2012: A practical guide: Reducing mercury use in artisanal and small scale gold mining.

<sup>91</sup> UNEP, 2012: A practical guide: Reducing mercury use in artisanal and small scale gold mining.

- \* Slurry feed with relatively uniform grain size (good milling and screening is important)
- \* Access to process water
- \* Access to a power supply, and;
- \* Capital investment.

Centrifuges must be tuned to the ore being processed, and they must be operated with diligence. This is accomplished by adjusting feed grain size (milling control), rate of feed, rotation velocity, and cycle duration. One of the main challenges is to keep the concentrate bed active (avoid compaction between the ridges) - this ensures that heavy gold particles will replace lighter ones, which flow over the ridges and out of the bowl.

## Magnets

Handheld magnets can be used to separate magnetic minerals from the non-magnetic minerals. Prior to this, the wet mineral concentrate is heated to increase the strength of magnetism. Magnets are also sometimes used to make improved sluices using thin magnetic beds on the surface onto which magnetic minerals are trapped therefore forming a bed into which only fine gold particles can settle.

## Improved Sluices

Sluices work on the principle that heavy particles sink to the bottom of a stream of water while lighter particles tend to be carried downstream and discharged. A rough surface, typically carpets, can trap the gold and other heavy particles. Like a ball rolling down a hill, flow and momentum increase with distance, making the trapping mechanism less effective further down the sluice, particularly for fine gold. For this reason, most gold is caught in the first meter of simple sluices like the one shown below. More sophisticated designs can avoid this problem.

For efficient sluice operation, consistent water supply is important. When buckets are used to deliver sediment and water onto sluices, surges in flow can lift gold particles off the carpets, reducing gold recovery. This can be avoided by filling a small reservoir like a drum that delivers consistent flow to the sluice.

## 2.0 Cyanidation methods

There are four major methods of cyanide leaching in basic small scale operations and include vat leaching, agitated tank leaching or Carbon-in-Pulp (CIP) leaching, percolation leaching and heap leaching<sup>92</sup>. Carbon in Column (CIC) and Carbon in Pulp (CIP) cyanidation were introduced to ASM in Uganda around 2014 as the ASGM got infiltrated by miners from Tanzania but also by a number of returning Tanzanian trained mining engineers and geologists.

### 2.1 Human health and environmental effects of cyanide

Cyanide is highly toxic and is known to kill people at very low concentrations. At a high PH, cyanide dissolves in water and can be poisonous to humans who drink or even touch it as it can soak into the skin and into the blood stream. At lower pH, cyanide gas can be released into the air and when ingested it can kill a human being within minutes. It is thus important to ensure that the pH is maintained at the proper levels in order to prevent cyanide exposure to humans.

Because, cyanide breaks down with sunlight and oxygen, the easiest way of ensuring safe disposal is by constructing tailings dams.

<sup>92</sup>Small Scale Mining Handbook, SMMRP, Ministry of Energy and Mineral Development

## Human health effects of cyanide

Cyanide is acutely toxic to humans. The toxicity of hydrogen cyanide to humans is dependent on the nature of the exposure. Cyanide-mercury complexes as a result of leaching mercury containing tailing lead to quicker methylation of mercury and formation of toxic bio-available mercury which accumulates in the food chain. Due to the variability of dose-response effects between individuals, the toxicity of a substance is typically expressed as the concentration or dose that is lethal to 50% of the exposed population (LC50 or LD50). The LC50 for gaseous hydrogen cyanide is 100-300 parts per million. Inhalation of cyanide in this range results in death within 10-60 minutes, with death coming more quickly as the concentration increases. Inhalation of 2,000 parts per million hydrogen cyanide causes death within one minute. The LD50 for ingestion is 50-200 milligrammes, or 1-3 milligrammes per kilogramme of body weight, calculated as hydrogen cyanide. For contact with unabraded skin, the LD50 is 100 milligrammes (as hydrogen cyanide) per kilogramme of body weight.

Initial symptoms of cyanide poisoning can occur from exposure to 20 to 40 ppm of gaseous hydrogen cyanide, and may include headache, drowsiness, vertigo, weak and rapid pulse, deep and rapid breathing, a bright-red colour in the face, nausea and vomiting. Convulsions, dilated pupils, clammy skin, a weaker and more rapid pulse and slower, shallower breathing can follow these symptoms. Finally, the heartbeat becomes slow and irregular, body temperature falls, the lips, face and extremities take on a blue colour, the individual falls into a coma, and death occurs.

*Source: International Cyanide Management Code*

## 3.0 Mercury-free gold purification methods at ASGM sites

### 3.1 Use of borax in Namayingo and Mubende districts

Borax is used to remove gold impurities at ASGM sites after obtaining the concentrate by use of gravitation method. The borax method offers better operating efficiencies after gravitation and higher yields of gold.

Sodium borax, commonly referred to as borax, is a chemical compound used in metal refining to facilitate smelting by lowering the melting temperature of the elements present in the ore. Once mixed with the previously treated (crushed and concentrated) ore, borax can be used to remove gold impurities hence refining the gold. Borax, also known as sodium borate, sodium tetraborate, or disodium tetraborate, is a mineral, and a salt of boric acid. Powdered borax is white, consisting of soft colorless crystals that dissolve in water.

Only when the gold particles in the ore are well liberated and concentrated, the borax can be

#### Challenges of using borax

- High cost of gas used for burning
- Lack of awareness by miners
- Best for large scale production of gold
- Requires extremely high temperatures to burn the gold/borax concentrate
- Requires a lot of water
- Requires electricity to run ball mills
- Fairly costly to set up compared to mercury
- Takes a lot more time and energy to produce the gold
- Requires equipment like clay pots, gas burners, charcoal and blowers which miners are not willing to invest in

added at the final stage to facilitate the melting process and gold refining. The effectiveness of borax depends, therefore, directly on effectiveness of the initial treatment of the ore containing gold, i.e., gold liberation and gravity concentration.

After the panning process, the gold concentrate is placed in a small piece of plastic together with equal amounts of borax and a few drops of water and then placed in a clay bowl. Heating with a gasoline burner or acetylene flame causes all the heavy minerals to melt and the molten gold will collect in the bottom of the bowl, from where a gold pellet can be picked up by the tip of a knife<sup>93</sup>. Gold has a melting point of 1063°C. By adding borax the melting point decreases for gold and the other heavy minerals. The heating action is what triggers the borax to go to work. Once the borax melts, it lowers the melting temperatures of everything in the ore. As all of the minerals melt down, they separate from one another. As the process continues, the borax causes the other minerals to oxidize and breakdown even further. Gold is unaffected by this reaction and sinks to the bottom of the mixture, intact.

Another method is with the use of charcoal and a blower. Here, the concentrate and borax mix is placed in a plastic bag and into a clay bowl filled with charcoal. The charcoal is ignited and kept at high temperatures by use of a blower which is mechanised and can be hand-powered. The gold then melts, forming coalesces which drops to the bottom of the bowl. This method could take over half an hour.

In 2017, NAPE and UNACOH conducted a Training of Trainers (ToT) for 30 miners from seven districts of Mubende, Buhweju, Bugiri, Namayingo, Busia, Moroto and Nakapiripirit on the use of borax. Fifteen of the miners from central and southern Uganda were trained in Mubende District and the other 15 miners from east and northern Uganda were trained in Namayingo District.

There are plans by NAPE in partnership with Dialogos, a Danish NGO, to construct borax training and demonstration sites for ASGM. Two demonstration sites will be set up in Tiira (Busia District) and Kajaani (Buhweju District). Initially 30 miners will be trained under a Training of Trainers arrangement, but the project targets to train 300 miners over three years.

In order for mercury-free technologies to be adopted, there needs efforts towards the formalisation of ASM, enabling access to finance by ASMs and promotion and training on mercury-free technologies in ASGM. According to one miner in Kassanda District who received training from UNACOH and DIALOGOS on the use of borax, miners need more sensitisation and training and access to finance in order to enhance use of borax. The miners also claim use of borax requires a special heating vessel as well as LPG which is an added cost.

In Kampala, borax is readily available in select shops and large pharmaceutical outlets. It is one of the inputs in the manufacture of **detergents**, **cosmetics** and **enamel** glazes. It is also used in the welding industry as a **fire retardant**.

Use of borax following gravitation of ground ore has been found to be environmentally benign with the capacity to enable miners recover twice as much gold without investment in expensive equipment. This, coupled with the huge price differences between borax and mercury as illustrated in table 8 below including other concerns indicated in table 9 below should incentivize miners to abandon mercury use in the long-run. Gold recovery using mercury amalgamation vs. borax in Bolivia and Philippines is indicated in table 31.

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<sup>93</sup> Appel, P.W.U. and Na-Oy, L.D. (2014)

**Table 31: Variances between mercury and borax**

Item	Mercury	Borax
Price	UGX800,000 (USD216.2) per kg	UGX80,000 (USD21.6) to UGX100,000 (USD27) per kg
Recovery of gold	- Mercury extracts gold but has to be burnt off and still impurities remain in the gold - Miners recover less with mercury use	- Borax removes most of the impurities in the gold but does not extract gold like mercury does - Miners recover twice as much as of gold with gravitational concentration and borax as opposed with mercury
Ease of use and time spent	Mercury is easier to use; it is also a faster process (consumes less time)	- Use of borax is time consuming. With training and increased availability at ASGM sites, borax use can be enhanced - Takes approximately the same time as whole ore amalgamation
Effects on health and environment	Causes significant effects on health and environment	If properly used, causes minimal to no health or environmental problems
Ease of adoption	Easy to learn for ASMs	Takes a little more time to learn
Availability	Is readily available in pure form	Not readily available at ASGM sites nor in the preferred form (granules as opposed to powder is available)
Ore grade	More productive with low ore grade	More productive with high ore grade
Temperatures	Requires room temperature dependent to form an amalgam and less heat to evaporate the amalgam	Requires extremely high temperatures to remove gold impurities
Popularity of method	Is the popular method of gold extraction	Less popular method given the labour and utility intensive processes
Economic benefits	Most of the gold is lost to the environment in mercury flour	Comes with economic benefits to the ASMs since gold is not lost to the environment in mercury flour
Attractiveness	Attractive both on large and small scale	Attractive if production is on a fairly large scale

Source: The NBO study of 2019

*Estimates of mercury use: 1-gramme Hg = 0.5 grams Au.*

*Estimates of borax use: 1 gramme of borax = 0.25 grams of Au.*

Summaries of the advantages and challenges of borax in ASGM in Uganda are presented in Table 32.

**Table 32 Advantages and disadvantages of borax**

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>○ Causes minimal to no health or environmental problems</li> <li>○ Miners recover twice as much as they would with mercury</li> <li>○ Easy to learn for ASMs</li> <li>○ Takes approximately the same time as whole ore amalgamation</li> <li>○ Comes with economic benefits to the ASMs since gold is not lost to the environment in mercury flour</li> </ul>	<ul style="list-style-type: none"> <li>○ Not easy to convince miners to change mining methods because all they know is mercury use</li> <li>○ Attractive if production is on a fairly large scale</li> <li>○ Requires extremely high temperatures</li> <li>○ Time consuming</li> </ul>

*Table 33: Gold recovery using mercury amalgamation vs borax Table 33 highlight*

Location	Amalgamation	Borax Smelting
Surte 1, Bolivia	0.1 gramme	0.5 gramme
Surte 2, Bolivia	0.4 gramme	0.5 gramme
Gaang 1, Phillipines	1.2 gramme	3.2 gramme
Gaang 2, Phillipines	2.3 gramme	4.8 gramme
Gaang 3, Phillipines	1.8 gramme	4.2 gramme
Gaang 4, Phillipines	7.2 gramme	22.5 gramme
Kias. Phillipines 1	0.4 gramme	1.1 gramme
Kias. Phillipines 2	0.8 gramme	1.3 gramme

Source: *Journal of Environmental Protection, 2014*<sup>94</sup>

<sup>94</sup>Journal of Environmental Protection, 2014, 5, 493-499: Published Online May 2014 in SciRes. <http://www.scirp.org/journal/jep>

## Annex II: Terms of Reference of the National Coordination Mechanism for the NAP Project

### 1. Background

Uganda became a signatory to the Minamata Convention on Mercury on October 10, 2013.

The overall objective of the Convention is to protect human health and the environment from anthropogenic emission and releases of mercury and its compounds.

NEMA is the National Focal Point in Uganda for the Minamata Convention on mercury. On behalf of the Government of Uganda, NEMA is implementing the 'Regional Project on the Development of National Action Plans for Artisanal and Small Scale Gold Mining in Africa' which is funded by the Global Environmental Facility (GEF) through the United Nations Environment Programme (UNEP) as the implementing agency and Africa Institute as the executing agency.

The goal of the project is to contribute to the implementation of the Minamata Convention through the reduction of the risks posed by the unsound use, management and release of mercury in the artisanal and small-scale gold mining sector.

The project objective is to contribute to the implementation of the NAP to reduce the use of mercury and mercury compounds in, and the emissions and releases to the environment of mercury from, artisanal and small-scale gold mining and processing by the use of scientific and technical knowledge and tools by national stakeholders in participating countries.

The NAP is also the basis for future national activities to reduce mercury emissions and releases from the ASGM sector in participating countries. The NAP will fully incorporate the gender dimensions identified in the national overview of the ASGM sector and foster gender equality.

