Republic of Kenya

MINISTRY OF ENVIRONMENT AND FORESTRY

National Action Plan for Artisanal and Small-scale Gold Mining in Kenya

In accordance with the Minamata Convention on Mercury



FOREWORD



Keriako Tobiko, EGH, CBS, SC
Cabinet Secretary
Ministry of Environment and Forestry

Artisanal and Small – Scale Gold Mining (ASGM) is an economic activity that has been taken up in Kenya, and dates back to the 19th Century. The sector uses mercury for gold extraction which has been found to have detrimental environmental and health impacts to the workers and adjacent communities including the environmentally sensitive aquatic ecosystems. For a long time, the ASGM has been governed by the 1940 Mining Act CAP 306 which had no provisions for licensing the ASGM sector. However, this Act was repealed in 2016 and replaced with Mining Act 2016 which has provisions for licensing of ASGM sector at the Counties.

Kenya signed the Minamata Convention on Mercury on 10 October 2013 to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds and proceeded to conduct an initial mercury assessment in 2016. The outcomes of the studies revealed amongst others things that, the ASGM sector is a major user and emitter of mercury and therefore requires special attention. Consequently, a proposal for the development of a National Action Plan (NAP) on the use of mercury in the Kenya's Artisanal and Small-scale Gold Mining (ASGM) sector was initiated in 2017 to comprehensively address the continued use of mercury and other related issues in the sector in line with Article 7 paragraph 3 of the Minamata Convention on Mercury. As a country some measures have been put in place and a summary presented in table 15 of the NAP. The ratification of the Minamata Convention on Mercury is at an advance stage and has received Cabinet support.

Assessments on the national overview of the ASGM sector, including baseline estimates of mercury use and practices have provided knowledge on mercury sources, releases and emissions in the ASGM sector and existing unsuitable gold mining and processing practices. These studies among others facilitated the development of this National Action Plan for ASGM to reduce the use of mercury and mercury compounds and emissions to the environment of mercury for the Artisanal and Small – Scale Gold Mining Sector. The NAP recognizes that ASGM forms an important livelihood source in Kenya, estimated to employ approximately 40,000 miners and resulting into 800,000 dependents on the sector. The action plan estimates that total gold produced from ASGM to be on average 6.9 tons annually which is produced using an amount of 8.2 tons of mercury.

The NAP therefore proposes formalization of the sector to comply with provisions of the Mining Act of 2016 and focus on adequate environmental management permits to avoid the occurrence of negative environmental and social impacts. It provides strategies that can act as impetus to reduce environmental damages that occur at local and global scales and have long lasting disruptions to important biodiversity services and livelihoods in line with the UNEA 5 Resolution on Chemical Management. Formalization will also focus on regulating the gold trade in the sector to ensure miners get the best prices for their products while the national and county governments will give incentives by fast-tracking formalization of ASGM. To address the health impacts, the NAP proposes the development of a health strategy, which will outline measures for counties to set up a functional health surveillance system to monitor cases of mercury poisoning and build capacity to diagnose cases of mercury poisoning including an enhanced awareness and training programme.

This NAP is a government intent which has prescribed a broad range of actions to be pursued jointly by all stakeholders to achieve sustainable mining in Kenya with enhanced benefits and protection of the environment. The NAP has been developed through a participatory and consultative process involving all stakeholders.

I wish to invite all to take advantage of the opportunities that comes with the full implementation of this National Action Plan.



Keriako Tobiko, EGH, CBS, SC
Cabinet Secretary
Ministry of Environment and Forestry

ACKNOWLEDGEMENT



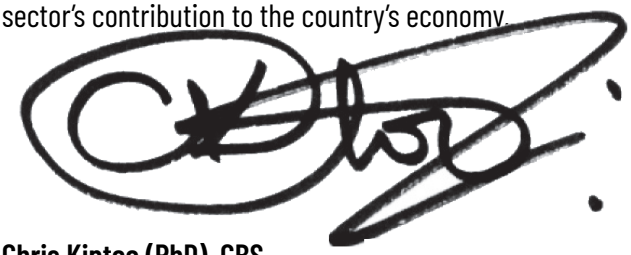
Chris Kiptoo (PhD), CBS
Principal Secretary
Ministry of Environment and Forestry

The National Action Plan (NAP) has been developed in conformity with the Minamata Convention on Mercury in respect to Article 7 and Annex C of the Convention. NAP will provide the opportunity to outline a clear and transparent basis for the support, development, and implementation of activities to reduce, and where feasible eliminate mercury use, emissions and releases of mercury and mercury compounds from ASGM sector.

This will reduce the burden of diseases and ensure better protection of the health of future generations. It is imperative that exposure to chemicals and wastes can be effectively managed, including those containing mercury and particularly in vulnerable populations such as women of child bearing age and children as well as fragile ecosystems. The support and good will from the Cabinet Secretary and the Chief Administrative Secretary of the Ministry of Environment and Forestry was pivotal in this achievement. The NAP development process benefited immensely from astute contributions from a wide range of institutions and personalities. I wish to acknowledge, with appreciation, the invaluable information provided by various experts from; Government Agencies, Research Institutions, Universities, Private Sector, NGOs and the Miners who participated in the preparation of this action plan.

I also wish to extend special thanks to the stakeholders and the consultants for their technical support in collecting, collating and reviewing information and putting the action plan together. I note with appreciation the leadership offered by the Department of Multilateral Environmental Agreements (MEAs) including the project team in coordinating the process.

Lastly, I thank the Global Environment Facility (GEF), the United Nations Environment Programme (UNEP) and Africa Institute (AI), for their technical and financial support towards the development of this action plan. It is my sincere hope that this action plan will contribute to the aspirations of a "clean and healthy environment for all Kenyans" and enhance the sub-sector's contribution to the country's economy.



Chris Kiptoo (PhD), CBS
Principal Secretary
Ministry of Environment and Forestry

EXECUTIVE SUMMARY

Gold as a mineral is an important income earner in Kenya in terms of value. Counties where ASGM is dominant includes; Migori, Narok, Siaya, Vihiga, and Kakamega. Other counties with ASGM mining activities include Nandi, Kisumu, Turkana, West Pokot, Marsabit, Homa Bay and Kericho. The per-capita income for a mineworker range between KSh.10,000 and 20,000 every month and the sector produce gold estimated at approximately KSh. 29 Billion per year, based on the international price of USD 42,000/Kg. As such, ASGM forms an integral part as a source of livelihood to many households in Kenya. It is estimated to employ approximately 40,000 miners with a total of 800,000 Kenyan citizens being dependent on the ASGM sector.

Globally it is agreed that excessive mercury is injurious to human health and the environment. Although listed as a toxic chemical, mercury is easily diverted from legal use to ASGM posing challenges in its management. Kenya is a signatory to the Minamata Convention on Mercury and has followed the agenda on reduction of mercury from all anthropogenic sources. The Convention is a Multilateral Environmental Agreement to protect human health and the environment from anthropogenic emissions of mercury and its compounds. The Convention was adopted in 2013 and came into force on 16th of August 2017. Kenya is at an advanced stage of ratifying the Convention.

After signing the Convention, Kenya commenced the global program on mercury initial assessment culminating into a nationally endorsed Kenya Mercury Action Plan in January 2017. The action plan identified artisanal and small-scale gold mining as a significant source of mercury emission and releases in Kenya and therefore significant in accordance with Article 7 of the Convention. Accordingly, Kenya notified the then Convention Interim Secretariat on 8th June, 2015. Kenya also received support from the Global Environment Facility through UNEP to develop a National Action Plan in line with Annex C of the Convention Text. In addition, Kenya participates in the national and regional project on integrated sound management of mercury known as Planet Gold. The NAP development has been coordinated by the Ministry of Environment and Forestry with financing from the Global Environment Facility (GEF). The technical work was done through an Inter-Ministerial and Inter-Sectoral Coordinating Committee whose mandates has some bearing on ASGM activities. Guided by the Convention's ASGM guidelines, the committee's activities were to appraise mercury use in ASGM in Kenya and develop an action plan for minimization and/or elimination to comply with the Convention. This would help not only meet Kenya's global environmental contribution but also reduce adverse human health and environmental risks associated with mercury use in ASGM.

The NAP development process started late 2017 with the key activities being situational analyses and awareness programs in the legal and policy, economic and financial, education, information and technological thematic areas. The committee and consultants' team carried out a mercury inventory, visited the 24 ASGM sites where artisanal and small – scale gold mining is practiced and interviewed the relevant members of the public, government and international stakeholders as specified in Annex A. A total of 250 stakeholders were involved in field work training, review of consultants' thematic reports, validating reports and presenting a vision for the NAP in Kenya.

The conclusions of the thematic areas of legal, policy regulatory, the social economic aspects of ASGM and its competition with large-scale gold mining, education, information, technology and awareness as well as inventory conducted facilitated observations, conclusions and recommendations. In general, much development has taken place on policy and legal formulation which are at advanced stages.

Evidently, ASGM contributes better returns than farming and it is likely to grow even further. It was confirmed that about one (1) million people are involved. In terms of technology, all ASGM mining sites are retrogressive, making them to extract only 20% of gold available leaving the rest to cyanide leaching plants which is growing at a higher rate. As far as education is concerned, despite several awareness campaigns and trainings on the toxicity of mercury, the people involved are still adamant to change.

Using the ASGM guidelines, it was estimated that gold production from ASGM is 6.9 tons annually which is produced using 8.2 tons of mercury. This data is based on case study carried out in Kakamega, Siaya, Migori and Narok Counties. The average ore quality varies from county to county as follows; Migori estimated at 24.9 g /ton, Kakamega at 22.8 g /ton, Siaya at 27.9 g /ton, Narok at 27.0 g /ton, Vihiga at 27.1 g /ton and Nandi at 26.7 g /ton of ore.

Mercury used in the sector is obtained from both formal and informal sources. The Kenya Revenue Authority documented that in 2014/15, about 21,926 Kg of mercury was imported into Kenya. Other reports also indicate that there exists cross border informal trade of mercury across the three East African States of Kenya, Uganda and Tanzania. It is estimated that an average of 1.2 grams of mercury is used for 1 gram of gold produced and therefore an estimated 6,864 Kilograms of gold per year is produced using 8,237 Kilograms of mercury. The worst practices identified for elimination as per the Convention includes whole ore amalgamation which is negligible in Kenya, open burning of amalgam, burning of amalgam in residential areas and leaching of mercury containing tailings.

To ensure organized phase out of mercury use in artisanal mining, the stakeholders during NAP preparation agreed on policy change, institutional management, fiscal and economic incentives to support ASGM miners. The NAP also proposes targets including ratifying the Minamata Convention, ensuring ongoing activities are completed by 2022 for government project and for GEF funded projects, and phase out of mercury use in ASGM by the year 2024.

The NAP also focuses on areas where vulnerable groups need attention and planned for policy guidance and strategies. The strategies include, public health strategy for ASGM by 2025; managing mercury and gold trade and preventing diversion of mercury and mercury compounds to the ASGM sector.