The National Coordination Mechanism (NCC) for the NAP project will comprise members of the Technical Working Group (TWG) and National Stakeholder Advisory Group representing Government Ministries, Agencies and Departments; CSOs; Academia, Private sector, ASG miner associations and city traders associations as detailed in table 34

Sn	Ministries/Agencies/Departments	Responsibilities / Areas of Expertise
1	Ministry of Water and Environment	Focal point for the national implementation of the project. Environmental laws, issues, and regulations; environmental impacts
2	Ministry of Energy and Mineral Development	Statistics and data on ASGM; mining sector laws and regulations;
3	Ministry of Finance, Planning and Economic Development including URA	Formalisation of ASGM sector; market-based mechanisms for reducing mercury use; funding for the implementation of the NAP
4	Ministry of Local Government	Mobilisations of local governments to regulate the ASGM sector
5	Ministry of Internal Affairs	Coordination of security aspects at ASGMS and necessary reforms
6	Ministry of Internal Affairs-Directorate of Government Analytical Laboratory	Mercury testing
7	Ministry of Agriculture, Animal Industry and Fisheries	Suggesting alternatives to mining, enhancing agricultural productivity capacities of miners
8	Uganda Investment Authority	Identifying investors in gold mining, information required for investors in mining

9	District Local Government	Mobilising miners to provide information, mapping of ASGM activities, suggesting alternatives to mining
10	Uganda National Council of Science and Technology	Suggesting innovative technologies for recovery of mercury at ASGMs
11	Kampala Capital City Authority (KCCA)	Identification and mobilisation of traders engaged in gold trade
12	Uganda National Bureau of Standards (UNBS)	Provision of standards related to ASGMs
13	Uganda Bureau of Statistics (UBOS)	Providing population statistics related to ASGMs
14	Ministry of Health	Public health strategies related to ASGM
15	Ministry of Education and Sports	Strategies for community outreach and stakeholder involvement
16	Ministry of Tourism, Trade and Industry	Mercury trade; formalisation; Market-based mechanisms for reducing mercury use
17	Ministry of Justice, Law and Order	Understanding of how to enforce regulations
18	Ministry of Gender, Labour and Social Development	Formalisation of ASGM sector
19	National Forestry Authority	Mining in protected areas
20	Uganda Wildlife Authority	Mining in protected areas
<b>Academia</b>		<b>Responsibilities / Areas of Expertise</b>
21	Busitema University	Research methods and publication
22	Makerere University	Research methods and publication
23	Kyambogo University	Collecting representative information Initiating and developing technological innovations Sharing literature and lessons
<b>ASG Miner Associations</b>		<b>Responsibilities / Areas of Expertise</b>
24	Busia United Miners Association	-To put formalisation needs/challenges across and strategies for addressing them
25	Tiira Small Scale Miners Association	-Aid the in implementation of the NAP actions and activities
	BUSIA-TLAMA	-Submit ASGM related concerns and proposed solutions
<b>Private Sector</b>		<b>Responsibilities / Areas of Expertise</b>
26	Uganda Manufacturers Association	Opportunities for fabricating/supplying equipment
<b>Civil Society Organisation</b>		<b>Responsibilities / Areas of Expertise</b>
27	Pro-biodiversity Conservationists in Uganda (PROBICO)	-Advocating for behavioural change among ASG miners
28	National Association of Professional Environmentalists (NAPE)	-Advocating for policy change to favour ASGM formalisation
29	Environment in Action for Development/EWAD	-Share experiences and lessons learnt from promoting best practices in the ASGM sector
30	Action Coalition for Climate Change	-Promote mercury free technologies
31	Uganda National Association for Community and occupational Health	-Mobilise resources for implementing the NAP
32	Global Rights Alert	-Facilitate ASG miners to form associations
33	Environment Management for Livelihood Improvement Bwaise Facility (EMLI)	
34	Action Center for Energy and Mineral Policy	
35	Uganda Environmental Education Foundation (UEEF)	
<b>City traders Association</b>		<b>Responsibilities / Areas of Expertise</b>
36	Kampala City Traders Association	Organise gold traders and Jewry processors and traders
		Create awareness on trade, supply and use of mercury and promote best practices

The Terms of Reference for the National Coordination Mechanism are detailed below



## 2. General functions of the National Coordination Committee

The National Coordination Mechanism (NCC) will guide the implementation of the NAP in all its phases and ensure that there is proper project planning, implementation and monitoring. It will also monitor progress, implement the national activities (facilitate exchange, learning and cooperation with other project countries) and support the executing agency.

## 3. Specific Terms of Reference

Consistent with the functions above, the Specific Terms of Reference for the NWG will include:

- \* Form a focal point for the national implementation of the NAP.
- \* Provide advice, policy guidance and oversee the implementation of the NAP for ASGM
- \* Approve a detailed work plan for the NAP for ASGM
- \* Undertake monitoring and evaluation of NAP activities.
- \* Advise the Project Coordination Team on public information and awareness raising activities.
- \* Review sectoral team work plans and ensure that cross-sectoral issues are adequately addressed.
- \* Oversee the establishment of national regulations for mercury management.
- \* Ensure that the implementation of the NAP is integrated into Government priority programmes.
- \* Spearhead further resources mobilisation for implementation of the NAP
- \* Lobbying the necessary support for implementation of NAP interventions and output at all levels of policy and decision making.
- \* Determine and agree on a mechanism for receiving direct feedback from the National Stakeholder Advisory Group on the NAP
- \* Provide guidance in the following areas: information on environmental impacts, statistics and data on ASGM; mining sector laws and regulations; economic importance of ASGM; formalisation of ASGM sector; market-based mechanisms for reducing mercury use; funding for NAP process, public health strategies related to ASGM, strategies for community outreach and stakeholder involvement, mercury trade formalisation; market-based mechanisms for reducing mercury use, understanding of how to enforce regulations and formalisation of ASGM sector.

In the execution of its work, the NWG will hold regular and extra-ordinary committee meetings, for instance, once a month. NEMA will provide a Secretariat for all project activities.

## 4. Outputs

A National Action Plan that meets the obligations of the Minamata Convention in a manner consistent with the needs and priorities of Uganda and the resources available.

## 5. Meeting timeframe

The NCC will meet quarterly unless an urgent demand for them to meet arises.

## 6. Linkage between working and advisory group

The NCC which comprises the working and advisory groups that will meet regularly to share information and ideas.

## 7. Daily sustenance allowance for participation at the meetings

Members of the NCC and other participants will be facilitated with both transport and daily sustenance allowance for each meeting, as per Government of Uganda rates.

## 8. Duration

The tenure of the NCC commences on the date of the national NAP project inception meeting and is limited to the duration of the review and reporting term stipulated in the Minamata Convention, which is three years (36 months) from the time of its endorsement of the NAP.

## Annex III: Terms of Reference for NAP Technical Working Group

### 1.0 Background

The background to the Terms of Reference for the Technical Working Group is similar to the NCC in Annex II of this NAP.

The Technical Working Group will be composed of members from different Government Ministries, Agencies and Departments including Academia as detailed in the table 35:

**Table 35: Ministries, Agencies and Departments Constituting the Technical Working Group and their Roles in Regard to the Regional Project on the Development of National Action Plans for the Artisanal and Small Scale Gold Mining**

Sn	Ministries/Agencies/Departments	Responsibilities / Areas of Expertise
1	Ministry of Water and Environment, NEMA	<ul style="list-style-type: none"> <li>○ Focal point for the national implementation of the project</li> <li>○ Environmental policies, laws, and regulations</li> <li>○ Coordination of environment related issues</li> <li>○ Assessment of environmental and social impacts</li> <li>○ Awareness raising on environment and social issues</li> </ul>
2	Ministry of Energy and Mineral Development	<ul style="list-style-type: none"> <li>○ Statistics and data on ASGM</li> <li>○ Mining sector laws and regulations</li> </ul>
3	Ministry of Finance, Planning and Economic Development, including URA	<ul style="list-style-type: none"> <li>○ Economic importance of ASGM</li> <li>○ Formalisation of ASGM sector</li> <li>○ Market-based mechanisms for reducing mercury use</li> <li>○ Funding for NAP process</li> </ul>
4	Ministry of Local Government	<ul style="list-style-type: none"> <li>○ Mobilisations of local governments to provide information related to ASGM</li> <li>○ Awareness creation on dangers associated with the use and exposure to Hg (mercury) during mining</li> <li>○ Devising means/strategies to reduce community engagement in gold mining</li> <li>○ Ensuring restoration of mined sites</li> </ul>
5	Ministry of Internal Affairs -UPF	<ul style="list-style-type: none"> <li>○ Coordination of security aspects at ASGMS and necessary reforms</li> </ul>
6	Ministry of Internal Affairs-Directorate of Government Analytical Laboratory	<ul style="list-style-type: none"> <li>○ Mercury testing</li> </ul>
7	Ministry of Agriculture, Animal Industry and Fisheries	<ul style="list-style-type: none"> <li>○ Suggesting alternatives to mining, enhancing agricultural capacities of miners</li> </ul>
8	Uganda Investment Authority	<ul style="list-style-type: none"> <li>○ Identifying investors in gold mining, information required for investors in mining</li> </ul>
9	District Local Governments	<ul style="list-style-type: none"> <li>○ Mobilising Miners to provide information, mapping of ASGM activities, suggesting alternatives to mining</li> <li>○ Awareness creation on dangers associated with the use and exposure to Hg (mercury) during mining;</li> <li>○ Formulating strategies to reduce people's engagements in gold mining</li> <li>○ Ensuring restoration of mined sites</li> <li>○ Promoting good sanitation and health safety at mine sites</li> </ul>
10	Uganda National Council of Science and Technology	<ul style="list-style-type: none"> <li>○ Suggesting innovative technologies for recovery of mercury at ASGMS</li> </ul>
11	Kampala Capital City Authority	<ul style="list-style-type: none"> <li>○ Identification and mobilisation of traders engaged in gold trade</li> </ul>
12	Uganda National Bureau of Standards	<ul style="list-style-type: none"> <li>○ Provision of standards related to ASGMS</li> </ul>

13	Uganda Bureau of Statistics	<input type="radio"/> Providing population statistics related to ASGMs
14	Ministry of Health	<input type="radio"/> Public health strategies related to ASGM
15	Ministry of Education and Sports	<input type="radio"/> Strategies for community outreach and stakeholder involvement
16	Ministry of Tourism, Trade and Industry	<input type="radio"/> Mercury trade <input type="radio"/> Formalisation <input type="radio"/> Market-based mechanisms for reducing mercury use
17	Ministry of Justice, Law and Order	<input type="radio"/> Understanding of how to enforce regulations
18	Ministry of Gender, Labour and Social Development	<input type="radio"/> Formalisation of ASGM sector
19	ASG Miner Associations	<input type="radio"/> Submit ASGM related concerns and proposed solutions
		<input type="radio"/> Provide clarification on issues raised by TWG

## 2.0 General functions of the the Technical Working Group

The TWG will provide advice, policy guidance and oversee the implementation of NAP on ASGM project in line with sectoral policies

## 3.0 Specific Terms of Reference

Consistent with the functions above, the Specific Terms of Reference for the Technical Working Group will include:

- i. To share institutional and legislative arrangements in the management of the ASGM sector, industrial chemicals including mercury
- ii. To discuss past, present and future interventions in the management of the ASGM sector, industrial chemicals including mercury
- iii. To develop possible synergies in the management of the ASGM sector, industrial chemicals including mercury
- iv. To enhance strategies for intersectoral coordination with regard to the management of the ASGM sector, industrial chemicals including mercury
- v. To develop detailed work plan and budget for project activities/outputs
- vi. To develop monitoring checklists for project implementation
- vii. To prepare Terms of Reference for consultancy work and ensure that cross-sectoral issues are adequately addressed
- viii. Organise NAP process review meetings
- ix. Oversee the establishment of national regulations for mercury management.
- x. Advise the Coordination Team on public information and awareness raising activities
- xi. Participate in the review and endorsement of the NAP on ASGM
- xii. Review and make inputs to project reports including action plans and strategy documents
- xiii. Ensure that the outcome of the project (i.e. the NAP) is integrated into government priority programmes.
- xiv. Spearhead resource mobilisation for implementation of the project outcome
- xv. Lobbying the necessary support for implementation of project activities and output at all levels of policy and decision making
- xvi. Determine and agree on a mechanism for receiving direct feedback from the National Stakeholder Advisory Group on the NAP
- xvii. Provide guidance in the following areas: Information on environmental impacts, statistics and data on ASGM; mining sector laws and regulations; economic importance of ASGM; formalisation of ASGM sector; market-based mechanisms for reducing mercury use; funding for NAP process, public health strategies related to ASGM, strategies for community outreach and stakeholder involvement, mercury trade formalisation; market-based mechanisms for reducing mercury use; understanding of how to enforce regulations and formalisation of ASGM sector
- xviii. In the execution of its work, the TWG will hold regular and extra-ordinary meetings for instance, once a month. NEMA will provide a Secretariat for all project activities

## 4.0 Outputs

A National Action Plan that meets the obligations of the Minamata Convention in a manner consistent with the needs and priorities of Uganda and the resources available.

## 5.0 Meeting timeframe

The TWG will meet quarterly unless an urgent demand for them to meet arises.

## 6.0 Linkage between technical working and advisory group

The TWG will regularly give feedback to the National Stakeholder Advisory Group. The TWG will consult the National Stakeholder Advisory Group at regular intervals and will provide direct feedback on the NAP through a mechanism to be agreed upon by the National Coordination Mechanisms.

## 7.0 Daily allowance for participation at the meetings

The TWG including other meeting participants will be facilitated both transport and daily sustenance allowance for each meeting, as per Government of Uganda rates.

## 8.0 Duration

The tenure of the TWG commences on the date of the national NAP project inception meeting and is limited to the duration of the review and reporting term stipulated in the Minamata Convention, which is three years (36 months) from the time of its endorsement of the NAP.

## Annex IV: Terms of Reference for the National Stakeholder Advisory Group

### 1.0 Background

The background to the Terms of Reference for the National Stakeholder Advisory Group Group is similar to the NCC including the TWG as detailed in Annex II of this NAP.

The National Stakeholder Advisory Group will be composed of members who possess relevant knowledge and information, and whose collaboration and cooperation will be needed for the successful formulation and implementation of the NAP. The national stakeholder advisory group will include relevant members of Academia, selected TWG members, city trader associations, Civil Society Organisations, private sector, NAP project secretariat and ASGM miner associations among others, with experience and knowledge in the ASGM sector as listed below:

- Miner organisations - like cooperatives and/or associations for example, Busia Mining Association
- Miners/miner representatives
- Community leaders and local government from ASGM areas for example L.C.1, county/sub-county chiefs, RDC
- Indigenous groups - members from the local community
- Technical expert in gold mining
- Environmental and human health organisations
- Academic and research organisations - universities and research institutions
- Legal professionals
- Representatives from large scale mining
- Other relevant land holders
- Police and customs officials
- Gold buying agents, gold traders, mercury traders
- Waste management specialists - environmental and public health officials
- Private sector partners such as large-scale mining companies or equipment providers
- Financial/banking sector - micro finance, Sacco groups
- Representatives of the United Nations country teams
- Women-based organisations dealing with mining, for example, Empowered Women in Action

### 2.0 Functions of the National Stakeholder Advisory Group

The National Stakeholder Advisory Group will be consulted at regular intervals by the TWG and will provide direct feedback on the NAP through a mechanism to be agreed upon by the national coordination mechanisms including the TWG.

### 3.0 Specific Terms of Reference

Consistent with the functions above, the Specific Terms of Reference for the National Stakeholder Advisory Group are:

- i. Help to organise miners
- ii. Provide realistic view of current practices and barriers to change in the ASGM sector in Uganda
- iii. Assist with development and implementation of plan within ASGM communities
- iv. Represent vested interests in ASGM operations in indigenous areas
- v. Provide technical alternatives to mercury use; provide training opportunities
- vi. Represent vested interests in reducing environmental impacts of ASGM and the risks of exposure to the public
- vii. Provide valuable information and conduct future research; provide training opportunities from ASGM specialists

- i. Provide insight and guides in the national legislation as it relates to ASGM including relevant regulation on mercury use and trade regulation
- ii. Contribute to finding innovative solutions and provide insights on mining regulatory issues; potential partner with small scale miners on technical improvements to mining practice
- iii. Represent interest in land conflicts and in reclaiming impacted lands; risk of mercury exposure
- iv. Guide in the understanding of the role of enforcement
- v. Provide insight into market dynamics, and barriers to formalisation; also important focal point for community health and emissions
- vi. Provide insight into available mechanisms to handle mercury wastes generated by ASGM and how to clean/restore contaminated sites
- vii. Provide technical capacity; potential public/private partnership
- viii. Provide small and commercial-sized loans to miners to assist with financing transition towards better practices
- ix. Ensure that the project is contributing to the country priorities as identified by the National United Nations Development Assistance Frameworks

#### **4.0 Outputs**

Contribute to the development of the NAP that meets the obligations of the Minamata Convention in a manner consistent with the needs and priorities of Uganda and the resources available.

#### **5.0 Meeting timeframe**

The National Stakeholder Advisory Group will meet quarterly unless an urgent demand for them to meet arises.

#### **6.0 Linkage between Working and Advisory group**

The National Stakeholder Advisory Group will receive regular updates and feedback from the TWG. The National Stakeholder Advisory Group will be consulted at regular intervals and will provide direct feedback on the NAP through a mechanism to be agreed upon by the National Coordination Mechanisms including the TWG.

#### **7.0 Daily allowance for participation at the meetings**

The National Stakeholder Advisory Group including other meeting participants will be facilitated both transport and daily sustenance allowance for each meeting, as per Government of Uganda rates.

#### **8.0 Duration**

The tenure of the National Stakeholder Advisory Group commences on the date of the national NAP project inception meeting and is limited to the duration of the review and reporting term stipulated in the Minamata Convention, which is three years (36 months) from the time of its endorsement of the NAP.

## Annex V: Additional Information from the NBO Study of 2019

### A) Detailed methodology for undertaking NBO study of 2019

#### (i) Description of the sampling framework

The detailed work and methodology collected data from A to constrain the mercury use estimate, mercury to gold ratio (Hg : Au ratio) and provided a strong idea of earnings per miner. A broader survey that counts sites and site population will be used to scale the detailed survey up to the national level.

The materials to be used included: Semi-structured questionnaires, sampling apparatus, GPS, cameras, measuring devices such as electronic scales, tally sheets and spreadsheets, sample storage containers, preservatives, personal protective equipment and safety gears.

The sample size used was determined using the Kish and Leslie formula:

$$N = \frac{Z^2 pq}{\delta^2}$$

Where

$Z^2 = 1.96$  (standard normal value at  $\alpha=5\%$  level of significance)

$p$  = Estimated prevalence of mercury intoxication among miners

$q = 1-p$

$\delta$  = Maximum error that can be allowed which is 0.05 (Absolute Precision of 5%)

From each of the mining area, random sampling was used to select the actual of participants and for each selected participant, a semi-structured questionnaire was administered.

#### (ii) Description of the data analysis process

This being a baseline survey meant assessing the use; management and health and the environmental effects of mercury in the rural set up, descriptive statistical techniques in analysis of data were used. Simple additions were used to build the picture of the situation. Salient phrases and quotations on emerging themes were described verbatim and integrated in the report.

Data from the socio-economic assessment was analysed by carrying out a systematic appraisal of the potential social impacts of economic or other activities such as the management of mercury on all sectors of society (including local communities and groups, civil society, private sector and government). Data was analysed using a number of approaches such as: Cost benefit analysis, stakeholder analysis, importance and influence matrix, participation matrix, livelihood analysis, social risk analysis, options analysis, and SWOT analyses.

The study also carried out monitoring and scientific investigation of mercury presence in humans, water, land, air and aquatic life. Urine and blood samples were collected and analysed for mercury levels after clearance to use humans in the study as per research ethics was obtained.

Water, soil, and plant samples from selected hotspots and sites were collected, along with samples of pesticides from shops. This was done by using URA statistics, UBOS business premises statistics, and registers of pesticide dealers from Ministry of Agriculture, Animal Industry and Fisheries. The samples collected were analysed and findings compared with both Ugandan standards, and WHO limits. Fish samples were collected from water bodies in proximity with mining sites. The laboratory used was the Government Analytical Laboratory (GAL). Given the importance of the study, the consultant sought clearance from the National Council of Science and Technology to ensure authenticity of the results.

## B) Knowledge Gaps

The NBO study of 2019 identified existing knowledge gaps and made the following recommendations:

- There is need to undertake a Level 2 National Mercury Inventory building upon the results of the completed Level 1 Inventory (National Overview of mercury use in ASGM) as well as identify relevant point source categories for mercury releases to air, water and soil.
- Improvement of the policy and regulatory framework governing the management of mercury. The baseline and findings from the NBO study of 2019 already indicate that there are weaknesses in the regulatory framework managing mercury in the country. There is no specific law for management of not only mercury but also chemicals of utmost concern.
- Improvement of monitoring and reporting capacity on mercury levels in food, soil, water and air. A number of laboratories have the capacity/equipment to analyse mercury levels in soil, water and biological samples (e.g. fish). There is some institutional capacity for the analysis and bio-monitoring (e.g. blood and urine for humans) but no capacity yet for monitoring mercury emissions in the air. Monitoring of a few environmental media is conducted (e.g. landfill leachate, seven priority water bodies (NEL), fish for export to the EU (CASFU), etc.) This capacity needs to be supported and enhanced.



## Annex VI: Budget

Table: 36 Budget

Objectives	Strategy	Sn	Intervention/Activity	Qty	Days	Freq	Years	Unit cost	Amount	USD	2	2	2	2	2	2	2	2	2	2	Notes			
											0	0	0	0	0	0	0	0	0	0		0	0	0
1. To reduce the emissions, releases and risks of exposure to mercury by the ASGM sector by 70% by 2024	1.1 Actions to eliminate worst practices (As required by point 1(b) of the Annex C of the Minamata Convention)	1.1.1.	Elimination of whole ore amalgamation																					
		1.1.1.1.	Holding sensitization campaigns on mercury use and its dangers																					
			Radio talk shows	1	1	24	5	1,500,000	180,000,000	48,000.00													Bi-Monthly radio talk shows will be held for the first 5 years at different radio stations in gold mining regions	
			Radio adverts	1	365	6	2	50,000	219,000,000	58,400.00													Radio adverts will be played every day for the first two years	
			Radio messages	1	90	2	1	600,000	108,000,000	28,800.00													Radio messages will be played at peak hours on different radio stations for the first 3 months of NAP implementation	
			Television spot messages	1	45	2	1	1,000,000	90,000,000	24,000.00													Television spot messages will be aired for 3 months at news commercial breaks for a year	
			<b>Sub Total</b>						<b>597,000,000</b>	<b>159,200.00</b>														
				1.1.1.2.	Developing and producing communication materials to illustrate the disadvantages of whole ore amalgamation and other worst practices and solutions																			
			Design of IEC materials	1	1	1	2	350,000	700,000	186.67												IEC materials will be designed once a year for the first two years so as to change the message as need arises		
			Production of IEC materials	50,000	1	1	2	500	50,000,000	13,333.33												50,000 copies shall be printed every years		

	<b>Sub Total</b>						50,700,000	13,520.00											
1.1.1.3	Conducting demonstrations on alternative methods to mercury use for example by use of gravitational methods and cyanide technologies																		
	Facilitators	2	2	20	1	350,000	28,000,000	7,466.67											A facilitator will be engaged to conduct the training
	Facilitation for the participants	50	2	20	1	50,000	100,000,000	26,666.67											5 meetings per Hg using region, 50 ASGM participants including and suppliers and technicians of equipment will be trained. This will be a Training of Trainers.
	Refreshments	50	2	20	1	15,000	30,000,000	8,000.00											The participants will be served refreshments
	<b>Sub Total</b>						158,000,000	42,133.33											
1.1.1.4	Instituting a collaborative mechanism between ASG miners and suppliers including technicians of equipment that requires little to no mercury use in gold processing																		
	Communication (Airtime)						5,000,000	1,351.35											
	Data						5,000,000	1,351.35											
	<b>Sub Total</b>						10,000,000	2702.7											
1.1.1.5	Developing and enforcing Bye-laws and Ordinances against ASG miner engagement in worst practices																		
	Facilitation for meetings	15	1	5	1	500,000	37,500,000	10,000.00											Transport refund and daily sustenance allowance for the council meetings will be provided
	<b>Sub Total</b>						37,500,000	10,000.00											
1.1.1.6	Developing ASGM popularized guidelines on sustainable gold mining and processing																		
	A consultant (or DGSM officer) will be engaged to develop the guidelines.	1	1	1	1	2,250,000	2,250,000	600.00											These guidelines will be developed by DGSM

	<b>Sub Total</b>						2,250,000	600.00												
							<b>Total</b>	855,450,000	228,156.03											
1.1.2	Elimination of open burning of amalgam or processed amalgam																			
1.1.2.1	Demonstrating to miners existing mercury containment tools/technologies including retorts and fume hoods																			
	Facilitators	2	1	20	1	350,000	14,000,000	3,733.33												A facilitator will be engaged to conduct the training. The demonstration will take place at a mine site.
	Facilitation for the miners	50	1	20	1	50,000	50,000,000	13,333.33												5 demonstrations per Hg using region will be held in the first year, 50 miners will participate.
	Refreshments	50	1	20	1	15,000	15,000,000	4,000.00												The participants will be served refreshments
	<b>Sub Total</b>						79,000,000	21,066.67												
1.1.2.2	Incentivizing the acquisition of alternative methods to gold processing with mercury																			
	Refreshments	10	1	2	1	20,000	400,000	106.67												Refreshments will be provided for the meetings
	Transport facilitation for meetings	10	1	2	1	200,000	4,000,000	960												The officials and development partners transport will be facilitated
	<b>Sub Total</b>						4,000,000	1,066.67												
1.1.2.3	Distributing of mercury containment tools/technologies including mercury free processing technologies to ASGMs																			
	Retorts	200	1	1	5	120,000	120,000,000	32,000.00												Retorts which are mercury containment tools will be distributed at the Hg using mine sites