This NAP therefore details measures Kenya will take to minimize and formally eliminate the use of mercury in the ASGM sector as per the provision of the Mining Act of 2016, the environmental sector legislations and the expected global commitments contained in the Minamata Convention.

The measures will include formalization of the sector by fast tracking registration of mining groups, mapping of ASGM sites and registering miners, regulation of market in gold trade to ensure miners get the best prices for their products through establishment of commodities exchange as well as operationalizing County Mining Committees. Incentives for formalization will include technical and financial assistance to the registered groups. To address the health impacts, the

NAP details and lays out measures for ASGM hotspot counties to set up a functional health surveillance system to monitor cases of mercury poisoning and build their capacity to diagnose cases of mercury poisoning. To reduce emissions to land, air and water, the NAP includes a strategy focused on demonstration sites where mercury free technologies will be piloted in the counties of Migori, Narok, Kakamega and Vihiga. A multi-agency team will prepare and implement sensitization programs on mercury use and its environmental and health risks. It will also cover available best practices, advanced methods of gold processing and marketing and ways to discourage worst practices mentioned above.

The NAP proposes policy and institutional strengthening for those entities directly related to ASGM. They will provide an interagency framework with key institutions that will include: Ministry of Environment and Forestry, Ministry of Petroleum and Mining, National Environment and Management Authority, County Governments, Ministry of Health, among other institutions. The NAP also contains a proposal for establishment of a robust monitoring system for emissions to land, air and water through specialized agencies such as NEMA, Water Resources Authority, Meteorological Department, Ministry of Health, Kenya Fisheries Service, and Kenya Marine and Fisheries Research Institute.

Implementation of this NAP is estimated to cost KSh.8.3765 Billion or USD 77.5602 Million for the 5-year period. It is expected that part of the funds will be generated from miners, investors and stakeholders across the gold value chain. The bulk of the money will however come from Government of Kenya in form of fees, registration, enforcement, economic and environmental tools. When Kenya becomes a party, it will pursue assistance from GEF which is the financing mechanism for the Convention, the private sector and other international partners.

In conclusion, the Government of Kenya recognizes the ASGM sector as crucial to Kenya's economy and has therefore put in place some on-going and planned activities. It has been recognized that the use of mercury is detrimental to human health and the environment and there is therefore need to stop its usage through actions which include formalization of the ASGM sector by elimination of worst practices mentioned above.

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Acronyms and Abbreviations

AMC	Artisanal Mining Committee
AM(s)	Artisanal Mining / Miners
AMZ	Artisanal Mining Zones
ASGM	Artisanal and Small-Scale Gold Mining
ASM (s)	Artisanal and Small-Scale Mining / Miners
ASMN	Artisanal and Small-Scale Mining Network
ASMTC	Artisanal and Small-Scale Mining Technical Committee
ASMU	Artisanal and Small-Scale Mining Unit
BAT	Best Available Technologies
BEP	Best Environmental Practices
CBOs	Community Based Organizations
CEJAD	Centre for Environment Justice and Development
CMC	County Mining Committee
CO	County Offices
CS	Cabinet Secretary
DGS	Directorate of Geological Surveys
DMSHS	Department of Occupational Safety and Health Services
DoM	Directorate of Mines
DOSH	Directorate of Occupational Safety & Health Services
EA	Environmental Audits
ESIA	Environmental and Social Impact Assessment
FAO	Food and Agricultural Organization
FBOs	Faith Based Organizations
GEF	Global Environment Facility

GOLD	Global Opportunities for Long-term Development
GoK	Government of Kenya
KALRO	Kenya Agricultural and Livestock Research Organization
INC	Intergovernmental Negotiating Committee
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KAMS	Kenyan Artisanal Mining Strategy
KCM	Kenya Chamber of Mines
KEMRI	Kenya Medical Research Institute
KIRDI	Kenya Industrial Research and Development Institute
KEBS	Kenya Bureau of Standards
KEXPO	Kenya Extractives Program
KeFS	Kenya Fisheries Service
KFS	Kenya Forest Service
KICD	Kenya Institute of Curriculum Development
KMD	Kenya Meteorological Department
KEMFRI	Kenya Marine and Fisheries Research Institute
KMPDU	Kenya Medical Practitioners and Dentist Union
KNBS	Kenya National Bureau of Statistics
KNCPC	Kenya National Cleaner Production Centre
KRA	Kenya Revenue Authority
LSM	Large-Scale Mining
MAPs	Mercury Added Products
MCA(s)	Member(s) of County Assembly
MEAs	Multilateral Environmental Agreements
ME&F	Ministry of Environment and Forestry
MIA	Mercury Initial Assessment
MoALFC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
MoEST	Ministry of Education, Science and Technology

MOH	Ministry of Health
MoPM	Ministry of Petroleum and Mining
MoIT&ED	Ministry of Industralization Trade and Enterprise Development
MRB	Mineral Rights Board
MSH	Mines Safety and Health
NAP	National Action Plan
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
PPEs	Personal Protective Equipment
REE	Rare Earth Elements
SACCOS	Savings and Credit Cooperative Societies
SDM	State Department of Mining
SLO	Social License to Operate
SSM (s)	Small-Scale Mining / Miners
TIVET	Technical and Vocational Education and Training
TNT	The National Treasury
ToTs	Training of Trainers
UNEP	United Nations Environment Programme
WHO	World Health Organization
WRA	Water Resources Authority

1.0 INTRODUCTION

1.1 Introduction

According to the Global Mercury Assessment (UNEP, 2018) artisanal and small-scale gold mining (ASGM) is the largest source of anthropogenic mercury emissions (38%). Mercury is a recognized toxic element that is mobile and persistent with serious impacts on human health and environment. Exposure to mercury is through inhalation, ingestion or dermal exposure of different mercury compounds. Exposure leads to neurological and behavioral disorders whose symptoms include tremors, insomnia, memory loss, neuromuscular effects, headaches and cognitive and motor dysfunction, ultimately leading to the Minamata disease.

1.2 Mercury

Mercury exists in various forms: Elemental (Metallic), Inorganic (Mercuric chloride) and Organic (Methyl- and Ethyl mercury). Elemental mercury is a liquid that vaporizes readily at normal temperature. It can stay for up to a year in the atmosphere, where it can be transported and deposited widely in the environment. Once in the environment, elemental mercury is naturally transformed into methyl mercury that bio-accumulates in fish and shellfish.

1.3 Human Exposure

Mercury released into the environment emanates from natural sources and human activity, particularly from coal-fired power stations, residential heating systems and waste incinerators and as a result of mining for mercury, gold and other metals. Human exposure occurs mainly through inhalation of elemental mercury vapors during industrial processes and through consumption of contaminated fish and shellfish (Anderson, 1991)governments agreed to legally binding text for the Minamata Convention on Mercury. 1 Article 7 and Annex C of the Convention address artisanal and small-scale gold mining (ASGM. Individuals residing in or near ASGM communities get exposed from methyl mercury-contaminated fish or from the mercury vapor produced during the burning process Sana et.al., 2017).

1.4 Health Outcomes after Mercury Exposure

1.4.1 The Minamata disease after Mercury Exposure

Minamata disease is a neurological syndrome caused by severe mercury poisoning. The signs and symptoms include: Ataxia (a neurological sign consisting of lack of voluntary coordination of muscle movements, include gait, speech changes and abnormalities in eye movements), numbness in the hands and feet, general muscle weakness, loss of peripheral vision, and damage to hearing and speech. In extreme cases, the disease may exhibit insanity, paralysis, coma, and death may follow within weeks of the onset of the symptoms. A congenital form of the disease can also affect fetuses in the womb. Both elemental and methyl mercury are toxic to the central and peripheral nervous system

1.5 The Minamata Convention on Mercury

The toxicity of mercury to humans and environment was the reason behind adoption of the Minamata Convention on Mercury on 13th October 2013 in Kumamoto, Japan. The Convention aims to protect the human health and the environment

from adverse effects of mercury and mercury compounds. The Convention entered into force on 16th August 2017 and had 119 parties as of May 2020. Kenya signed the Convention in 2013 and is in the process of ratification.

After signing the convention, Kenya embarked on a process of developing a Kenya Mercury Action Plan which was adopted in January 2017. In the plan, artisanal gold mining (ASGM) was found to be a significant source of mercury as per the convention (MAP, 2017). Accordingly, it notified the Convention Secretariat of the same. To this end, Kenya received a grant from the Global Environment Facility towards development of the National Action Plan (NAP) ASGM in Kenya. The NAP will be submitted to the Convention Secretariat once endorsed by Kenya ASGM stakeholders. It will detail Kenya's road map and commitments towards eliminating bad practices involving use of mercury in ASGM.

Article 7 of the Convention addresses the issue of mercury use in ASGM and requires countries with mercury use in ASGM activities within their territories to take steps to reduce, and where feasible eliminate the use of mercury and mercury compounds in ASGM, emissions and releases to the environment from mining and processing. Paragraph 3 obliges Parties with "more than insignificant ASGM activity" to notify the Convention Secretariat accordingly, and develop and implement a national action plan in accordance with Annex C of the Convention. The NAP development outlines the required elements to include:

- **i)** National objectives and reduction targets,
- **ii)** List of worst practices to be eliminated,
- **iii)** Steps to facilitate formalization or regulation of the sector,
- **iv)** Baseline estimates of the quantities of mercury used and the practices employed,
- **v)** Schedule for implementation of the national action plan,
- **vi)** A series of strategies among them managing trade and prevention of diversion of mercury from foreign or domestic sources,
- **vii)** Promoting the reduction of emissions and releases, and exposure to mercury as well as involving stakeholders in the implementation, and
- **viii)** Additional strategies to achieve its objectives: A public health strategy, which encompasses health surveillance, preventing exposure of vulnerable populations.

The NAP will be reviewed every 3 years to assess progress made in meeting the obligations under Article 7 of the Convention.

1.6 The NAP Development Process

The Government of Kenya signed the Minamata Convention on Mercury on 10th October, 2013 after actively participating in the Intergovernmental Negotiating Committee (INC) process which led to the adoption of the Convention. In 2016, following the signing of the Convention, the Government of Kenya embarked on a Mercury Initial Assessment (MIA) Project funded by the Global Environment Facility and steps towards ratification of the Convention. The MIA identified ASGM as one of the significant sources of mercury emissions and releases in Kenya. The ME&F thereafter notified the Secretariat of the Convention on Mercury that "ASGM in Kenya is more than insignificant" which signaled the development of the NAP for ASGM in Kenya in accordance with Article 7 of the Convention.

In its statement at the MIA endorsement meeting of January 2016, the ME&F and the Ministry of Mining (MOM) indicated their intention to ban the use of mercury in artisanal and small-scale gold mining so as to protect workers and the environment from mercury pollution. To this end, the government put in place a legal framework to outlaw the use of mercury in the subsector, through enactment of the Mining Act No. 12 of 2016.

In 2017, Kenya embarked on the development of an action plan for ASGM as part of an eight-country regional project funded by GEF, implemented by United Nations Environment Programme (UNEP) and executed by Africa Institute (AI). The project is aimed at assisting participating countries to develop NAPs to reduce the use of mercury and mercury compounds, and the emissions and releases to the environment of mercury from ASGM. The participating countries include Burundi, Republic of Congo, Central African Republic, Kenya, Eswatini Uganda, Zambia, and Zimbabwe.