	Ridged plastic pans	200	1	1	5	70,000	70,000,000	18,666.67													Ridged plastic pans are used for panning, they have the advantage of being ridged which makes it easier to trap gold and in addition, they are light and not as heavy as the metallic pans the ASGMs currently use
	<b>Sub Total</b>						<b>190,000,000</b>	<b>50,666.67</b>													
						<b>Total</b>	<b>273,000,000</b>	<b>72,800.01</b>													
1.1.3	Elimination of burning of amalgam in residential areas																				
1.1.3.1	Facilitating the establishment of designated gold processing units at each ASGM mine site																				
	Facilitation for inspectors	5	5	12	2	250,000	150,000,000	40,000.00													This caters for facilitation for the inspectors' movements who will carry out constant monitoring of the mine sites and ensure the ASGMs have a designated processing unit at each site
	<b>Sub Total</b>						<b>150,000,000</b>	<b>40,000.00</b>													
1.1.3.2	Updating environmental regulations to incorporate restrictions on open burning of amalgam in residential areas/ settlements/ dwellings/ mining camp sites																				
	Holding national and regional meetings to review and update laws						5,000,000	1,351.35													
	Drafting, reviewing and presenting updated laws						2,000,000	540.54													
	Publication dissemination of updated laws						3,000,000	810.81													
	<b>Sub Total</b>						<b>10,000,000</b>	<b>2702.7</b>													
						<b>Total</b>	<b>160,000,000</b>	<b>42,702.70</b>													

1.1.4	Elimination of cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury																	
1.1.4.1	Training small to medium scale gold miners on handling, storage and decontaminating mercury containing tailings																	
	Facilitator fees	2	2	4	1	350,000	5,600,000	1,493.33										A facilitator will be engaged to conduct the training. The training will take place at a selected mine site.
	Facilitation for miners	50	2	4	1	50,000	20,000,000	5,333.33										1 meetings per Hg using region, 50 miners will be trained and their transport facilitated. This will be a training of trainers.
	Refreshments	50	2	4	1	15,000	6,000,000	1,600.00										The participants will be served refreshments
	<b>Sub Total</b>						<b>31,600,000</b>	<b>8,426.67</b>										
1.1.4.2	Developing a collaborative mechanism between medium to large scale mining companies and ASGMs as part of CSR to develop ASGM technical capacities																	
	Transport facilitation for meetings	10	1	2	1	200,000	4,000,000	1,066.67										This will be a bi annual meeting between representative from the National Coordination Mechanism and a few large scale mining companies and ASGMs ready to cultivate relationships
	Refreshments	10	1	2	1	20,000	400,000	106.67										Refreshments will be provided at the meetings
	<b>Sub Total</b>						<b>4,400,000</b>	<b>1,173.33</b>										
1.1.4.3	Committing medium to large scale gold processors to adequately transport, handle, store mercury containing tailings and dispose of mercury containing waste																	
	Venue hire	1	1	1	1	500,000	500,000	133.33										A national meeting will be held between NEMA, the national implementation group and medium to large scale gold processors at a hired venue

		Refreshments	50	1	1	1	50,000	2,500,000	666.67												Refreshments will be provided	
		Transport facilitation for participants	50	1	1	1	100,000	5,000,000	1,333.33												The participants will be provided transport refund	
		<b>Sub-Total</b>						<b>8,000,000</b>	<b>2,133.33</b>													
		<b>Sub-Total</b>						<b>44,000,000</b>	<b>11,733.33</b>													
1.2 Strategies for promoting the reduction of emissions, releases, and risks of exposure to mercury (As required by point 1(e) of the Annex C of the Minamata Convention)	1.2.1	Assessing existing minimal mercury use to mercury free technologies for gold processing by ASGMs																				
	1.2.1.1	Benchmarking mercury-free technologies including associated costs and benefits of these technologies																				
		Consultant's fees	1	45	1	1	700,000	31,500,000	8,400.00												A consultant will be engaged to undertake the benchmarking study over 45 working days	
		Publishing of report	500	1	1	1	30,000	15,000,000	4,000.00												The reports will be published for dissemination	
		<b>Sub Total</b>						<b>46,500,000</b>	<b>12,400.00</b>													
	1.2.1.2	Training of local masons and fabricators in producing retorts, mercury capture hoods, construction of mercury effluent containment structures, among others																				
		Facilitator fees	1	2	4	1	350,000	2,800,000	746.67													A facilitator will be engaged to conduct the training. The training will be conducted at a workshop.
		Facilitation for the fabricators	50	2	4	1	100,000	40,000,000	10,666.67													1 meeting per Hg using region, 50 fabricators will be trained and their transport facilitated. This will be a training of trainers.
		Refreshments	50	2	4	1	15,000	6,000,000	1,600.00													The participants will be served refreshments
		<b>Sub Total</b>						<b>48,800,000</b>	<b>13,013.33</b>													
							<b>Total</b>	<b>95,300,000</b>	<b>25,413.3</b>													

1.2.2	Supporting the use of mercury free and mercury capture technologies																				
1.2.2.1	Training ASGM Miners on mercury effluent and emissions containment tools and technologies																				
	Facilitator fees	1	2	4	1	350,000	2,800,000	746.67												A facilitator will be engaged to conduct the training. This training will take place at selected mine site in one of the ASGM districts	
	Facilitation for miners	50	2	4	1	100,000	40,000,000	10,666.67												1 meeting per Hg using region, 50 fabricators will be trained and their transport facilitated. This will be a training of trainers.	
	Refreshments	50	2	4	1	15,000	6,000,000	1,600.00												The participants will be served refreshments	
	<b>Sub Total</b>						<b>48,800,000</b>	<b>13,013.33</b>													
1.2.2.2	Integrating miner needs into Local and national government planning and budgeting programmes and projects																				
	Venue hire	1	1	1	10	500,000	5,000,000	1,333.33												A venue will be hired annually where the members of the NAP implementation team will meet representatives from the relevant local and national governments	
	Refreshments	50	1	1	10	50,000	25,000,000	6,666.67												Refreshments will be provided	
	Transport refund	50	1	1	10	200,000	100,000,000	26,666.67												The participants will be provided transport refund	
	<b>Sub Total</b>						<b>130,000,000</b>	<b>34,666.67</b>													
1.2.2.3	Carrying out formal and informal education in institutions and mining communities in regard to mercury effects on human health and environment and mitigating such effects																				

	Venue hire	1	1	1	1	500,000	500,000	133.33													A venue will be hired where the members of the NAP implementation team will meet representatives from MoES, the National Council for Higher Education to discuss ways in which this will be achieved.
	Refreshments	30	1	1	1	50,000	1,500,000	400.00													Refreshments will be provided
	Transport refund	30	1	1	1	200,000	6,000,000	1,600.00													The participants will be provided transport refund
	<b>Sub Total</b>						<b>8,000,000</b>	<b>2,133.33</b>													
1.2.2.4	Updating the curriculum of public vocational institutions to cover ASM/ASGM trainings on sustainable gold extraction, processing and fabrication of tools/equipment																			This will be undertaken together with activity 1.2.2.3	
	Reviewing existing curriculum and proposing amendments to incorporate trainings on sustainable mining						33,333,333.33	9,009.003													
	Drafting updated curriculum with trainings on sustainable mining						33,333,333.33	9,009.003													
	Engaging different stakeholders to approve the updated curriculum						33,333,333.33	9,009.003													
	<b>Sub Total</b>						<b>100,000,000</b>	<b>27027.01</b>													
						<b>Total</b>	<b>358,800,000</b>	<b>96,040.34</b>													
1.2.3	Establishing a safe waste disposal program in the ASGM sector																				
1.2.3.1	Training ASGMs in safe waste disposal methods, waste/effluent treatment and recycling methods and management of mercury containing tailings																				
	Facilitator fees						31,400,000	8,486.49													A facilitator will be engaged to conduct the training



			Facilitation for miners						20,000,000	5,405.41										1 meeting per Hg using region, 80 miners will be trained and their transport facilitated. This will be a training of trainers.	
			Refreshments						25,000,000	6,481.43										The participants will be served refreshments	
			<b>Sub Total</b>						<b>76,400,000</b>	<b>20,373.33</b>											
							<b>Total</b>		<b>76,400,000</b>	<b>20,373.33</b>											
2. To facilitate the formalization of the ASGM sector by 2024	2.1 Steps to facilitate formalization or regulation of the ASGM sector (As required by point 1(c) of the Annex C of the Minamata Convention)	2.1.1	Developing a legal and regulatory framework that clearly defines ASGM operations and provides for the adequate monitoring of their activities																		
		2.1.1.1	Reviewing relevant laws/regulations to incorporate provisions of ASGM/ASM formalisation strategies																		
			Venue hire	1	2	1	1	500,000	1,000,000	267											A venue will be hired at which to hold the meeting where the relevant authorities will be engaged to review the laws and regulations
			Facilitator fees	1	2	1	1	350,000	700,000	187											A facilitator will be engaged
			Facilitation for participants	30	2	1	1	200,000	12,000,000	3,200											The participants transport and daily sustenance will be facilitated
			Refreshments	30	2	1	1	50,000	3,000,000	799											Refreshments will be provided
			<b>Sub Total</b>						<b>16,700,000</b>	<b>4,453</b>											
		2.1.1.2	Formulating ordinances and bye-laws to customise provisions of relevant environment and natural resources laws/regulations that govern ASGM activities/operations																		
			Facilitation for meetings	15	1	5	1	500,000	37,500,000	10,000											Transport refund and daily sustenance allowance for the different council meetings
			<b>Sub Total</b>						<b>37,500,000</b>	<b>10,000</b>											
2.1.1.3	Developing monitoring guidelines for ASM/ASGM activities																				

	Consultant's fees	1	1	1	1	2,250,000	2,250,000	600													These monitoring guidelines will be developed by a consultant or NEMA officer
2.1.1.4	Reviewing and improving the efficiency of the licensing system to provide for categories of ASGM operations and ascertaining viability of dormant mineral licenses																				
	Venue hire	1	2	1	1	500,000	1,000,000	267													A venue will be hired at which to hold a meeting between the NAP working group, MEMD, DGSM and other stakeholders
	Facilitator fees	1	2	1	1	350,000	700,000	187													A facilitator will be engaged
	Facilitation for participants	50	2	1	1	200,000	20,000,000	5,333													The participants transport and daily sustenance will be facilitated
	Refreshments	50	2	1	1	50,000	5,000,000	1,333													Refreshments will be provided
	<b>Sub Total</b>						<b>26,700,000</b>	<b>7,120</b>													
						<b>Total</b>	<b>83,150,000</b>	<b>22173</b>													
2.1.2	Building the capacity of ASGMs and extension staff to manage the ASGM sector																				
2.1.2.1	Carrying out research on best ASGM practices and technologies in ASGM sector																				
	Consultant's fees	1	60	1	1	700,000	42,000,000	11,200.00													A consultant will be engaged to undertake the benchmarking study over 60 working days
	Publishing of report	500	1	1	1	30,000	15,000,000	4,000.00													The report will be published for dissemination
	<b>Sub Total</b>						<b>57,000,000</b>	<b>15,200.00</b>													
2.1.2.2	Carrying out Inspectors and ASG miner capacity needs assessment in regard to managing the ASGM sector																				

	Consultant's fees	1	60	1	1	700,000	42,000,000	11,200.00													A consultant will be engaged to visit the relevant institutions and mine sites in order to undertake this assessment
	Publishing of report	500	1	1	1	30,000	15,000,000	4,000.00													The report will be published for dissemination
	<b>Sub Total</b>						<b>57,000,000</b>	<b>15,200.00</b>													
2.1.2.3	Training of ASGM Trainers and youth miners on best ASGM practices and technologies																				
	Facilitator fees	1	2	8	1	350,000	5,600,000	1,493.33													A facilitator will be engaged to conduct the training
	Venue hire	1	2	8	1	200,000	3,200,000	853.33													A venue where the training will take place will be hired in one of the mining districts
	Facilitation for miners	80	2	8	1	100,000	128,000,000	34,133.33													2 meetings per Hg using region, 80 miners will be trained and their transport facilitated. This will be a training of trainers.
	Refreshments	80	2	8	1	15,000	19,200,000	5,120.00													The participants will be served refreshments
	<b>Sub Total</b>						<b>156,000,000</b>	<b>41,600.00</b>													
2.1.2.4	Training of Inspectors on ASGM activity monitoring, ASGM protocols, standards and regulations																				
	Venue hire	1	2	6	2	500,000	12,000,000	3,200													A venue will be hired where the meeting will be held. The training will be held centrally in Kampala but also in the 5 ASGM regions.
	Facilitator fees	1	2	6	2	350,000	8,400,000	2,240													A facilitator will be engaged

	Facilitation for officials	50	2	6	2	200,000	240,000,000	64,000												The officers will be facilitated both transport and daily sustenance
	Refreshments	50	2	6	2	50,000	60,000,000	16,000												Refreshments will be provided
	Documentation						8,400,000	2,240												
	<b>Sub Total</b>						<b>328,800,000</b>	<b>87,680</b>												
2.1.2.5	Developing mobile applications for cell phones to enhance information sharing among miners and between miners and Inspectors/MDAs and private sector																			
	Developers fees	1	1	1	1	68,000,000	68,000,000	18,133												This is currently being undertaken by DGSM and a consultant to undertake the task has already been engaged
	Maintenance fees	1	1	1	11	500,000	5,500,000	1,467												
	<b>Sub Total</b>						<b>73,500,000</b>	<b>19,600</b>												
2.1.2.6	Train responsible officers in management of mercury																			
	Venue hire	1	2	1	2	500,000	2,000,000	533												A venue will be hired where the meeting will be held. The training will be conducted after 5 years to cater for turnover.
	Facilitator fees	1	2	1	2	350,000	1,400,000	373												A facilitator will be engaged
	Facilitation for officials	60	2	1	2	200,000	48,000,000	12,800												The officers will be facilitated both transport and daily sustenance
	Refreshments	60	2	1	2	50,000	12,000,000	3,200												Refreshments will be provided
	Documentaion						1,400,000	374												
	<b>Sub Total</b>						<b>64,800,000</b>	<b>17,280</b>												
						<b>Total</b>	<b>737,100,000</b>	<b>196,560.00</b>												
2.1.3	Forming, strengthening and defining ASGM Associations, companies and cooperatives																			
2.1.3.1	Training ASGMs on rules and procedures for forming associations, cooperatives and companies																			

	Venue hire	1	1	5	1	500,000	2,500,000	667												A venue will be hired where the meeting will be held. 1 meeting will be held per region targeting mine site leaders.
	Facilitator fees	1	1	5	1	350,000	1,750,000	467												A facilitator will be engaged
	Facilitation for miners	100	10	5	1	90,000	45,000,000	12,162												The miners will be facilitated both transport and daily sustenance
	Refreshments	100	1	5	1	6,300	3,150,000	677												Refreshments will be provided
	<b>Sub Total</b>						<b>129,250,000</b>	<b>34,467</b>												
2.1.3.2	<b>Registering of ASGM associations, cooperatives, companies</b>																			
	Registration fees	150	1	1	1	50,000	7,500,000	2,000												150 registrations will be facilitated to register their associations at their respective district local governments
	<b>Sub Total</b>						<b>7,500,000</b>	<b>2,000</b>												
2.1.3.3	<b>Establishing a national ASGM umbrella association or network</b>																			
	Venue hire	1	1	1	1	500,000	500,000	133												A venue will be hired to hold a meeting where the leaders will be voted
	Facilitator fees	1	1	1	1	700,000	700,000	187												The meeting will be facilitated by officers from DGSM and NEMA
	Facilitation for miners	100	1	1	1	100,000	10,000,000	2,667												The miners transport will be facilitated
	Refreshments	100	1	1	1	50,000	5,000,000	1,333												Refreshments will be provided
	Registration fees for the association	1	1	1	1	100,000	100,000	27												
	<b>Sub Total</b>						<b>16,300,000</b>	<b>4,347</b>												
	<b>Total</b>						<b>76,200,000</b>	<b>20,320</b>												

2.1.4	Facilitating miners to access financial credit																		
2.1.4.1	Reviewing financial regulations to provide for ASGM associations, cooperatives and companies access to credit schemes																		
	Venue hire	1	1	4	1	500,000	2,000,000	533											A venue will be hired where meetings of officers from the responsible authorities will take place to discuss the review of financial regulations
	Facilitation for officers	20	1	4	1	200,000	16,000,000	4,267											The participants will be facilitated transport refund and daily sustenance
	Refreshments	20	1	4	1	50,000	4,000,000	1,067											Refreshments will be provided
	<b>Sub Total</b>						<b>22,000,000</b>	<b>5,867</b>											
2.1.4.2	Holding engagements between ASGMs and financial institutions																		
	Venue hire	1	1	5	1	500,000	2,500,000	667											A venue will be hired where the meeting will be held. The meeting will be held regionally and include different association leaders and financial institutions
	Facilitator fees	1	1	5	1	700,000	3,500,000	933											A facilitator will be engaged
	Facilitation for participants	45	1	5	1	100,000	22,500,000	6,000											The participants will be facilitated transport refund and daily sustenance
	Refreshments	45	1	5	1	50,000	11,250,000	3,133											Refreshments will be provided
	Documentation						39,750,000	10,467											
	<b>Sub Total</b>						<b>79,500,000</b>	<b>21,200</b>											
						<b>Total</b>	<b>101,500,000</b>	<b>27,067</b>											
2.1.5	Geo-prospecting and zoning of ASGM mining areas																		

2.1.5.1	Collecting geological data and gazetting areas for ASGM operations							7,000,000	1,867													Currently being undertaken by DGSM which is collecting geodata and will be gazetting ASM areas in 2020.
	Subtotal							7,000,000	1,867													
2.1.5.2	Cancellation of dormant Licenses																					This will be undertaken by the DGSM
	Review meetings						500,000	135.13														
	Inspections						2,000,000	540.54														
	Public hearing						2,000,000	540.54														
	Court processes						500,000	135.13														
	Subtotal						5,000,000	1351.34														
2.1.6	Undertake a national biometric registration and mapping of all ASGM value chain key players																					
2.1.6.1	Carrying out a baseline survey of ASG households, actors along the ASGM value chain and location of ASGM operations																					
	Consultant's fees	1	60	1	1	700,000	42,000,000	11,200.00													A consultant will be engaged to undertake the benchmarking study over 60 working days	
	Publishing of survey report	500	1	1	1	30,000	15,000,000	4,000.00													The report will be published for dissemination	
	Sub Total						57,000,000	15,200.00														
2.1.6.2	Undertaking the biometric registration of ASGMs							40,000,000	10,667													This activity was launched in March, 2019 to commence in November 2019 and end by June 2020. It is being undertaken by DGSM which is currently developing the software to register the miners.
	Sub Total						40,000,000	10,667														
2.1.6.3	Benchmarking of best practice in the formation of ASGM associations, companies and cooperatives																					

			Consultant's fees	1	20	1	1	700,000	14,000,000	3,733.33											A consultant will be engaged to undertake the benchmarking study over 30 working days		
			Publishing of survey report	500	1	1	1	30,000	15,000,000	4,000.00											The report will be published for dissemination		
			<b>Sub Total</b>						<b>29,000,000</b>	<b>7,733.33</b>													
		2.1.6.4	Establishing gazetted buying centers for gold																				
				5	1	1	1	3,000,000,000	15,000,000,000	4,000,000.00											This will involve feasibility studies, design, and purchase of equipment, training and construction. The centers will be established in each of the gold mining districts		
			<b>Sub Total</b>						<b>15,000,000,000</b>	<b>4,000,000.00</b>													
		<b>Sub-Total</b>							<b>16,158,250,000</b>	<b>4,308,867</b>													
3. To strengthen stakeholder engagement in the implementation of the NAP	3.1 Strategies for involving stakeholders in the implementation and continuing development of the plan (As required by point 1(g) of the Annex C of the Minamata Convention)	3.1.1	Establishing a Multi-stakeholders' Working Group Responsible for the implementation of the NAP																				
		3.1.1.1	Undertaking the mapping of national stakeholders to form a National Action Plan implementation working group																				
			Carry out a mapping study	1	20	1	1	500,000	10,000,000	2,667												A consultant will be engage to undertake this mapping study	
			<b>Sub Total</b>						<b>10,000,000</b>	<b>2,667</b>													
		3.1.1.1.1	Inception meeting																			An inception meeting will be held to discuss the methodology to be used in undertaking the study	
			Venue Hire	1	1	1	1	300,000	300,000	80													A venue will be hired
			Facilitation for participants	45	1	1	1	100,000	4,500,000	1,200													The participants will be give transport refund
			Refreshments	45	1	1	1	50,000	2,250,000	600													Refreshments will be provided
	<b>Sub Total</b>						<b>7,050,000</b>	<b>1,880</b>															



	3.1.1.1.2	Consultative meeting																																					A meeting will be held to consult the country working group on the draft study													
		Venue Hire	1	1	1	1	300,000	300,000	80																												A venue will be hired															
		Facilitation for participants	45	1	1	1	100,000	4,500,000	1,200																													The participants will be give transport refund														
		Refreshments	45	1	1	1	50,000	2,250,000	600																													Refreshments will be provided														
		<b>Sub Total</b>						<b>7,050,000</b>	<b>1,880</b>																																											
	3.1.1.1.3	Validation meeting																																				A validation meeting will be held														
		Venue Hire	1	2	1	1	300,000	600,000	160																													A venue will be hired														
		Facilitation for participants	45	2	1	1	100,000	9,000,000	2,400																													The participants will be give transport refund														
		Refreshments	45	2	1	1	50,000	4,500,000	1,200																													Refreshments will be provided														
		<b>Sub Total</b>						<b>14,100,000</b>	<b>3,760</b>																																											
	3.1.1.2	Defining the post National Action Plan implementation working group terms of references, their interests and potential contributions in reviewing and implementing the NAP																																																	This will be undertaken by NEMA	
	3.1.1.3	Establishing and updating of a national database of ASGM stakeholders (inclusive of regional stakeholders)																																																		This can be linked to the MEMD initiative of the biometric registration of ASMs, Gold miners already registered will be retrieved from the database leaving the NAP implementation to identify other stakeholders
		Development a data base	1	30	1	1	300,000	9,000,000	2,400																													A database will be developed to house this information, this will be the developers fee														
		Annual Maintenance Fee	1	1	1	10	300,000	3,000,000	800																													These will be annual maintenance fees														
		<b>Sub Total</b>						<b>12,000,000</b>	<b>3,200</b>																																											



	Facilitation for participants	50	1	1	10	100,000	50,000,000	13,333														The participants transport will be facilitated
	Refreshments	50	1	1	10	50,000	25,000,000	6,667														Refreshments will be provided
	<b>Sub Total</b>						<b>77,000,000</b>	<b>20,533</b>														
3.1.1.5.2	National stakeholders meeting																					
	Venue Hire	1	1	1	10	500,000	5,000,000	1,333														Once a year, a national stakeholders meeting will be conducted and venue hired at which to hold it.
	Facilitation for participants	80	1	1	10	100,000	80,000,000	21,333														The participants transport will be facilitated
	Refreshments	80	1	1	10	50,000	40,000,000	10,667														Refreshments will be provided
	<b>Sub Total</b>						<b>125,000,000</b>	<b>33,333.33</b>														
3.1.2	Enhancing information sharing among key stakeholders																					
3.1.2.1	Holding periodic stakeholder review meetings to review the NAP																					
	Venue hire	1	1	4	10	500,000	20,000,000	5,333														A venue will be hired to hold quarterly meetings where NAP working group and other relevant stakeholders will meet
	Facilitation for participants	60	1	4	10	200,000	480,000,000	128,000														The miners transport will be facilitated
	Refreshments	60	1	4	10	50,000	120,000,000	32,000														Refreshments will be provided
	<b>Sub Total</b>						<b>620,000,000</b>	<b>165,333</b>														
3.1.2.2	Holding community barazzas to share information on strategies to reduce mercury emissions and releases and obtain feedback																					



	Facilitation for meetings	30	1	5	1	100,000	15,000,000	4,000													The participants will be facilitated with transport refund
	Venue hire	1	1	5	1	500,000	2,500,000	667													A venue at which the trainings will be held will be hired. The meetings will take place in each gold mining region
	Facilitator fees	1	1	5	1	350,000	1,750,000	467													A facilitator will be engaged
	Refreshments	30	1	5	1	20,000	3,000,000	800													Refreshments will be provided
	<b>Sub Total</b>						<b>22,250,000</b>	<b>5,933</b>													
4.1.1.5	Undertaking studies to assess mercury pathways/trade routes to effectively roll out strategies that manage mercury trade																				
	Consultancy fees	1	60	1	1	700,000	42,000,000	11,200													A consultant will be engaged to undertake an assessment of mercury pathways and trade routes
	Publishing of the report	100	1	1	1	30,000	3,000,000	800													The assessment report will be published and disseminated to the responsible authorities
	<b>Sub Total</b>						<b>45,000,000</b>	<b>12,000</b>													
4.1.1.6	Training police and judiciary on prosecution of victims engaging in illegal mercury trade																				
	Facilitation for meetings	50	1	2	1	200,000	20,000,000	5,333													The participants will be facilitated with transport refund
	Venue hire	1	1	2	1	500,000	1,000,000	267													A venue at which the trainings will be held will be hired. The trainings will take place twice in the first year of implementation and will be held at the national level.

	Facilitator fees	1	1	2	1	350,000	700,000	187													A facilitator will be engaged to conduct the training
	Refreshments	50	1	2	1	20,000	2,000,000	533													Refreshments will be provided
	<b>Sub Total</b>						<b>23,700,000</b>	<b>6,320</b>													
4.1.2	Strengthening institutional capacity in detecting and analyzing samples for mercury																				
4.1.2.1	Procuring and equipping inspectors with tools for detecting mercury on site																				
	Mercury detection tools	50	1	1	2	800,000	80,000,000	21,333													Mercury detection tools will be supplied to different inspectors. These are mobile hand held detection tools that can be transport to the field. The tools will be replaced after three years to cater for wear and tear.
	Training in use of tools and record taking	80	1	1	2	100,000	16,000,000	4,267													Officers from the institutions will be trained on how to use and calibrate the detection tools. They shall be given a transport fee.
	Refreshments	80	1	1	2	50,000	8,000,000	2,133													Refreshments will be provided
	Facilitator fees	1	1	1	2	350,000	700,000	187													A facilitator will be engaged to undertake this training
	<b>Sub Total</b>						<b>104,700,000</b>	<b>27,920</b>													











	Food and refreshments	60	1	4	1	60,000	14,400,000	3,840												Refreshments will be provided
	Facilitation for participants	60	1	4	1	100,000	24,000,000	6,400												60 participants for each of the four regions and one in central
	<b>Sub Total</b>						<b>39,400,000</b>	<b>10,507</b>												
5.1.1.4.2	<b>National meetings</b>																			
	Venue hire	1	1	1	1	250,000	250,000	67												A venue at which the meeting will be held will be hired
	Food and refreshments	100	1	1	1	60,000	6,000,000	1,600												Refreshments will be provided
	Facilitation for participants	100	1	1	1	120,000	12,000,000	3,200												A daily sustenance fee will be given to the participants
	Transport refund	100	1	1	1	50,000	5,000,000	1,333												The meeting participants will be facilitated with transport refund
	<b>Sub Total</b>						<b>23,250,000</b>	<b>6,200</b>												
5.1.1.4.3	<b>International meetings</b>																			
	Return Air ticket	2	1	1	3	7,500,000	45,000,000	12,000												The disseminator will be provided a return air ticket
	Travel Abroad Allowance	2	6	1	3	1,350,000	48,600,000	12,960												Daily Allowance will be provided
	<b>Sub Total</b>						<b>93,600,000</b>	<b>24,960</b>												
5.1.2	Building the capacity of health care workers, VHTs on the health effects of mercury, diagnosis and treatment of the same and equipping health facilities including health Centre IIs & IIIs with diagnostic tools																			
5.1.2.1	Training health care workers and Village Health Teams (VHTs) on the effects of mercury and how to diagnose and treat mercury related complications at the earliest time possible																			
5.1.2.1.1	Training of Health workers																			These will be Trainings of Trainers
	Venue hire	1	1	5	3	200,000	3,000,000	800												A venue at which the meeting will be held will be hired to accommodate 60 participants per region.