The NAP development process in Kenya began with an inception workshop in January 2017 at Merica Hotel, Nakuru, organized by ME&F and Africa Institute. This was followed by establishment of a project steering committee under the ME&F which comprised representatives from Ministries of Environment and Forestry, Petroleum and Mining; Industrialization, Trade and Enterprise Development; Health; Agriculture, Livestock, Fisheries and Cooperatives; Water, Sanitation and Irrigation. Other government bodies included National Environment Management Authority; Attorney General's Office; and the Council of Governors.

A training workshop organized by the ME&F on undertaking baseline estimates of mercury use and practices at artisanal and small-scale gold mining sites was conducted from 20th to 25th November 2017 by the Africa Institute. This training was attended by various stakeholders including miners. In May 2019, the ME&F hired a team of consultants to assist in collecting data for development of a national overview of the ASGM sector. Three thematic consultants were engaged to collect data on socio-economic within the ASGM sector; legal and policy; as well as education, information and technology. A lead consultant was engaged to synthesize the information and draft the NAP for presentation to national stakeholders. The ME&F and the national consultants held a series of meetings as follows:

- **i)** An inception workshop between the ME&F and consultants was organized in May 2019.
- **ii)** Field studies and submission of the first draft report to the ME&F in June, 2019.
- **iii)** Workshops organized by the ME&F to give inputs into the NAP.
- **iv)** A stakeholder workshop was convened in September 2019 to review the Draft NAP, give inputs and develop sector strategies and targets for the NAP.

This NAP report is structured in the following manner as guided by the UNEP guideline for the development of NAP[1]:

- **i)** Background and context of the NAP, including the process of its development
- **ii)** National Overview of the ASGM sector in Kenya.
- **iii)** National targets and strategies for Implementation of the NAP including the work plan.
- **iv)** Monitoring and evaluation framework for the NAP.

[1] **From the convention website www.minamata.org/INC7**

1.7 The NAP Guiding Principles

The following guiding principles informed development of the NAP:

- **i)** Participatory approach and inclusivity of all stakeholders in decision-making and implementation;
- **ii)** Gender inclusivity in planning and implementation of activities to be carried out under the NAP;
- **iii)** Objectivity and impartiality in decision making, bearing in mind the nature of the Artisanal Mining

2.0 NATIONAL OVERVIEW OF ASGM

This chapter describes the general status in relation to mining in Kenya, the contribution of the mining sector to the economy, areas where artisanal and small-scale mining is occurring, the socio-economic details of the mining sector, the legal and regulatory framework governing the sector as well as the details of mercury emissions from ASGM. The chapter is summarized from the thematic reports legal and policy; education, information and technology report, and social economic reports (Annex 6).

2.1 Introduction

Kenya is located on the eastern part of Africa between latitudes 5°N and 4° 40 S. It shares boundaries with the Republic of Uganda to the west, Sudan and Ethiopia to the north, Tanzania to the south and Somalia to the East. Kenya's territory comprises a total area of 582,646 km^2 of which 2.3% of the area consists of water bodies (Figure 1). The country has a total population of 47,564,296, comprising of 23,548,056 males, 24,014,716 females and 1,524 intersex, with the females accounting for 50.5% of the total population (KNBS, 2019). Administratively, Kenya has a two-tier governance system comprising the national government and 47 county governments (devolved units), levels which are distinct and interdependent. The national government is headed by the president, while the county governments are headed by governors.

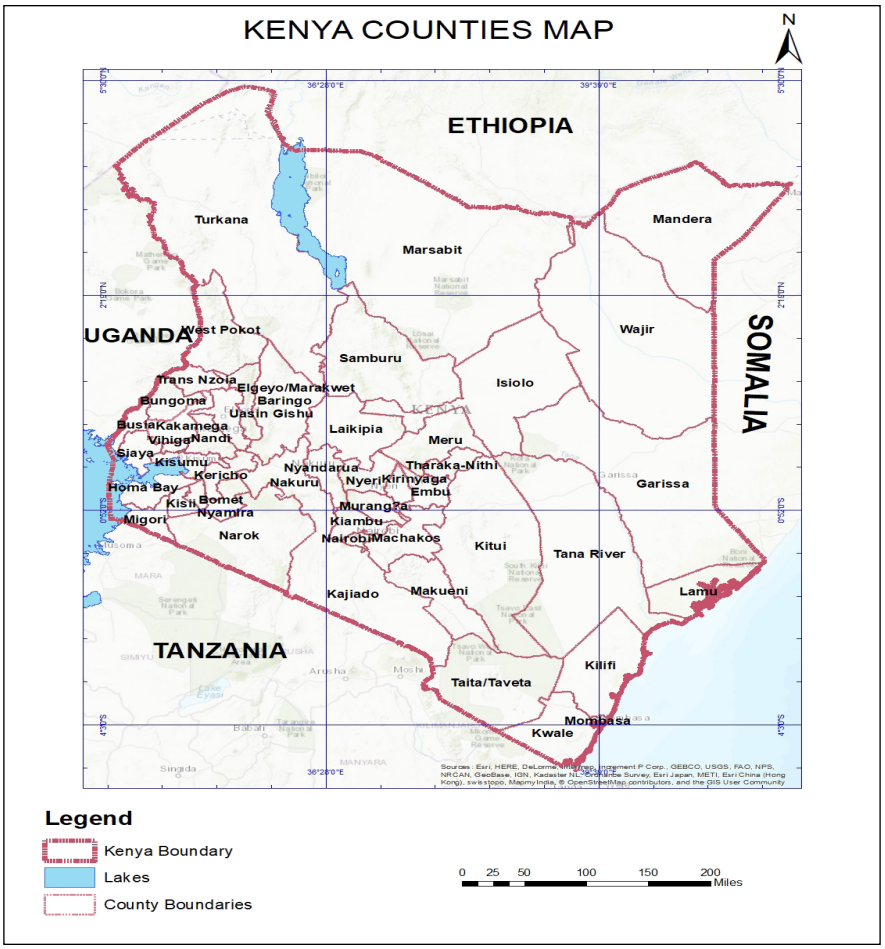


Figure 1: Administrative units in Kenya (Modified from Survey of Kenya)

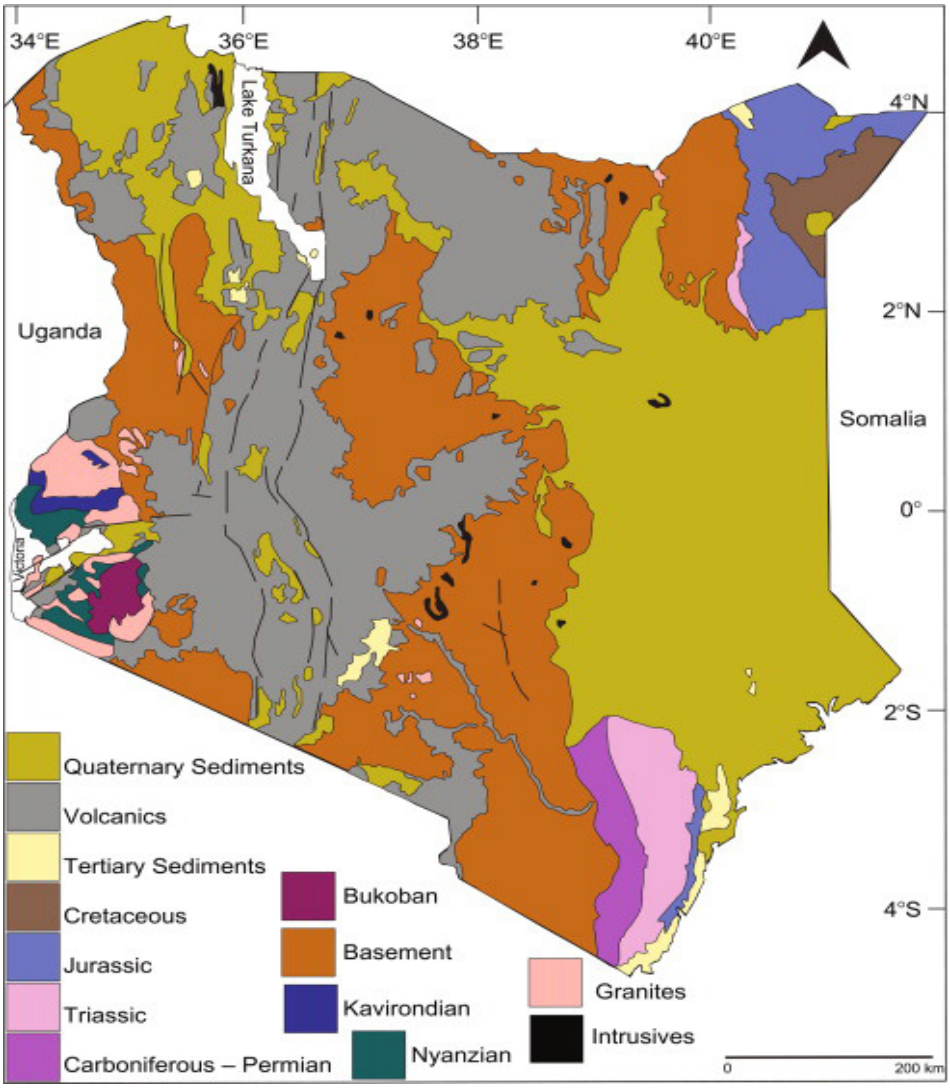
2.2 Mineral deposits in Kenya

Kenya has four belts of minerals namely; the gold green stone belt in Western Kenya, which extends to Tanzania; the Mozambique belt passing through central Kenya, the source of Kenya's unique gemstones; the Rift belt, which has resources including soda ash, fluorspar and diatomite; and, the Coastal belt, which has titanium (EAC, 2019). According to the geological map of Kenya (Figure 2) the geological formations that contain minerals in Kenya include:

- The Archean Nyanzian Craton area of western Kenya, where metallic mineralization of base and precious metals such as gold, copper, and silver are present and the potential for ferrous and non-ferrous metals exists.
- The Proterozoic Mozambique Belt that runs through the center of Kenya from north to south, in which minerals such as kyanite, corundum, graphite, wollastonite, marble, asbestos, fluorspar, magnetite, kaolin, and a variety of gemstones are found.
- The widespread sedimentary rocks of Paleozoic to Quaternary: These rocks are sources and hosts of limestone, gypsum, clays, manganese and construction materials, and hydrocarbons in Turkana County (oil discovered in 2012). Base metal mineralization, lead-zinc-barite, and copper are known to occur in the sedimentary basin along the coastal belt. Heavy mineral sands containing titanium are found in coastal beach sands.
- The volcanic rocks associated with Rift System, which host a variety of minerals and construction materials such as clays, evaporites, trona (soda ash), diatomite, gypsum, and gem-quality rubies: Carbonates known for potential of niobium and rare earth elements (REE) are found in the Nyanzian shield area, around Lake Victoria shores, and in the southern part of the coastal sedimentary basin.