	Facilitator's fees	1	1	5	3	350,000	5,250,000	1,400											A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	60	1	5	3	150,000	135,000,000	36,000											A daily sustenance fee will be given to the participants
	Transport refund	60	1	5	3	70,000	63,000,000	16,800											The meeting participants will be facilitated with transport refund
	Food and refreshments	60	1	5	3	60,000	54,000,000	14,400											Refreshments will be provided
	<b>Sub Total</b>						<b>260,250,000</b>	<b>69,400</b>											
5.1.2.1.2	Training of VHTs																		
	Venue hire	1	1	4	3	200,000	2,400,000	640											A venue at which the meeting will be held will be hired to accommodate 100 participants per region.
	Facilitator's fees	1	1	4	3	350,000	4,200,000	1,120											A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	100	1	4	3	150,000	180,000,000	48,000											A daily sustenance fee will be given to the participants
	Transport refund	100	1	4	3	70,000	84,000,000	22,400											The meeting participants will be facilitated with transport refund
	Food and refreshments	100	1	4	3	60,000	72,000,000	19,200											Refreshments will be provided
	<b>Sub Total</b>						<b>342,600,000</b>												
5.1.2.2	Drafting Standard Operating Procedures (SOPs) and guidelines																		

	Consultant's Fees	1	1	1	1	2,250,000	2,250,000	600													A consultant (or MoH personnel) will be engaged to draft the SOPs
							2,250,000	600													
5.1.2.3	Equipping health workers /health centers with diagnostic tools and equipment as well as medicine (chelators)																				
	Provide Presumptive Test Kits and medicine to Health Centre lvs	17	1	1	1	18,750,000	318,750,000	85,000													Each kit is assumed to cost \$5,000 and each of the mining districts will be provided one.
	<b>Sub Total</b>						<b>318,750,000</b>	<b>85,000</b>													
5.1.3	Raising awareness of ASGMs and surrounding communities on the dangers of mercury use in gold extraction and alternative including pollution mitigation measures																				
5.1.3.1	Developing and disseminating customized / popular versions of IEC materials																				
	Development of IEC materials	1	10	1	3	2,250,000	67,500,000	18,000													These will be customized in various languages
	Printing	50,000	1	1	3	2,000	300,000,000	80,000													They will be printed and disseminated very three years
	Dissemination	10	1	1	3	100,000	3,000,000	800													These will be disseminated during the various community engagement activities.
	<b>Sub Total</b>						<b>370,500,000</b>	<b>98,800</b>													
5.1.3.2	Disseminating of information through use of community change agents																				
	Facilitation for community champions	90	1	12	3	100,000	324,000,000	86,400													The community champions will be given a monthly facilitation fee to enable them spread the message.
	<b>Sub Total</b>						<b>324,000,000</b>	<b>86,400</b>													
5.1.3.3	Holding community meetings/barazzas, dialogues and outreach																				
	Facilitator's fees	2	3	4	3	350,000	25,200,000	6,720													A facilitator will be engaged.
	Facilitator Transport	2	3	4	3	70,000	5,040,000	1,344													The participants will be given transport

	Food and refreshments	120	3	4	3	10,000	43,200,000	11,520											30 participants for each of the 4 regions every quarter will be provided refreshments.
	Production of IEC material	—	—	—	—	—	—	—											These will be IEC materials produced under activity 5.1.3.1 and will be disseminated at the different activities
	<b>Sub Total</b>						<b>73,440,000</b>	<b>19,584</b>											
5.1.3.4	<b>Developing and producing spot messages and jingles</b>																		
	Development of the messages and jingles	2	10	1	1	350,000	7,000,000	1,866.67											
	Publishing on radio stations	1	365	6	2	50,000	219,000,000	58,400.00											
	<b>Sub Total</b>						<b>226,000,000</b>	<b>60,267</b>											
5.1.3.5	<b>Training of ASGMs on early detection of mercury poisoning/pollution/contamination and response mechanism</b>																		
	Venue hire	1	1	4	3	200,000	2,400,000	640											A venue at which the meeting will be held will be hired to accommodate 100 participants per region.
	Facilitator's fees	1	1	4	3	350,000	4,200,000	1,120											A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	100	1	4	3	100,000	120,000,000	32,000											A daily sustenance fee will be given to the participants
	Food and refreshments	100	1	4	3	60,000	72,000,000	19,200											Refreshments will be provided
	<b>Sub Total</b>						<b>198,600,000</b>	<b>52,960</b>											



	Food and refreshments	100	1	4	3	50,000	60,000,000	16,000												Refreshments will be provided
	<b>Sub Total</b>						<b>186,600,000</b>	<b>49,760</b>												
5.1.5.2	Training ASGMs on use of PPEs during gold extraction and processing																			
	Venue hire	1	1	5	3	200,000	3,000,000	800												A venue at which the meeting will be held will be hired to accommodate 100 participants per ASGM region.
	Facilitator's fees	1	1	5	3	350,000	5,250,000	1,400												A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	100	1	5	3	100,000	150,000,000	40,000												A daily sustenance fee will be given to the participants
	Food and refreshments	100	1	5	3	50,000	75,000,000	20,000												Refreshments will be provided
	<b>Sub Total</b>						<b>233,250,000</b>	<b>62,200</b>												
5.1.5.3	Demonstrating to ASGM mitigation measures for dust pollution																			
	Venue hire	1	1	5	3	200,000	3,000,000	800												A venue at which the meeting will be held will be hired to accommodate 100 participants per ASGM region.
	Facilitator's fees	1	1	5	3	350,000	5,250,000	1,400												A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	100	1	5	3	100,000	150,000,000	40,000												A daily sustenance fee will be given to the participants
	Food and refreshments	100	1	5	3	50,000	75,000,000	20,000												Refreshments will be provided



	<b>Sub Total</b>						233,250,000	62,200											
5.1.5.4	Training miners on containment of mercury effluent																		
	Venue hire	1	1	4	3	200,000	2,400,000	640											A venue at which the meeting will be held will be hired to accommodate 100 participants per Hg using region.
	Facilitator's fees	1	1	4	3	350,000	4,200,000	1,120											A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	100	1	4	3	100,000	120,000,000	32,000											A daily sustenance fee will be given to the participants
	Food and refreshments	100	1	4	3	50,000	60,000,000	16,000											Refreshments will be provided
	<b>Sub Total</b>						186,600,000	49,760											
5.1.5.5	Demonstrating to ASGMs mercury-free processing methods including minimal mercury use technologies for gold processing																		
	Venue hire	1	1	4	3	200,000	2,400,000	640											A venue at which the meeting will be held will be hired to accommodate 100 participants per Hg using region.
	Facilitator's fees	1	1	4	3	350,000	4,200,000	1,120											A facilitator will undertake the trainings. The trainings will be undertaken every 3 years to cater for turnover.
	Facilitation for participants	100	1	4	3	100,000	120,000,000	32,000											A daily sustenance fee will be given to the participants
	Food and refreshments	100	1	4	3	50,000	60,000,000	16,000											Refreshments will be provided
	<b>Sub Total</b>						186,600,000	49,760											



			Facilitation for officers	34	2	4	10	120,000	326,400,000	87,040												Inspection will be carried out by the Health Officers and Labour Officer and the districts level. They will receive bi-quarterly facilitation to undertake the monitoring and inspection exercises.	
			Fuel	300	2	4	10	4,200	100,800,000	26,880												The officers will be provided fuel to enable their movements.	
			<b>Sub Total</b>						<b>427,200,000</b>	<b>113,920</b>													
			<b>Sub Total</b>						<b>4,790,690,000</b>	<b>1,277,517.33</b>													
6. To prevent exposure of vulnerable populations to mercury used in the ASGM sector by 2024	6.1 Strategies to prevent the exposure of vulnerable populations, particularly children, women of child-bearing age, pregnant mothers and nursing mothers to mercury used in ASGM (As required by point 1(i) of the Annex C of the Minamata Convention)	6.1.1	Undertaking community outreach programmes to emphasize the risks vulnerable populations face in and around mine sites																				
		6.1.1.1	Carrying out sensitize campaigns, dialogues and meetings with vulnerable populations																				
			Radio talk Shows	1	1	4	3	1,500,000	18,000,000	4,800													Quarterly radio talk shows will be held for the first three years
			Spot Messages	1	1	365	1	300,000	109,500,000	29,200													Radio spot messages will be played on radio for one year
			Drama and music	1	2	4	3	500,000	12,000,000	3,200													Music and drama events will be held every quarter in regionally
			Community dialogues	50	1	4	3	500,000	300,000,000	80,000													The 17 districts with an average of 4 mining sub counties in each
			IEC Materials	50,000	1	1	3	2,000	300,000,000	80,000													IEC materials will be developed and published
			Policy briefs	4	1	1	1	350,000	1,400,000	373													A consultant will be engaged to develop policy briefs on mercury use and its dangers
			<b>Sub Total</b>						<b>740,900,000</b>	<b>197,573</b>													
			6.1.1.2	Developing an informative documentary on the dangers of mercury to human health and environment and screening the documentary in ASGM camps, communities and national televisions																			

	Consultant's Fees	1	30	1	1	1,000,000	30,000,000	8,000											This fee includes development, editing and production of the documentary
	<b>Sub Total</b>						<b>30,000,000</b>	<b>8,000</b>											
6.1.1.3	Developing the capacities of ASGMs on mining practices that will prevent exposure of vulnerable populations to mercury																		
	Venue hire	1	1	4	2	200,000	1,600,000	427											A venue at which the meeting will be held will be hired to accommodate 100 participants per region.
	Facilitator's fees	1	1	4	2	350,000	2,800,000	747											A facilitator will undertake the trainings. The trainings will be undertaken again after 3 years to cater for turnover.
	Facilitation for participants	100	1	4	2	100,000	80,000,000	21,333											A daily sustenance fee will be given to the participants
	Food and refreshments	100	1	4	2	50,000	40,000,000	10,667											Refreshments will be provided
	<b>Sub Total</b>						<b>124,400,000</b>	<b>33,173</b>											
6.1.1.4	Facilitating ASGM local exchange visits in regard to knowledge transfer and practices related to mercury free technology and safe practices																		
	Daily Sustenance Fee	20	3	4	1	130,000	31,200,000	8,320											The participants will be provided a daily sustenance fee for the days of the exchange visit
	Facilitators fees	2	3	4	1	350,000	8,400,000	2,240											2 facilitators will conduct the exchange visit
	Vehicle hire	1	3	4	1	400,000	4,800,000	1,280											A vehicle (van) will be hired to transport the participants
	Fuel	300	1	4	1	4,200	5,040,000	1,344											The vehicle will be fueled
	<b>Sub Total</b>						<b>49,440,000</b>	<b>13,184</b>											

6.1.2	Introducing alternative income generating activities to vulnerable groups to reduce gold mining pressure where mercury free gold processing methods may be costly to adopt																				
6.1.2.1	Training women miners youth and elderly persons on alternative income generating activities, entrepreneurship skills , business, record keeping and financial management																				
	Venue hire	68	1	4	3	250,000	204,000,000	54,400													A venue at which the meeting will be held will be hired
	Facilitator's fees	1	1	4	3	350,000	4,200,000	1,120													A facilitator will undertake the trainings. The trainings will be undertaken every quarter for the first 2 years and then in the 4th year of implementation
	Vehicle hire	1	3	4	3	250,000	9,000,000	2,400													A vehicle will be fuel to enable the facilitator's movements
	Fuel for vehicle	150	1	4	3	4,200	7,560,000	2,016													A daily sustenance fee will be given to the participants
	Facilitation for participants	60	1	4	3	100,000	72,000,000	19,200													The meeting participants will be facilitated with transport refund
	Food and refreshments	60	1	4	3	60,000	43,200,000	11,520													
	<b>Sub Total</b>						<b>339,960,000</b>	<b>90,656</b>													
6.1.2.2	Supporting vulnerable groups to access funds and other support from government and development partners to engage in alternative, healthier and economic livelihoods																				
	Venue hire	1	1	1	1	500,000	500,000	133													A venue will be hired where leaders from vulnerable groups engage with representatives from government and development partners to seek ways in which they can access funds