2.3 Economic Contribution of Minerals

In Kenya's Economic Report of 2019, the country reported a gross domestic product (GDP) growth rate of 6.3% with 2015 with mining contributing approximately 0.8%. The government targets to increase to 10% by 2030. With 4.9 % in 2018, mining is estimated to have contributed a total of KSh. 30.4 billion to the Kenyan economy, an increase of 6.0%. Of this, titanium ore minerals contributed the highest share of approximately KSh. 20.1 Billion, followed by soda ash at KSh. 6.8 Billion; gold at KSh.2 Billion; crushed refined Soda at 580 Million with other minerals contributing approximately 1.2 Billion (KNBS, 2019). Table gives a summary of the value of minerals produced in Kenya between the year 2014 and 2018.



Source: Norbert et al, (2013), Figure 2: Geology Map of Kenya

Table 1: Total value of mineral production from 2014 to 2018

Type of mineral	Value of mineral production, 2014-2018 (millions)				
	2014	2015	2016	2017	2018
Soda Ash	7,840.8	6,599.6	6,227.2	6,259.7	6,837.7
Fluorspar	1,901.0	1,427.7	868.8	129.7	-
Salt	173.5	197.8	218.5	98.9	19.4
Crushed Refined Soda	568.4	409.7	494.4	1,108.9	579.9
Diatomite	70.6	70.6	75.2	79.4	87.6
Gold (Kg)	**790.1**	**978.1**	**970.3**	**1,510.8**	**2,021.1**
Gemstones (cut) in 000 carats	46.0	36.9	77.5	128.6	106.2
Gemstones (Rough)	263.6	798.4	936.0	238.3	412.1
Titanium Ore Minerals	9063	12819	10087.2	18527	20094.7
Total	20,717.3	23338.1	19,955.1	28081.3	29746.6

Source: Kenya Economic Survey (2019)

2.4 Gold Mining in Kenya

Gold mining in Kenya traces back to the early nineties during which some large-scale exploration and mining was undertaken in Macalder in Migori County and Kilimapesa and Rosterman in Kakamega County. The two-form part of the gold-enriched Archaean Tanzanian craton (Sanislav et al., 2014). Administratively, the belt traverses' parts of Migori, Siaya, Kakamega, Vihiga, Narok, Nandi, West Pokot, Turkana, Kericho, and Kisumu Counties. The gradual decline of production in the late 1950s to late 1960's saw the exit of the large companies and the closure of mines such as Macalder, the largest in the country (GoK, 1969).

Gold Mining in Kenya comprises of both large-scale and artisanal and small-scale mining. Large-scale gold mining companies include Acacia Mining, Kilimapesa Gold Pty Ltd that is based in Lolgorian (Narok County) and Karebe Gold Mining Ltd in Nandi County as shown in Table 2. However, all the large-scale gold mining companies operating in Kenya are foreign owned. Acacia holds the prospecting licenses in Vihiga, Kakamega, Kisumu and Siaya Counties. Kilimapesa Gold Pty Ltd on the other hand, holds a license in Narok County.

Table 2: Gold exploration and mining companies in Kenya

Company	Nationality	Area of operation
Acacia Mining	Foreign	Siaya and Kakamega Counties
Karebe Gold Mining Ltd	Foreign (Maris Africa)	Nandi County
Kilimapesa Gold Pty Ltd	Foreign (Gold Plat Plc.)	Trans Mara and Narok Counties

Source : Extractives Baraza. https://www.extractives-baraza.com/

It is estimated that the bulk of gold production in Kenya is usually done by small-scale and artisanal miners in Western Kenya, estimated at 500 Kg or 17,637 ounces a month which is equivalent to about 40 gold bars (one gold bar is about 12.4 Kg or 439 ounces). However, since the gold is traded informally this is never reported in government statistics thus the need to formalize the ASGM sector.

2.4.1 Geographical Distribution of ASGM in Kenya

ASGM in Kenya occurs largely in areas previously occupied by large-scale exploration and mining companies. The main colonial old mines were in Macalder (Migori County), Kilimapesa (Narok County), and Rosterman (Kakamega County). These areas host the bulk of ASGM activities. From these areas, ASGM activities have spread to other counties, following the ore yielding veins found along the Archean Nyanzian Craton geological belt. The gold bearing counties are shown in Figure 3.

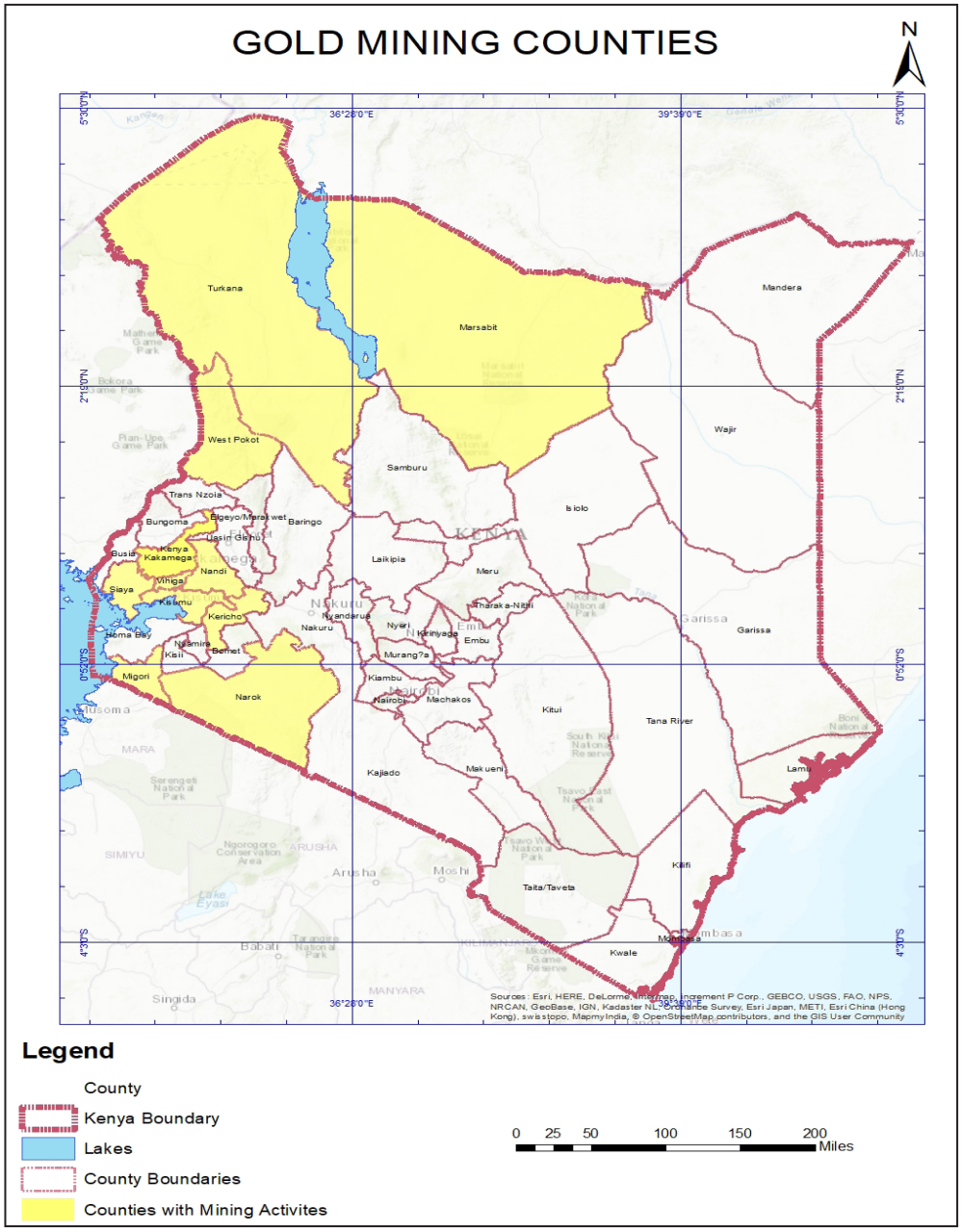


Figure 3: Counties with Gold deposits and ASGM activities

To date, ASGM activities are mainly spread in Migori, Narok, Vihiga, Kakamega, Siaya, Turkana, Kisumu and Nandi Counties as follows:

i) Migori County: Masara, Macalder, Osiri and Mikei, Masaba, Kitere, Kamwango (Rongo), Kehancha and at the Kuria- Transmara border.

ii) Siaya County: Wagusu, Ligega, Nyamasare and Bar Kalare villages.

iii) Kakamega County: Ikolomani, Lurambi (Rosterman area), Shinyalu and Khwisero.

iv) Narok County: Lolgorian Town; Got Kabongo, Kilimapesa, Nyakigile, Masurura, Blure and Teng Teng.

v) Nandi County: Kapsaos and Chemase areas.

vi) Vihiga County: Vyalo, Shaviringa and Mbale.

vii) Turkana County: Naduat (once known as 'a gold village'). Namoruputh, Nakalale and Lapur wards. Gold deposits are also found in Lomaguro, Atereka and Nakareareka, Karusuk, Nakalale, Kaputir, Loima and Sasame[3]

New areas where ASGM is picking up include; Bar Korua in Kisumu County, Elgeyo Marakwet, Homa Bay and Marsabit Counties. There has been renewed sense of gold rush in Kenya driven by new interest in the sector from the government, and new discoveries by companies doing exploration. For instance, in Kakamega County alone, the evaluated estimation of Gold by the Acacia mining organization is cited at USD 1.65 billion (Acacia, 2019). This has additionally attracted more miners to the area.

2.5 Mining and Processing Information

2.5.1 Common Mining Practices

Artisanal and small-scale gold mining in Kenya entails both production of gold from alluvial deposits and hard rock mining. All the visited sites had some form of mechanization in the mining process by way of using compressors, generator driven ball mills, drilling and blasting. Alluvial mining is done in the rivers and river valleys that cross gold bearing rocks. In these areas, gold nuggets and flakes are mined from the alluvium. Gold recovery is done by panning directly in water or on rudimentary sluices that are set-up within the valleys. Underground mining on the other hand is done by digging of pits using tools such as pick axes and sledgehammers. The depth of the pits ranges between 70 and 150 ft. or deeper depending on the level of mechanization. The pit walls are reinforced by use of timber to prevent collapse. Equipment such as compressors and heavy-duty water pumps are used in some sites, with blasting periodically done to access the "reefs" (planar gold bearing veins of rock).

2.5.2 Gold Processing Practices

Gold processing in hard rock deposits follows the conventional method as described below;

Crushing	Drying	Milling	Concentration *(Sluicing)*	Amalgamation	Roasting of Amalgam

a) Crushing: The ore is brought to the surface in sacks by porters. Crushing is then done to liberate the gold as shown in Plate 1. Primary crushing is often done manually using hammers, with some few exceptions where machines such as jaw crushers have been installed. This produces a gravel sized rock ore that is then be milled into powder.



Plate 1: A mine worker crushing rock bearing ore using hammer in a process known as stamping

Milling: Good milling is key to achieving an even grain size that is fine enough to liberate the gold from the ore. The dominant mode of milling is dry milling by use of ball mill crushers (Plate 2). The mills have a capacity of processing 1 ton of ore per day. One miner group, MICA in Migori County had invested in a hammer mill which has a higher capacity of crushing of ore at 1ton per hour.



Plate 2: Ball mill crusher at a mining site in Osiri, Migori County

c) Concentration: The dominant method of concentration is sluicing (Plate 3). Conventional sluices lined using sisal sacks are used to concentrate gold dust based on density. The milled ore containing gold is washed down the sluice box to enable dense gold dust to be trapped by the lining material. Heavy gold particles are trapped in sluice carpets as the slurry (ore and water) passes over the inclined surface. The concentrate is then collected by washing the carpets into a basin. The use of sluicing technology among the miners reduces the amount of mercury used for amalgamation.



Plate 3: Sluicing at Isulu in Ikolomani

d) Amalgamation: Mercury is used for extracting gold in Kenya by ASG miners. The common practice at the mining site is concentrate amalgamation. Whole ore amalgamation is rarely practiced due to adoption of sluices in the region thus reducing the quantity of mercury used. However, in some sites such as Kehancha, Lolgorian and Siaya, few miners were processing the tailings using WOA amalgamation as shown in Plate 4.




Plate 4: Amalgamation using mercury in Kehancha, Migori County

e) Roasting of amalgam: Amalgam is normally squeezed through a piece of cloth to recover excess mercury which is reused for amalgamation, after which the gold concentrated amalgam is taken for burning to recover the gold sponge. Amalgam burning is mainly done by gold buyers using charcoal stoves and small gas torches, and in some cases on open fire (Plate 5). Burning of amalgam is mostly performed outside the small covered, iron sheet-walled shops located at the mine sites. Some gold buyers also burn amalgam inside the buying shops, especially those using gas torches while others burn it at their homes. Mercury vapor is released into the atmosphere during roasting and the remaining gold is weighed and purchased, the values based on purity and source. Gold is graded by buyers as either Khaki /sponge gold, regular gold or yellow gold depending on the purity (Plate 6).




Plate 5: Open burning of amalgam

Plate 6: Khaki gold at a buying center in Migori County

f) By Products: The waste (residual mercury, lost gold, waste minerals) is usually discharged into the sluice ponds which are located next to the sluice boxes. This forms part of tailings that are sold to leaching companies to recover additional gold.

2.6 Estimated Number of People Involved in ASGM

National data on the number of ASGM miners in Kenya is lacking as the sector is largely informal. However, a study conducted by Alliance for Responsible Mining and Pact in 2017 estimated that the ASGM sector employs a total of 40,000 people resulting in 800,000 people being dependent on the ASM sector (ARM, 2017).

2.7 Baseline estimates of the amount of Mercury used in ASGM

The calculation of gold production was based on extraction method (UNEP, 2017) practical guide for developing baseline estimates of mercury use in artisanal and small-scale gold mining communities. Based on 2019 field data on production from 6 counties of Kakamega, Migori, Siaya, Nandi, Narok and Vihiga, it is estimated that 6.864 tons of gold per year is produced using mercury. Based on mercury to gold ratio of 1.2:1, an amount of 8.237 tons of mercury is used to recover the gold (Table 3) and the estimation process is shown in Annex 5.

Table 3: Amount of mercury used in the ASGM sector in Kenya

County	Annual ASGM Gold Production (Kgs)	Amount of mercury (Kgs)
Migori	1,947.78	2337.34
Siaya	523.98	628.78
Kakamega	1,406.46	1687.75
Narok	1,520.40	1824.48
Vihiga	1,385.04	1662.05
Nandi	80.10	96.12
Total	**6,863.76**	**8236.51**

Source: Field data

2.8 Legal Status

The Kenya Constitution 2010 Article 61 provides that all land in Kenya belongs to the people of Kenya collectively as a nation, communities and individuals and that land in Kenya is classified as public, community or private. All minerals and mineral oils as defined by law are categorised as Public Land under Article 62(1) of the Constitution, effectively transferring the mineral rights to the government.

Article 42 of the constitution confers the right to a clean and healthy environment for all while Article 69 further makes provisions on the State's obligations in respect of the environment, and Article 70 makes provisions on the enforcement of environmental rights by aggrieved persons. These provisions have a direct impact on the operations of ASGMs, both in terms of accessing the mineral rights, as well as operating in a manner not likely to jeopardize the right to clean and healthy environment for all.

Artisanal and small-scale gold mining in Kenya is governed by the Sessional Paper No. 7 of 2016 (Mining and Minerals Policy 2016), operationalized through the Mining Act, No. 12 of 2016. The Mining and Minerals Policy 2016 takes a holistic approach to the mining sector addressing issues relating to sustainable exploitation of natural resources such as community engagement, environmental issues and beneficiaries from mining.

The Mining Act, 2016 and the Mining Regulations lay out the legal framework for the mining sector in Kenya. The Act recognizes 3 categories of miners; artisanal miners, small scale miners and large-scale miners, each with a clearly defined level of operations. The Act further provides for inter alia, classifications for ASM operations; zoning for ASM; permits and licenses for ASM operations; county mining committees, environmental and health; training and assistance for ASGM operations; mineral rights and establishes the Minerals Rights Board to vet applications for licenses, as well as the National Mining Corporation, a Parastatal [2] which is the investment arm of the government in respect to minerals. On artisanal mining operations, the Act provides for:

i) The establishment of a county mines office that is responsible for granting, revoking and renewing artisanal mining permits;
ii) Supervise and monitor operations of artisanal miners;
iii) Provide trainings for efficient artisanal mining operations;
iv) Keep a register of the artisanal miners;
v) Facilitate the formation of artisanal association groups or cooperatives and promote fair trade of artisanal miners.

The Act also provides for artisanal mining permits for all artisanal operations as well as the establishment of County Mining Committees to advice on granting, renewal or revocation of artisanal mining permits.

In terms of mercury use in ASGM, the Mining Act, 2016 Section 4, Schedule 2 establishes the criteria for determining small scale prospective and mining operations and prohibits the use of mercury by small-scale miners. However, the enforcement remains a challenge. The institutional frameworks detailed under this Act are in the process of establishing their operations. The government has recently gazetted artisanal mining committees in Migori, Kakamega and Vihiga setting the pace for formalization of the sector.

The Ministry of Petroleum and Mining (MoPM) is currently working on the regulations and strategies: Draft Strategic Plan 2018 – 2022, for the Mining Sector; Draft Gender Strategy and Action Plan for the Mining Sector; Draft Community Development Agreement Guidelines; Draft Model Community Development Agreement; Draft Mining (Local Equity) Regulations 2019; Draft Artisanal and Small-Scale Mining Strategy; and a 20-year Mining Strategy. The drafts are at different stages of development, but largely awaiting stakeholder consultation and implementation.

Other key relevant laws include the Environmental Management and Coordination Act 1999 (EMCA) Amended 2015 which is the framework law for environmental management in Kenya and provides for environmental impact assessment (EIA) and Environmental Audit (EA) for mining projects, including (ASGM) projects. The Act has various subsidiary regulations that are relevant to the ASGM sector such as Solid Waste Management Regulations, Environmental (Impact Assessment and Audit)

[2] Parastatal: government owned companies, boards or organizations which help the government to run essential functions of the government.

regulations and the Draft Chemicals Regulations. EMCA (Waste Management Regulations 2006) prohibits the dangerous handling and disposal of wastes, introduces a licensing system for waste management, and specifies methods for disposal of hazardous wastes, including wastes containing mercury and mercury compounds. Three ASGM groups have got the EIA license, awaiting being licensed. Majority of ASM miners are positive on the formalization exercise. The low number of those complying is due to the slow pace of formalization exercise.

The draft Environmental Management and Coordination Act (Toxic and Hazardous Chemicals and Materials Management) Regulations 2019 are proposed under EMCA. The regulation is awaiting gazettement. The draft regulations list mercury, mercury compounds, Mercury Added Product (MAPs) and manufacturing processes using mercury or mercury compounds as restricted chemicals. These regulations set out various phase out dates for such mercury-related chemicals. NEMA and the relevant lead agencies are required, under Regulation 33 of the draft Toxic and Hazardous Chemicals and Materials Management Regulations to ensure the use, emissions, releases and discharges of toxic and hazardous chemicals and material into the environment are minimized and eliminated in the oil and gas, geothermal, mining, dredging and other extractive processes.

Article (6) requires the owner or operator of an extractive facility or process to ensure that use of mercury or mercury compounds and any other toxic and hazardous industrial chemicals and materials listed in the Sixth Schedule are reduced and where feasible eliminated. Article 52 (1) provides that the national focal point to the relevant convention shall report to the Secretariat of the relevant conventions on the measures taken to implement the provisions of agreements or conventions on the management of toxic and hazardous chemicals and material in fulfillment of the national obligations. Kenya has signed the convention, reported to the secretariat that the mercury use is more than insignificant and is making effort to ratify.

Other legislations include the Water Act, 2016 which makes provisions on the regulations for controlling release of pollutants, including mercury, in water; the Occupational Health and Safety Act, No. 15 of 2007 which makes provisions concerning the safety of workers and the Public Health Act, Chapters 242, Laws of Kenya which makes provisions for securing and maintaining health. The Fisheries Management and Development Act, 2016 prohibits mercury releases of pollutants, including mercury, into the Kenya fisheries waters. Article 49(1) of the Act prohibits pollution of Kenya fisheries waters. It prohibits any person from introducing or attempting to introduce into the Kenya fishery waters, directly, indirectly, and deliberately, any deleterious article or substance, including those with toxic, hazardous or other harmful properties or effects to fish, marine environment, and those which may adversely affect the habitat or health of the fish.

The East Africa Community Customs Management Act[3] under its Second Schedule[4] lists generally prohibited and restricted goods for import into the EAC. The prohibited goods include, among others, all soaps and cosmetic products containing mercury, mercury compounds as agricultural chemicals. More details on the various laws and regulations are found in the legal report Annexed to this NAP (Annex 6).

[3] **2004 edition with all amendments up to 2009.**

[4] **The Second Schedule is in line with the powers conferred under sections 18, 19 and 20 of the Act.**

2.9 Leadership and Organization of ASGM at National and County Levels

ASGM in Kenya is still largely informal. However, in all the ASGM mining sites, miners appear to have some informal leadership structure to ensure order, control of people and conflict resolution. The control system in most of the mining sites is offered by shaft owners without any formal reporting and direction structures.

At the National Level, the only formal leadership structure for miners is through the Kenya Chambers of Mines (KCM) which is a membership body for all miners in the country. ASGM do not have any form of national organization but have an opportunity to be represented through KCM. The KCM is a Business Member Organization that represents the interests of players in the development of mineral sector of Kenya, with membership ranging from miners/mining companies, prospectors and explorers, mineral processors, manufacturers of mineral based products, mineral dealers and traders, mineral transporters, equipment and machinery dealers and suppliers, legal service providers in the mineral sector, financial service providers in the mineral sector, professionals in mineral development related disciplines and global, regional and national partners supporting mineral development in Kenya. The chamber has a large membership distributed across the country.