	Facilitators fees	1	1	1	1	350,000	350,000	93													A facilitator will moderate the meeting
	Daily Sustenance allowance	50	1	1	1	100,000	5,000,000	1,333													The participants will be provided a daily sustenance fee
	Refreshments	50	1	1	1	40,000	2,000,000	534													A vehicle (van) will be hired to transport the participants
	<b>Sub Total</b>						<b>7,850,000</b>	<b>2,093</b>													
6.1.2.3	Facilitating vulnerable groups to form groups, associations or cooperatives and SACCOs																				
	Registration fees	25	1	1	1	50,000	1,250,000	333													Five associations from each region will be facilitated to register at the district local government
	<b>Sub Total</b>						<b>1,250,000</b>	<b>333</b>													
6.1.2.4	Engaging Private Sector Foundation (PSF) and other business incubation initiatives to train the youth, elderly and women in alternative SMEs																				
	Facilitation for representative from the national implementation group to meet with the different institutions	2	20	1	1	130,000	5,200,000	1,387													
	<b>Sub Total</b>						<b>5,200,000</b>	<b>1,387</b>													
6.1.2.5	Developing a curriculum at all levels of higher education including secondary, tertiary and vocational institutions to train students, youth and elderly persons and certificate courses to equip students with OSHE skills and safer mining practices among others																				
	Consultants fee	1	60	1	1	350,000	21,000,000	5,600													A consultant of officer from the National Curriculum Development Centre will carry out this activity in conjunction with technical assistance from the Ministry of Education and Sports
	<b>Sub Total</b>						<b>21,000,000</b>	<b>5,600</b>													
6.1.3	Formulating policies protecting vulnerable populations including reducing foetal and infant exposure to mercury contamination, from mercury emissions and releases																				



	Facilitation for DGSM staff	5	1	12	10	130,000	78,000,000	20,800											Mines will be inspected by the 5 regional inspectors using the mines inspection toolkit under the ICGLR strategy to ensure that the mine site owners and mineral exporters are complying with the standards.
	Fuel	1500	1	12	10	4,200	756,000,000	201,600											Fuel will be provided for the DGSM vehicles
	<b>Sub Total</b>						<b>834,000,000</b>	<b>222,400</b>											
6.1.4.4	Carrying out regular monitoring to ensure that child labor laws are adhered to by ASGM																		
6.1.4.5	Committing parents in mining camps to take their children to school including taking advantage of UPE and USE programmes																		
	Facilitation for officers	2	1	85	2	130,000	44,200,000	11,786.67											Officers will be facilitated to go to mine sites and talk to miners about taking their children to school
	Fuel for vehicle	80	1	85	2	4,200	57,120,000	15,232.00											They will be provided fuel to enable their movements. An average of 80ltrs to each site has been used.
	<b>Sub Total</b>						<b>101,320,000</b>	<b>27,018.67</b>											
6.1.4.6	Supporting the construction of schools closer to designated mining camps and areas																		
	Contributions towards the construction of one school in each mining region	5	1	1	1	50,000,000	250,000,000	66,666.67											The NAP will contribute to the construction of 5 schools near busy mine sites, one in each mining region.
	<b>Sub Total</b>						<b>250,000,000</b>	<b>66,666.67</b>											
6.1.5	Developing accurate perceptions of miners and national stakeholders on the levels of mercury contamination in environmental samples																		
6.1.5.1	Assessing levels of mercury contamination in soil, water, land, fish, breast milk for ASGM and infants whose mothers work in gold mines																		



			Facilitation for collection of samples	6	30	1	1	130,000	23,400,000	6,685.71																													A team of 6 including health professionals, laboratory technicians and a sociologist will be dispatched to the field to collect sample. A daily sustenance fee will be provided.		
			Vehicle hire	1	30	1	1	250,000	7,500,000	2,142.86																												A vehicle will be hired			
			Fuel for vehicle	200	30	1	1	4,200	25,200,000	7,200.00																												Fuel shall be provided			
			Publication of reports	500	1	1	1	30,000	15,000,000	4,285.71																															
			<b>Sub Total</b>						<b>71,100,000</b>	<b>20,314.29</b>																															
	<b>Sub Total</b>								<b>3,102,520,000</b>	<b>827,338.67</b>																															
7. To develop market based mechanisms for the promotion of reduced mercury use by 2024	7.1 Strategies for instituting Market based mechanisms for promoting reduced mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)	7.1.1	Establishment of incentives and disincentives for the use of alternative methods to mercury in ASGM operations																																						
		7.1.1.1	Committing finance institutions to extend credit facilities to ASG miners with evidence of zero mercury use in gold processing																																						
			Facilitator's fees	1	3	1	1	350,000	1,050,000	280																													A facilitator will be engaged to moderate the meeting		
			Venue hire	1	3	1	1	300,000	900,000	240																														A venue will be hired where the meeting will be held	
			Facilitation for participants	80	3	1	1	200,000	48,000,000	12,800																														The participants will be facilitated with a daily sustenance fee and transport refund	
			Food and refreshments	80	3	1	1	50,000	12,000,000	3,200																														Refreshments will be provided	
			<b>Sub Total</b>						<b>61,950,000</b>	<b>16,520</b>																															
		7.1.1.2	Instituting disincentives on mercury importation and incentives on mercury free technologies and products																																						
			Facilitator's fees	1	1	1	1	350,000	350,000	93																															A facilitator will be engaged to moderate the meeting
			Venue hire	1	1	1	1	300,000	300,000	80																															A venue will be hired where the meeting will be held

	Facilitation for participants	30	1	1	1	200,000	6,000,000	1,600													The participants will be facilitated with a daily sustenance fee and transport refund
	Food and refreshments	30	1	1	1	50,000	1,500,000	400													Refreshments will be provided
	<b>Sub Total</b>						<b>8,150,000</b>	<b>2,173</b>													
7.1.1.3	Certifying gold mining and processing methods																				
	Training of ASGM stakeholders	100	1	1	5	70,000	35,000,000	9,333													This is being done under the regional certification mechanism in MEMD, however there is need for periodic training of stakeholders and publicizing of the mechanism needed
	Publicity	1	1	1	5	10,000,000	50,000,000	13,333													
	<b>Sub Total</b>						<b>85,000,000</b>	<b>22,667</b>													
7.1.2	Establishing market standards to determine mercury free gold																				
7.1.2.1	Monitoring and inspecting ASG mine sites and border points for mercury use and trade																				
	Facilitation for DGSM and Customs officers	20	2	1	10	130,000	52,000,000	13,867													Quarterly reports will be expected from each officer as the fee caters for monthly facilitation.
	Fuel for official vehicles	60	1	5	10	4200	12,600,000	3,360													
	<b>Sub Total</b>						<b>64,600,000</b>	<b>17,227</b>													
7.1.2.2	Enforcing OECD and ICGLR standards on gold mining and trade such as the implementation of the ICGLR ASM gold strategy and the Regional Certification Mechanism standards.																				
	Facilitation for officers	5	5	4	10	130,000	130,000,000	34,667													Quarterly monitoring to ensure that the standards are being implemented will be conducted by DGSM mines inspectors who will be facilitated
	Fuel	150	5	4	10	4,200	126,000,000	33,600													They shall be provided fuel





			Facilitator's fees	1	1	1	1	350,000	350,000	93																														A facilitator will be engaged to moderate the meeting			
			Facilitation for the participants	50	1	1	1	100,000	5,000,000	1,333																													The participants will be facilitated with a daily sustenance fee and transport refund				
			Food and refreshments	50	1	1	1	50,000	2,500,000	667																													Refreshments will be provided				
			<b>Sub Total</b>						<b>8,350,000</b>	<b>2,227</b>																																	
	<b>Sub-Total</b>								<b>542,750,000</b>	<b>144,733.33</b>																																	
8. To provide alternative and substitute gold extraction technologies in ASGM in order to eliminate mercury use in the sector by 2030	8.1 Strategies to provide alternative and substitute gold extraction technologies in ASGM in order to phase out and eventually eliminate mercury use (As suggested by point 2 of the Annex C of the Minamata Convention)	8.1.1	Supporting the adoption of mercury-free gold mining practices and technologies																																								
		8.1.1.1	Sensitizing miners on mercury free technologies, costs and benefits																																								
			Facilitation for officers	5	1	4	2	130,000	5,200,000	1,386.67																																	This activity will be carried out by DGSM, NEMA and different CSOs who will be facilitated
			Vehicle hire	1	3	4	2	250,000	6,000,000	1,600.00																																	A vehicle will be hired to ease movements
			Fuel for vehicle	150	1	4	2	4,200	5,040,000	1,344.00																																	The vehicle will be fueled
			Refreshments	80	1	4	2	25,000	16,000,000	4,266.67																																Refreshments for the sensitizations will be provided as the sensitizations will take place at the mine sites.	
			<b>Sub Total</b>						<b>32,240,000</b>	<b>8,597.33</b>																																	
		8.1.1.2	Constructing demonstration and piloting sites do demonstrate alternatives technologies and best practices in gold mining and processing in ASGM sector																																								
			Facilitator's Fees	6	5	2	2	350,000	42,000,000	11,200.00																																	One demonstration site will be set up in each region
			Fuel	100	5	2	2	4,200	8,400,000	2,240.00																																Institutional vehicles will be used, they will however be provided fuel to enable their movements	

			Equipment for set up	1	1	2	2	5,000,000	20,000,000	5,333.33													The officers shall also be provided a fee to purchase equipment for set up of the demonstration sites.	
			<b>Sub Total</b>						<b>70,400,000</b>	<b>18,773.33</b>														
		8.1.1.3	Training the judicial officers and law enforcement agencies on the dangers of mercury use in gold extraction and on the enforcement of laws against illegal mercury trade																					
			Facilitator's fees	1	1	1	1	350,000	350,000	93.33													A facilitator who will carry out the training will be engaged	
			Venue hire	1	1	1	1	500,000	500,000	133.33													A venue where the training will be held will be hired	
			Facilitation for participants	40	1	1	1	200,000	8,000,000	2,133.33													The participants will be facilitated	
			Food and refreshments	40	1	1	1	50,000	2,000,000	533.33													Refreshments will be provided	
			<b>Sub Total</b>						<b>10,850,000</b>	<b>2,893.33</b>														
		<b>Sub Total</b>							<b>113,490,000</b>	<b>30,264.00</b>														
9. To develop, sensitize and enforce occupational, safety and health standards in the ASGM sector by 2030	9.1 To facilitate OSH observance at ASGM sites	9.1.1	Enhancing the capacity of the OSH department at MGLSD to carry out its duties in ensuring proper practices in the ASGM sector																					
		9.1.1.1	Equipping the Department of OSH, NEMA, DGSM, UNBS with the tools to carry out standard/comprehensive inspections																					
			Mercury detection tools	30	1	2	2	800,000	96,000,000	25,600.00														Mobile hand held mercury detection tools will be provided to the OSH department
			<b>Sub Total</b>						<b>96,000,000</b>	<b>25,600.00</b>														
		9.1.1.2	Training district labor officers and other inspectors to monitor ASGM activities in ASGM districts																					
			Facilitator's Fees	1	2	1	3	350,000	2,100,000	560.00														This will be a central training in one of the regions for all the inspectors nationwide and a facilitator will be engaged to undertake the training.

	Venue hire	1	2	1	3	500,000	3,000,000	800.00												A training venue will be hired.
	Facilitation for participants	60	2	1	3	130,000	46,800,000	12,480.00												The participants shall receive a daily sustenance fee.
	Food and refreshments	60	2	1	3	60,000	21,600,000	5,760.00												Refreshments will be provided.
	Transport Refund	60	1	1	3	100,000	18,000,000	4,800.00												The participants shall receive a transport facilitation.
	<b>Sub Total</b>						<b>91,500,000</b>	<b>24,400.00</b>												
	9.1.2	Establishing OSH standards and practices at ASGM mine sites																		
	9.1.2.1	Set up of regional demonstration sites for OSH best practices in ASGM																		
	Facilitator's Fees	6	5	2	2	350,000	42,000,000	11,200.00												Demonstration sites will be set up in each region. This will be at the same demonstration sites as in activity 8.1.1.2
	Fuel	100	5	2	2	4,200	8,400,000	2,240.00												Institutional vehicles will be use, however fuel will be provided fuel to enable movements
	Equipment for set up	1	1	2	2	5,000,000	20,000,000	5,333.33												A fee to purchase equipment for set up of the demonstration sites shall be facilitated
	<b>Sub Total</b>						<b>70,400,000</b>	<b>18,773.33</b>												
	9.1.2.2	Updating/drafting guidelines for OSH implementation at ASM/ASGM sites and training mines inspectors on how to use the OSH Guidance tool kit																		
	Consultant's fees	1	1	1	1	2,250,000	2,250,000	600.00												A consultant (or official from MGLSD) will be engaged to draft the guidelines
	<b>Sub Total</b>						<b>2,250,000</b>	<b>600.00</b>												
	<b>Sub Total</b>						<b>260,150,000</b>	<b>69,373.33</b>												