In terms of organization, there are attempts by miners to form various groups such as community-based organizations (CBOs), cooperatives and self-help groups which vary from site to site. Some of these organizations include Migori County Miners Cooperative Society (MICA); Mining Community Development Program (MICODEPRO); Mwangaza Mining Community Based Organization and Mikei, Osiri, Kabigo Women Group (MOKA). As at June 2020, only MICA in Migori and Farmers of Gold in Lolgorian had registered as a cooperative and obtained a processing license in line with the requirement of the Mining Act, 2016. Majority of the miners do not belong to any of these institutions and largely operate informally.

At the county level, there are efforts by miners to form associations to articulate their issues and to be able to participate in the county mining committees as provided for in the Mining Act 2016. In Migori and Kakamega Counties, miners have formed an umbrella association bringing together all miners and miner groups in those counties namely, the Migori County Artisanal Miners Association (MICMA) and Kakamega Gold Miners Cooperative in Kakamega County, respectively.

Although miners appear to be organized at the mine sites as cooperative societies, community-based organizations or self-help groups, the sector is still considered informal since the organizations are not recognized under the Mining Act 2016 as they have not met the requirements for formalization under the Act. The fact that there is some form of organization already in the sector offers hope to the formalization process in Kenya.

2.10 Mercury Trade and Supply

2.10.1 Sources of Mercury

Mercury is not mined in Kenya but is imported. According to data from the Kenya Revenue Authority (KRA), a total of 21,926 kg of mercury was imported into the country in the year 2014/2015 mainly from Germany, India and China. Other countries that export mercury to Kenya include Rwanda, Tanzania, Uganda, Japan, Spain, Austria, Vietnam, Mexico, Singapore, USA, and South Africa among others. According to UN Comtrade database, Kenya has not reported mercury imports for the last 4 years (UNEP, 2017). There is currently no requirement to report mercury imports and exports into Kenya.

2.10.2 Mercury Trade and Supply

Mercury is imported into Kenya by large dealers in 54.5 kg or 34 kg metallic cans. It is then repackaged into 1kg plastic bottles resembling 250 ml syrup medicine bottles and further portioned into smaller plastic bags or soda bottle caps to 'cork' down the supply chain. It is sold and supplied at an average cost of less than KSh.22,000 per kilogram and traded between KSh.1,500 - 2,000 (15-20 USD) per 5 ml (1 cork) for small buyers (CEJAD, 2018). The bulk of mercury used in ASGM is from illegal trade within the country and across the borders. Key informant interviews revealed that there is cross border illegal trade of mercury between Kenya, Tanzania and Uganda, where the movement is determined by price variations. For example, when mercury is cheaper in Uganda, traders will tend to buy from there and vice versa in the three East African countries.

2.10.3 Mercury Supply Chain

According to CEJAD (2018)[7], the key actors in the mercury supply chain in Kenya are;

i) **Chemical Dealing Companies:** the companies import mercury in large quantities as shown by import data from Kenya Revenue Authority.

ii) **Bulk gold traders:** The traders buy the mercury from the chemical shops, or illegally obtained from neighboring countries and distributed to the miners through the agent's buying gold at the mining sites.

iii) **Gold buyers:** These are largely agents at different mining sites who buy gold and accumulate before selling to the main dealers. The buyers also sell/distribute mercury to miners at the site.

iv) **Middle men:** There are several middlemen who sell and distribute mercury at the sites purely as a business. The final buyers of the mercury are either the artisanal miners themselves or sluice owners who buy mercury and supply/give to the people working for them as amalgamators.

2.11 Storage, Recovery and Recycling of Mercury

Article 10 of Minamata Convention requires parties to take measures to ensure that interim storage of mercury and mercury compounds intended for use by a Party under the Convention is undertaken in an environmentally sound manner, taking into account the guidelines, and in accordance with any requirements of the Convention. On mercury wastes, Article 11 of the Convention requires Parties to take appropriate measures to ensure that mercury wastes is managed in an environmentally sound manner, taking into account the guidelines developed under the Basel Convention and in accordance with requirements under the Convention, and that any waste resulting from mercury recovery, recycling, is reclaimed or directly re-used for use as allowed to a Party under the Convention shall be managed in an environmentally sound manner.

In Kenya, storage of mercury in the mine sites is mostly done using closed plastic bottles of different sizes depending on the quantities involved. Storage of mercury can be done by gold buyers, pond owners or gold processors. Recovery and recycling of mercury during amalgamation is common in all the mining sites due to the quantities of gold recoverable. Mercury that has not been used in capturing gold is normally recovered and stored for re-use. The mercury is purified using nitric acid and stored and the process is repeated until all the mercury is exhausted. There are no centers for purification and the people purify the mercury at their sites informally. Currently, there are no regulation/guidelines for mercury storage in Kenya as required by the Minamata Convention.

2.12 Gold Trade and Export in Kenya

The trade of gold at ASGM sites is controlled by gold buyers and brokers who manipulate the entire process including the market and value of the gold. Although the miners sell their gold depending on the weight of the gold, there exists no standard for determining how the weighing machines are calibrated or how the purity is calculated. This is further exacerbated by limited gold markets and gold buyers/ brokers. The total gold production from artisanal and small-scale mining is estimated at about 6,863.76 Kgs (6.9 tons) per year and contributes approximately KSh.29 Billion per year, based on the international average price of USD 42,000/Kg. The figure has been calculated from gold production by use of mercury in ASGM. However, the bulk of the gold is traded informally thus the figures are not captured in official statistics. At the mining sites, one gram of gold is sold between KSh. 1,000 and 4,000 depending on the quality of the gold to the gold traders. This means that the benefits are not fully enjoyed by the local miners. Selling of gold is mainly concentrated at the mining sites and local market centers. Gold trade in the ASGM communities is therefore largely informal, locally organized and across the borders. The key actors in the gold trade in Kenya are:

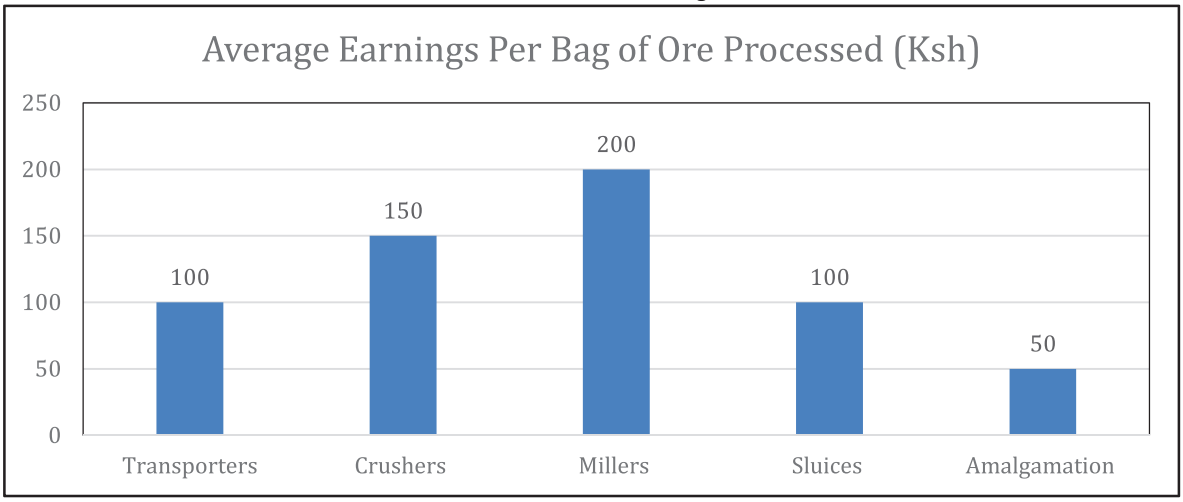
i) **Onsite gold brokers:** This group mainly includes informal brokers that buy gold directly at the mining sites, accumulate, and sell to the big brokers or dealers in main towns.

ii) **Main brokers:** Big gold brokers are linked to mining sites through networks of brokers who buy on their behalf at the mining sites. These main brokers are mainly found in major towns such as Migori, Busia, Kakamega and Nairobi.

iii) **Licensed gold dealers:** These mainly include gold buying companies that buy gold from the brokers and use in making jewelry, or for export.

2.13 Economic Aspects

ASGM is a key livelihood source in the mining communities with more than 93% of population in the mining areas being dependent on mining as the main occupation. Other livelihood sources include farming (4.4%) and services (1.2%). ASGM directly employs approximately 40,000 people who work as miners, resulting in about 800,000 people benefiting indirectly from the sector. The sector also supports auxiliary services ranging from equipment supply to hospitality services (food, beverage and accommodation) resulting in a greater multiplier effect to the economy. The per-capita income for a mine worker is estimated at between KSh 10,000 – 20,000 every month. The sector produces gold estimated at approximately KSh. 29 Billion per year, based on the international price of USD 42,000/Kg. The earnings for different workers involved in the mining process is summarized in Figure 4.



Source: Social and Economic Analysis Report, 2020 (Annex 4)

Figure 4: Average earnings per bag of ore processed for different actors

2.14 Access to Financial Services by Miners

Access to formal finance by artisanal and small-scale gold miners in Kenya is not adequate as ASGM operations are not recognized by financial institutions. This is largely attributed to the informal nature of the sector and a general lack of collateral. Financing mining is mainly through the land owners/mine owners (land lords) and gold buyers. Finances given by the landlords are recovered from the ore proceeds through a sharing formula between the landlord and the miners, where the landlords usually get the largest share. Where credit is given by the gold buyers, such money is usually recovered in the equivalent of supplied gold by the miners. By giving credit, the gold buyers are assured of loyalty from the miners who will commit to only sell their gold to them thus generating long term relationships.

Additionally, majority of miners lack a saving culture owing to the attitude that they can make money anytime from the mines or move to more productive mines in case where a mine is not yielding much. Incidences of miners being extravagant in times of financial windfalls are also common across the mining sites. Training and adopting financial management and saving culture can thus help in creating a financial record that miners can use to access credit so as to invest further in mining activities or alternative livelihoods.

2.15 Gender Roles

Field studies conducted in five mining counties of Kakamega, Migori, Siaya, Narok and Vihiga showed that artisanal and small-scale gold mining in Kenya is dominated by men (60.1%) followed by women at 39.9%. According to the field studies, the workforce is youthful as the majority of the miners are below the age of 40, and forms about 72% of the ASGM work force.

The mine sites are characterized by a clear division of labor and separation of roles, where women are mostly in charge of processing (sluicing, panning and amalgamation) while men perform ore extraction and porting. Men form 92% of the workforce in extraction while women constitute 84.6% of gold processing (crushing, sluicing, panning and amalgamation) workforce.

In all the sites, women are sorely involved in sluicing, panning and amalgamation. Men and women are involved in the initial processing stages of crushing. Milling is dominated by men who operate the ball mill crushers. The field study also revealed that in Rosterman mining site (Kakamega County), there is a site that is fully owned and operated by women. In one of the ASGM mining sites in Narok County, some women own mining shafts but do not engage in ore extraction work within the shafts. Although women are the majority of processors in the mine sites, they are not aware of related mercury exposure risks, yet are more prone to exposure due to inequalities in education status, access to information, participation and financial capacity, among others.

2.16 Child Labor and ASGM

Child labor is not common in most mining sites. Children are not allowed to engage in any form of mining activity and this is being enforced by the administration officers such as chiefs and assistant chiefs in the mining communities. However, in some sites, children accompany their parents to the mines especially during school holidays and weekends and assist in ore processing (sluicing and amalgamation) as well as hauling.

2.17 Education Levels of ASGM Miners

Field study conducted in the mining counties revealed that access to education by the mining community is very low as most miners (53%) are not educated beyond primary school level with only 39.6% attaining secondary education. Only 5% of economically active miners are educated beyond secondary level, and women are twice as likely as men to have no education (20% vs. 9%), thus limiting many from accessing more lucrative opportunities than men. The low literacy levels among the miners may impact on the adoption of information and communication technologies as a means of sharing information on ASGM as well as in adoption of best environmental practices (BET) and best available technologies (BAT).

2.18 Level of Knowledge on Environmental and Health Risks

The awareness level of miners on the impacts of mercury on the environment and human health is low in the ASGM counties except for Migori and Kakamega Counties. Majority (78%) of miners in Kenya are not aware of the adverse effects of mercury exposure to the environment and health. The high awareness levels in Migori and Kakamega may be attributed to a robust awareness creation program by different stakeholders such as CEJAD, Fair Trade and Canadian International Resource and Development Institute (CIRDI) among others targeting Kakamega and Migori, which have the longest history of ASGM.

2.19 Access to Healthcare Service and Other Social Services

Most miners in Kenya (79%) have adequate access to basic health care services from both public and private health facilities in the mining communities. However, miners have not been tested for any mercury poisoning in any hospital which is mainly attributed to lack of capacity by health professionals to diagnose cases of mercury poisoning or conduct mercury blood load monitoring. Protocols and algorithms for diagnostics and management of heavy metal poisoning developed by the Ministry of Health are not being adhered to due to inadequate personnel capacities, equipment and reagents in the hospitals.

2.20 Management of Tailings in the ASGM Sector

Tailings are normally sold to leaching companies for additional recovery of gold. Tailings leaching[5] by use of cyanide has been on the rise in the past five years. It was observed that there is no clear process of separating mercury contaminated tailings from mercury free tailings. There is a prevalent practice of leaching the contaminated tailings using cyanide as per the provisions of the Environmental Impact Assessment. This is one of the worst practices listed for elimination under the Minamata Convention.

2.21 Contaminated Sites

There is no official data on mercury levels at suspect contaminated sites in Kenya. However, several ad-hoc studies have been done on mercury pollution in gold mining areas. For example, a study conducted by Odumo et al. (2011) reported high levels of mercury contamination in soils, water bodies, and plant matter especially in Migori–Trans Mara gold mining areas. Mercury concentration are reported to be in the range of 20 and 1,100 µg kg^{-1} in soils: 30 to 2,380 µg kg^{-1}– in the sediments from the bottom of the rivers with the lowest and the highest levels recorded from the Migori and Lolgorian Rivers.

The WHO permissible levels are in the range of 0.005 mg/1in water. FAO sets the critical value of 0.0001µg/ml for unpolluted surface waters. In studies by Ngure et al. (2014) targeting heavy metal concentration in water, soil and fish, it was found that water samples recorded the highest geometrical means for Cadmium (11.1 µgl^{-1}); Pb (15.1 µgl^{-1}); As (23.3 µgl^{-1}), and Hg (0.0506 µgl–m1) (Both at the mouth of Migori River). All of these values are above the maximum allowable concentration recommended by WHO (FAO/WHO, 1999), and the water quality standards for effluent discharge into the environment and public sewer (Text Box 1).

The high concentrations can be attributed to natural background levels as well as the gold mining activities in the region (Ogola et al., 2002). The main source of Hg surface water, stream sediments and in fish is attributed to be from the amalgamation of gold concentrate (Ogola et al., 2002; Okoth et al., 2010). All artisanal gold mining areas including areas where leaching plants are located are thus considered contaminated sites calling for not only a regular monitoring system for determining mercury levels in soil, water and air but also measures for treatment and/ or rehabilitation of such sites.

Box 1

According to Kenya's Water Quality Regulations 2006, the permissible level of mercury is 0.005 mg/l and 0.05 mg/l for discharge into the environment and public sewer respectively.

2.22 Health Impacts and Mercury Exposure through Various Media

It was observed that there is widespread open burning of amalgam thus increasing the risk of exposure through inhalation of mercury vapor. However, health data on mercury poisoning in Kenya is inadequate because routine mercury blood level monitoring among populations at risk is not routinely done. In a study conducted by IPEN/CEJAD in 2016 to monitor mercury levels in the hair of women of child bearing age in ASGM areas in Osiri in Migori County, high mercury levels above 1ppm (parts per million) were reported (IPEN/CEJAD, 2016).

[5] **Leaching is a chemical process in mining for extracting valuable minerals from ore.**

3.0 NATIONAL OBJECTIVES AND REDUCTION TARGETS

The chapter outlines the problem statement, national objectives and reduction targets to reduce the use of mercury in ASGM in Kenya, as guided by the national overview chapter, as well as the guidelines on paragraph 1(a) of Annex C of the Minamata Convention.

3.1 Problem Statement

Kenya's entire mining sector contributes about 14.2% to the GDP and employs about 200,000 people and the ASM sector is expected to contribute 3% of GDP in the year 2020 and 10% by the year 2030 (GoK, 2016). Kenya's ASGM sector is largely informal, unregulated and until its recent recognition by the Mining Act No. 12 of 2016, was operating illegally.

Artisanal and small-scale gold mining using mercury occurs at a significant level in Kenya. However, the sector is largely informal thus hampering effective interventions aimed at enhancing sustainability within the sector. Within the mining sites, the worst practices related to use of mercury in mining have been identified. These include open burning of amalgam, burning of amalgam in residential areas and in some cases whole ore amalgamation and cyanide leaching. These worst practices coupled with poor environmental management in the ASGM areas continue to increase mercury releases and emissions into the environment. Mercury emissions increase the risk of exposure and present serious long-term environmental and health impacts. The most affected are the people working in the sector especially women and children, and the people living in, near or downstream/wind of such operations. In addition, the lack of necessary controls in mercury trade and supply in Kenya has led to continued diversion of mercury for use in the ASGM areas.

Data on health and environmental impacts of ASGM is inadequate in Kenya due to lack of a robust and consistent monitoring system. The inadequate data hampers effective planning and investments in minimizing the health and environmental impacts from the sector. The communities in the mining sector also lack adequate knowledge and awareness on the impacts of mining activities on their health and the environment in general. The sector operates informally thus characterized by low access to clean and efficient technology, thus low adoption of BAT/BEP.

3.2 Overall Objectives of NAP and Reduction Targets

The overall objective of the NAP on mercury is to address mercury emissions and releases so as to reduce adverse health and environmental risks associated with mercury use in ASGM. Emissions were not quantified by the UNEP toolkit. From the fieldwork, it was established at a ratio of 1.2:1 then the toolkit was used to calculate the distribution in air, water and land. The strategic objectives of the NAP are:

i) Formalization of the ASGM sector by the year 2023.
ii) Reduction of mercury emissions and releases by 50% through elimination of worst practices by 2024.
iii) Development and implementation of the public health strategy to reduce the exposure of vulnerable populations to mercury in ASGM Counties by the year 2025.
iv) Managing trade and preventing diversion of mercury and mercury compounds by the year 2024.

4.0 IMPLEMENTATION STRATEGIES

This section outlines thematic strategies guided by the overall and specific objectives of the NAP. The chapter is divided into 3 parts: Implementation Strategies; Implementation Framework; and Work Plan.

4.1 Implementation Strategies

4.1.1 Strategy 1: Steps to Facilitate Formalization/Regulation of the ASGM Sector (Objective 1)

The formalization process will enable Kenya achieve Objective 1 of the NAP and lay ground for achieving other targets set out in the NAP. The formalization will entail integration of the ASGM sector into the formal economy, society, and regulatory system. This will set the framework for effective reduction and control of mercury use by enabling organization, education, access to assistance, and the regulation of gold and mercury trade. Formalization will make it possible to obtain and maintain data about the sector. The actions under this strategy include:

1. Fast track and facilitate registration of all ASGM actors across the value chain.
2. Facilitate the issuance of ASGM permits in all ASGM areas.
3. Formalize all ASGM gold traders/dealers.
4. Carry out monitoring and enforcement of compliance.

4.1.2 Strategy 2: Actions to Eliminate Worst Practices in ASGM (Objective 2)

The use of mercury in ASGM leads to releases into land, air and water. This increases the risk of exposure to both the users and communities living within the gold mining areas. The common pathway to exposure is via inhalation of mercury vapor. Exposure to mercury is therefore highest amongst the gold buyers who burn the amalgam prior to weighing of the gold, as well as the women involved in panning who may inhale the vapors. Elimination of all worst practices will therefore depend on proper sensitization of miners on safe handling of mercury; proper environmental management measures at site, provision of alternative clean technologies, as well as capacity building of the miners to enable them adopt the technologies. Actions under this strategy will include:

1. Design and implement awareness raising program for ASGM communities on human and environmental risks of mercury use in mining.
2. Promote access to mercury free technologies based on BAT.
3. Promote adoption of BEP, and
4. Enhancing capacity of ASGM actors in safe and efficient mining through vocational training.

4.1.3 Strategy 3: Strategies for Promoting Reduction of Emissions, Releases and Risks of Exposure to Mercury (Objective 2 & 3)

Emission reduction can be achieved through adoption of BATs Ps that are mercury free, while prevention of exposure is largely through BEPs coupled with use of mercury free technologies. The actions for achieving this strategy complement the actions in Strategy 2. Actions under this strategy will include:

1. Promote mercury free technologies.
2. Undertake regular monitoring of mercury emissions to air, land and water.
3. Promote sound environmental management practices in ASGM sites and incorporate the tailings management.
4. Promote adoption of safe work practices including use of Personal Protective Equipment, and
5. Sensitization of miners on environmental conservation practices.

4.1.4 Strategy 4: Managing Trade and Preventing Diversion of Mercury and Mercury Compounds by the Year 2024 (Objective 4)

The trade paths for mercury are not well documented in Kenya hence the bulk of mercury used in ASGM is being traded informally. This calls for the need to properly regulate mercury flows into and out of Kenya. The country is formalizing and working towards eliminating the use of mercury and there is need to fast-track the gazettement and implementation regulations. This will enable proper monitoring of mercury use, as well as prevent diversion of mercury from the formal sector to the ASGM. Actions under this strategy will include:

1. Enforce the regulation of banning use of mercury in ASGM.
2. Identification of sources of mercury (imports and exports) in Kenya.
3. Regulation of trade and supply and use of mercury to avoid diversion into ASGM sector.