10. To develop and enforce an ASGM environment management strategy by 2030	10.1 An environment management strategy for ASGM related operations	10.1.1	Facilitating ASGM's adherence to environmentally friendly mining practices including restorative measures																		
		10.1.1.1	Developing environmental management guidelines for ASGM operations and activities																		
			Consultant's fees	1	1	1	1	2,250,000	2,250,000	600											A consultant (or official from MWE) will be engaged to develop these guidelines.
			Sub Total						2,250,000	600											
		10.1.1.2	Training ASGMs, LGs, Health officers among others on existing environmentally friendly methods and best practices																		
			Trainer's Fees	1	2	4	3	350,000	8,400,000	2,240.00											These trainings will be carried out at a central mine site in each region and a trainer will be engaged to conduct them.
			Facilitation for participants	80	2	4	3	150,000	288,000,000	76,800.00											The participants shall receive a daily sustenance fee.
			Food and refreshments	80	2	4	3	60,000	115,200,000	30,720.00											Refreshments will be provided.
			Sub Total						411,600,000	109,760.00											
		10.1.1.3	Carrying out community awareness meetings on sustainable gold mining																		
			Radio spot messages	1	1	365	1	300,000	109,500,000	29,200											Radio spot messages will be played on radio for one year
			Drama and music	34	1	1	3	50,000	5,100,000	1,360											At two venues (either public school or community halls) in each mining district
			Community dialogues	40	1	4	3	20,000	9,600,000	2,560											Community dialogues will be held at public places and refreshments provided



	IEC Materials	30,000	1	1	1	2,000	60,000,000	16,000													IEC materials specific to environmental management will be developed and disseminated
	<b>Sub Total</b>						<b>184,200,000</b>	<b>49,120</b>													
10.1.1.4	Increasing monitoring frequency of ASGM operations																				
	Facilitation for officers	8	5	4	10	120,000	192,000,000	51,200													Quarterly monitoring will be done by the District Technical team (DN RO, DEO, RDC, DLO, CDO) who will be facilitated
	Drivers Allowance & Escorts	8	5	4	10	75,000	120,000,000	32,000													Their drivers will be facilitated for daily sustenance
	Fuel	150	5	4	10	4,200	126,000,000	33,600													They shall be provided fuel
	<b>Sub Total</b>						<b>438,000,000</b>	<b>116,800</b>													
10.1.1.5	Strengthening the capacity of key stakeholders including minerals police, environment police to monitor ASGM activities																				
	Venue hire	1	1	1	1	500,000	500,000	133.33													A venue will be hired
	Facilitators fee	1	1	1	1	700,000	700,000	186.67													This training will be carried out centrally and a facilitator engaged to conduct it.
	Transport refund for miners	50	1	1	1	20,000	1,000,000	266.66													The participants shall receive a transport facilitation.
	Refreshments	50	1	1	1	20,000	1,000,000	266.67													Refreshments will be provided.
	<b>Sub Total</b>						<b>3,200,000</b>	<b>853.33</b>													
10.1.1.6	Supporting ASG miners in restoring previously degraded abandoned sites																				

	Supply of tree seedling	20,000	1	5	5	2,000	1,000,000,000	266,667													The NAP implementation team will provide seedlings at ASGM sites and communities so as to encourage them to revegetate the degraded land
	<b>Sub Total</b>						<b>1,000,000,000</b>	<b>266,667</b>													
10.1.1.7	<b>Committing miners to environmental restoration and proper waste including rock waste disposal as a prerequisite to approval of a license application</b>																				
	Facilitation for DEOs	2	2	12	10	130,000	62,400,000	16,640													Monthly monitoring will be done by the DEO who will commit the miners to restoration and proper waste disposal. The DEOs will be facilitated
	Fuel	150	2	12	10	4,200	151,200,000	40,320													They shall be provided fuel
	<b>Sub Total</b>						<b>213,600,000</b>	<b>56,960</b>													
10.1.1.8	<b>Establishing demonstration sites at mercury free mine sites to demonstrate shafts and pit construction</b>																				
	Trainer's Fees	6	5	2	2	350,000	42,000,000	11,200.00													Demonstration sites will be set up in each region. This will be undertaken at the same demonstration sites as in activity 8.1.1.2 and 9.1.2.1
	Fuel	100	5	2	2	4,200	8,400,000	2,240.00													Institutional vehicles will use, however fuel will be provided fuel to enable movements
	Equipment for set up	1	1	2	2	10,000,000	40,000,000	10,666.67													A fee to purchase equipment for set up of the demonstration sites shall be facilitated

	Sub Total						90,400,000	24,106.67												
10.1.1.9	Preparing, publishing and continuously updating geological maps to be used as reference by ASGMs																			
	Printing and publication	17	1	4	10	20,000	13,600,000	4,945.45												Quarterly geological maps will be published and distributed to the ASGM districts
	Sub Total						13,600,000	4,945.45												
10.1.1.10	Defining the level of ESIA to be undertaken by various ASGM categories/structures																			
	This will be undertaken by DGSM with consultations with NEMA to be included in the Mining and Mineral Bill, 2019																			
10.1.1.11	Formulating/reviewing policies to ensure that Location Licenses are issued after environmental assessments have been undertaken; mining leases for vast pieces of land are issued after environment and social impact assessments subjected to public hearing																			
	This has been catered for by the Mining and Mineral Bill, 2019. Public hearings are catered for under 10.1.2.2.																			
10.1.1.12	Equipping MDAs including NEMA, LGs, MGLSD with tools for early detection of mercury contamination in environmental samples including air, land and water																			
	Mercury detection tools	40	1	2	2	800,000	128,000,000	34,133.33												Mobile hand held mercury detection tools will be provided to the OSH department
	Sub Total						128,000,000	34,133.33												
10.1.1.13	Formulating and instituting fines for non-compliance of ASMs/ASGMs to environmental standards																			
	These fines will be issued during the various monitoring exercises undertaken under the NAP implementation																			



	Sub Total						612,000,000	163,200											
10.1.2.2	Holding public hearings before allocating mining leases on extensive pieces of land including protected areas																		
	Venue hire	1	1	4	10	200,000	8,000,000	2,133											The community halls will be used and will be paid for.
	Refreshments	100	1	4	10	20,000	80,000,000	21,333											These will be quarterly hearings held at community halls in the different regions and involving miners from the region
	Sub Total						88,000,000	23,466.67											
10.1.2.3	Holding stakeholder engagements to agree on sustainable co-existence of ASGM activities with biodiversity in protected areas																		
	Venue Hire	1	1	2	5	500,000	5,000,000	1,333.33											These are bi annual meetings with key stakeholders
	Facilitation for stakeholders	50	1	2	5	100,000	50,000,000	13,333.33											The stakeholder shall be provided daily sustenance fee and transport facilitation
	Food and refreshments	50	1	2	5	50,000	25,000,000	6,666.67											Refreshments shall be provided
	Sub Total						80,000,000	21,333.33											
10.1.2.4	Inspecting and monitoring ASGM activities in protected areas																		
	Facilitation fees for monitoring	17	1	12	10	130,000	265,200,000	70,720											DEOs will be modestly facilitated to enable coordination and movements to the different mine sites for monitoring.
	Sub Total						265,200,000	70,720											
10.1.2.5	Updating geological maps with protected areas' layers to indicate where the protected areas are situated so as to prevent licensing of these areas without prior stakeholder consultations																		











	Refreshments	45	2	1	1	50,000	4,500,000	1,200													Refreshments will be provided
	<b>Sub Total</b>						<b>14,100,000</b>	<b>3,760</b>													
11.1.1.2	Developing targeted messages and holding targeted stakeholder meetings in regard to effects of mercury on human health and environment, existing alternatives and mitigation measures																				
	Venue Hire	1	1	4	1	500,000	2,000,000	533													A venue will be hired to hold a meeting between representatives of the National Coordination Mechanism and other national stakeholders
	Facilitation for participants	40	1	4	1	100,000	16,000,000	4,267													The participants will be give transport refund
	Refreshments	40	1	4	1	50,000	8,000,000	2,133													Refreshments will be provided
	<b>Sub Total</b>						<b>26,000,000</b>	<b>6,933</b>													
11.1.2	Documenting and dissemination of information on mercury use and its dangers																				
11.1.2.1	Developing and translating (into local languages) IEC Materials on effects of mercury on human health and environment and BATs																				
	Development of IEC material	1	5	1	1	300,000	1,500,000	400													This shall tie into the development of IEC materials in the different activities
	Production of IEC material	20,000	1	1	10	2,000	400,000,000	106,667													This shall tie into the production of IEC materials in the different activities
	Translation	4	6	1	1	500,000	12,000,000	3,200													This shall tie into the translation of IEC materials in the different activities
	Disseminate IEC Materials	1	20	1	10	100,000	20,000,000	5,333													This shall tie into the dissemination of IEC materials in the different activities

	Sub Total						433,500,000	115,600											
11.1.3	Implementation and dissemination of information on mercury use and dangers																		
11.1.3.1	Holding public meetings to disseminate information on effects of mercury on human health and environment and BATs in collaboration with ASGMs																		
	Transport facilitation	100	1	5	10	30,000	150,000,000	40,000											The participants will be given a modest transport refund for the one day meeting which will be held at a mine site in each mining region
	Refreshments	100	1	5	10	20,000	100,000,000	2,667											This will cater for refreshments
	Sub Total						250,000,000	66,667											
11.1.3.2	Disseminating information on the impacts of mercury on human health and environment and adoption of BATs through media																		
	Press conference	40	1	4	10	150,000	240,000,000	64,000											Quarterly press conferences will be held
	Print media	4	1	4	10	7,000,000	1,120,000,000	298,667											Quarterly pullouts will be printed in the 4 national newspapers in different languages
	Sub Total						1,360,000,000	362,667											
11.1.3.3	Holding Training of Trainers on impacts of mercury on human health and environment and BATs																		
	Trainer's Fees	1	2	4	3	350,000	8,400,000	2,240.00											These trainings will be carried out in each region and a trainer will be engaged to conduct them.
	Facilitation for participants	80	2	4	3	150,000	288,000,000	76,800.00											The participants shall receive a daily sustenance fee.
	Food and refreshments	80	2	4	3	60,000	115,200,000	30,720.00											Refreshments will be provided.
	Sub Total						411,600,000	109,760.00											
11.1.3.4	Developing an ASGM platform for sharing information with national stakeholders and miners and also serving as a feedback loop																		
	Venue hire	1	1	1	1	500,000	500,000	133											A venue will be hire at which to hold a meeting between ASGMs and national stakeholders on how information can be shared

	Refreshments	40	1	1	1	50,000	2,000,000	533													Refreshments will be provided
	Transport refund for participants	40	1	1	1	100,000	4,000,000	1,067													The participants will be given transport refund
	<b>Sub Total</b>						<b>6,500,000</b>	<b>1,733</b>													
11.1.3.5	Documenting, popularizing and disseminating of good ASGM practices																				
	Development of bulletins	1	2	2	10	530,000	21,200,000	5,653.33													Bulletins on good ASGM practices will be developed bi annually
	Production	50,000	1	2	10	2,000	2,000,000,000	533,333.33													
	Dissemination	–	–	–	–	–	–	–													Through the working group, the different stakeholders will have access to these bulletins which will be distributed during the different activities
	<b>Sub Total</b>						<b>2,021,200,000</b>	<b>538,986.67</b>													
11.1.3.6	Developing the capacity of media houses and other communication channels to monitor and relay information on ASGM operations and good practices																				
	Trainer's Fees	1	2	1	2	350,000	1,400,000	373.33													These trainings will be carried out centrally and a trainer will be engaged to conduct them. The training shall be undertaken at the beginning and mid implementation to cater for turnover.
	Venue hire	1	2	1	2	500,000	2,000,000	533.33													A venue where the training will be held will be hired
	Facilitation for participants	50	2	1	2	150,000	30,000,000	8,000.00													The participants shall receive a daily sustenance fee.
	Food and refreshments	50	2	1	2	60,000	12,000,000	3,200.00													Refreshments will be provided.
	<b>Sub Total</b>						<b>45,400,000</b>	<b>12,106.67</b>													

11.1.3.7	Undertaking ASGM technical officers' exposure visits to countries with ASGM good practices																					
	Return Air ticket	10	1	1	2	7,500,000	150,000,000	40,000													The officers will be provided return air tickets	
	Travel Abroad Allowance	10	6	1	2	1,350,000	162,000,000	43,200													Daily Allowance will be provided	
	<b>Sub Total</b>						<b>312,000,000</b>	<b>83,200</b>														
11.1.4	Instituting an information sharing platform for disseminating mining information																					
11.1.4.1	Setting up an information dissemination system including cadaster related information																					
	Venue hire	1	1	1	1	500,000	500,000	133													A venue will be hire at which to hold a meeting between ASGMs, DGSM, NEMA and other stakeholders on how information can be disseminated and shared. This can be combined with activity 11.1.3.4	
	Refreshments	50	1	1	1	50,000	2,500,000	667													Refreshments will be provided	
	Transport refund for participants	50	1	1	1	100,000	5,000,000	1,333													The participants will be given transport refund	
	<b>Sub Total</b>						<b>8,000,000</b>	<b>2,133</b>														
11.1.4.2	Develop a database for suppliers and local fabricators of ASGM/ASM mining equipment																					An expert developer will be hired to develop the database
	Expert developer fees	1	1	1	1	2,250,000	2,250,000	600													The system will be maintained with an annual fee	
	Maintenance of the system	1	1	1	10	500,000	5,000,000	1,333														
	<b>Sub Total</b>						<b>7,250,000</b>	<b>1,933</b>														
	<b>Sub-Total</b>						<b>4,924,650,000</b>	<b>1,313,240</b>														
	<b>OVERALL TOTAL</b>						<b>46,651,380,000</b>	<b>12,447,012.13</b>														



## **The National Environment Management Authority (Nema) November 2019**