4.1.5 Strategy 5: Strategies for Involving Stakeholders in the Implementation and Continuing Development of the Plan

The NAP is a living document that will require regular monitoring and evaluation of measures taken to reduce emissions and releases. Its implementation will be by different stakeholders drawn from the government, private sector, public benefit organizations and local community organizations according to their mandates, responsibilities and competencies. There is therefore need to have a mechanism that will provide for participation of all actors in NAP implementation. Actions to facilitate this will therefore include:

1. An inter-agency coordinating mechanism comprising membership from all relevant agencies and a NAP coordination office.
2. Provision for quarterly reporting as per the government reporting frameworks.
3. Provision for Midterm evaluation three years from NAP adoption to assess adequacy and effectiveness of measures undertaken.
4. Regular consultative meetings with stakeholders to report on progress made in implementing relevant strategies.

4.1.6 Strategy 6: Public Health Strategy to Reduce Exposure of Artisanal and Small-Scale Gold Miners and Their Communities (Objective 3)

The health strategy aims at reducing exposure of artisanal and small-scale gold miners and their communities to health risks associated with ASGM by the year 2024 in the six counties where ASGM is prevalent. This public health strategy feeds into Strategic Objective 3 with focus on prevention of mercury exposure for ASGM miners and their communities, gathering of health data, training of health care-workers on ASGM related health matters, and equipping health facilities to be able to diagnose and treat mercury poisoning cases. Actions to achieve this will include:

1. Sensitization of health workers on mercury poisoning and protocols for managing mercury poisoning.
2. Building capacity of health workers on diagnosis and management of mercury poisoning.
3. Strengthening the capacity of local health facilities to diagnose and give care.
4. Strengthen health surveillance and gathering of data on mercury poisoning.

4.1.7 Strategy 7: Strategies to Prevent Exposure of Vulnerable Populations, Particularly Children and Women of Childbearing Age to Mercury Used In ASGM

This strategy is for protecting the vulnerable populations especially children, women of childbearing age, and pregnant women. The actions proposed under this strategy include:

1. Identification of key health needs and challenges in ASGM areas.
2. Promoting of mercury free alternatives through technical assistance programs targeting vulnerable groups to reduce exposure.
3. Promoting information sharing and awareness creation among vulnerable groups.
4. Enhancing access to health care for the affected persons.

4.1.8 Strategy 8: Strategies for Providing Information to Artisanal and Small-Scale Gold Miners, Gold Processors and Affected Communities

Access to information by miners is key to adoption of best practices, improvement of governance systems as well as compliance to the various legal and regulatory provisions. The actions proposed under this strategy includes:

1. Developing outreach and information sharing mechanism to ASGM miners, gold processors and affected communities.
2. Encouraging media to regularly disseminate and broadcast information on the health risks and environmental problems associated with ASGM activities i.e. mercury.
3. Customizing the mining cadaster to include ASGM specific information.

4.1.9 Strategy 9: Strategies for Promoting Market Access and Value Addition

This strategy is for enhancing value addition and access to markets for ASGM products. The actions proposed under this strategy includes:

1. Promote partnerships and investments for value additions in ASGM.
2. Develop a National Gold Buying Platform.
3. Develop a National Gold Processing refinery.
4. Develop a certification system for ASGM gold.

4.1.10 Strategy 10: Strategy for Gender Mainstreaming

Women and youth are often disadvantaged in the mining sector due to social and economic disadvantages. There is need for a concerted effort to the mainstream their special circumstances to mining so as to empower them to gainfully participate in the mining sector across the gold value chain. This requires a proper strategy for gender mainstreaming in the NAP process that is more comprehensive and inclusive of social structures. The actions proposed under this action includes:

1. Carry out baseline assessment on gender issues in the ASGM sector. The assessment is yet to be done and it is considered a priority in this action plan.
2. Identify barriers for effective women engagement in the sector.
3. Mainstream gender in the formation and registration of mining groups.
4. Mainstream gender in the governance structures of ASGM sector.
5. Train women miners on safe and efficient mining.
6. Facilitate women miners to access mining permits as applicable.
7. Facilitate and train women miners' access to finance and technology for ore extraction and processing.
8. Facilitate women investments in the production value chain (value addition).

4.2 Implementation Framework

The National Action Plan (NAP) is a national framework whose implementation is through a multi-agency sectoral approach. The Ministry of Environment and Forestry is the focal point for the Minamata Convention on Mercury. The ministry has a department of Multilateral Environmental Agreements (MEAS) which coordinates conventions and programs on chemicals and waste across government institutions, and is currently implementing various projects on chemicals and waste funded both by the Kenya Government, Global Environmental Facility (GEF), UNEP (Special Chemicals Programme), various members of the Intergovernmental Organizations of the Chemicals Management (IOMC) as well as bilateral and multilateral agencies. The NAP implementation process will therefore benefit from synergy with the existing projects in the department and in other specialized agencies.

The NAP anticipates to benefit greatly from the support it will get from the Convention Secretariat as well as the Meetings Conference of Parties. The review provided will also draw from the decisions of the meetings of the conference of parties and more so when Kenya becomes a party which is expected to be in the near future.

The Africa Institute (AI) is cooperating well with the Kenya Government and directly with miners. It will play a key role in NAP implementation in as far as technical assistance and financial management is concerned.

The key plank of NAP will be the Planet GOLD Project funded by the GEF which will support a large part of the NAP implementation in formalization, technology and access to markets and finance.

Once endorsed, the NAP will be included in the County Integrated Management Plans for the 10 ASGM counties and benefit from the county funds implementing the NAP. The ME&F will be responsible for overall coordination of the NAP activities. Each relevant lead agency will be responsible for implementation of the various strategies proposed in the NAP according to its mandate and competency. To ensure effective coordination, the ME&F shall establish an inter-institutional coordination committee with clear terms of reference. The committee shall comprise of relevant government agencies and non-state actors to provide guidance on the implementation of the NAP. The activities of the committee will be funded by the government, the Global Environment Facility from ongoing Planet GOLD Project, miners and other investors. Table 4 is a list of institutions and their various roles during the implementation of NAP.

Table 4: Institutions and their roles during NAP implementation

	Institution	Role in NAP implementation
1.	Ministry of Environment and Forestry	i. Responsible for overall coordination and implementation of the NAP. ii. Implementation of sustainable gold mining projects and programs. iii. Enforcement of regulations on toxic chemicals. iv. Coordination with other lead agencies and establishing partnerships with other relevant stakeholders. v. Coordinated mobilization of technical and financial resources for effective implementation of the NAP. vi. Follow up on NAP implementation.
2.	Ministry of Petroleum and Mining	i. Lead ministry in implementation of the formalization strategy of the NAP. ii. Develop programs and projects on promotion of safe and efficient mining practices in the ASGM sector. iii. Enforcement of mine safety regulation in ASGM operations. iv. Promotions of mineral value addition in gold value chain.
3.	Ministry of Health	i. Lead ministry in coordination and implementation of the health strategy of the NAP. ii. Develop and coordinate awareness and training programs of the health strategy. iii. Monitoring and evaluation of the implementation of the health strategy.
4.	Ministry of Industrialization, Trade and Enterprise Development	i. Overall coordination on implementation of the mercury trade and control strategies. ii. Promotion of in country value addition in gold value chain iii. Promotion of local content in ASGM
5.	National Environment Management Authority	i. Coordinate and implement best environmental practices. ii. Develop and implement programs on best environmental practices in the sector. iii. Ensure compliance with all applicable laws in the sector. iv. Implement Prior Informed Consent procedures for mercury trade and licensing.
6.	Ministry of Agriculture, Livestock, Fisheries and Cooperatives (KeFS and KEMFRI)	i. Generation of data and bio-monitoring of the aquatic environment. ii. Ensure sector compliance to the Fisheries Management and Development Act
7.	County Artisanal Mining Committees	i. Facilitate vetting and issuance of artisanal mining permits. ii. Provide local enabling environment for ASGM.

8.	Council of Governors	i. Coordinate with lead ministries and agencies implementation of the NAP strategies.
9.	Water Resources Authority	i. Coordinate water quality monitoring in ASGM areas. ii. Enforce effluent discharge regulations.
10.	NGOs/CBOs/FBOs/ Non-Governmental Organizations/ Community Based organizations/ Faith Based Organizations	i. Awareness creation and sensitization of miners. ii. Participate in governance improvement of the sector.
11.	Kenya Chamber of Miners	i. Assist in market development mechanisms ii. Awareness and education. iii. Promotion of partnerships for sector advancement.
12.	Representative of ASG Miners	i. Participation in decision making mechanisms. ii. Promotion of miners' welfare. iii. Coordination of in-house trainings. iv. Mobilization and sensitization of miners. v. Reporting on compliance.
13.	Financial Institutions	i. Facilitate access to loans and grants. ii. Investment opportunities.

4.3 Work Plan

Tables 5 to 14 describes different activities proposed under each strategy, and the relevant lead agencies in charge of their implementation. The tables also show the results expected to be achieved from the implementation of the various strategies and the indicative budget for implementing the NAP strategies. In addition, Table 15 shows a summary of the costs of implementing the NAP for the five-year period.

Table 5: Work Plan for Strategy 1: Steps to Facilitate Formalization/Regulation of the ASGM Sector (Objective 1)

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Fast track and facilitate registration of all ASGM actors across the value chain	Enumerate and map out all ASGM sites and actors (baseline data)	• Map out all ASGM sites • Enumerate different actors • Zone out regular miners in an area	Baseline data on ASGM actors	MoPM ME&F	2022-2023	18. 00	Allocate 3M per county for data collation for 6 counties	GoK/Partners
	Set and maintain an up-to-date register of ASGM sites and actors	• Update cadaster to reflect mapped ASGM sites. • Secure daily (wage) registers of active mining locations	Up to date database of all ASGM miners and actors	MoPM	2022-2023	36.00	3M per county for 2 years for 6 counties	GoK/Partners
	Sensitize miners on need for formal organizations and various registration modalities	• Support in formation of registered groups or cooperatives • Enforce mining by registered entities as per Mining Act 2016	Register of mining groups (cooperatives, companies, etc.)	MoIT&ED ME&F MoPM, County Governments Department of gender and Social Services State Department of Cooperatives	2022-2023	36.00	3M per county for 2 years	GoK/Partners
	Facilitate miners to register as cooperatives/ CBOs	• Offer guide and no-objection letters to cooperatives/CBO during their registration	Increased number of formalized miner groups and cooperatives	MoIT&ED County Governments State Department of gender and Social Services State Department of Cooperatives	2022-2023	36.00	3M per county for 2 years for 6 counties	GoK/Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Facilitate the issuance of ASGM permits in all ASGM areas	Spatial mapping out of current and potential ASGM areas in close partnership with other stakeholders	• Stake holder consultation • Map out current and potential ASGM areas in different Counties • Delineate ASGM friendly or small-scale mining area in liaison with AMC and MRB	Map of current and potential ASGM sites in Kenya	MoPM	2022-2023	10.00	Provide for consultancy	GoK/Partners
	Facilitate allocation of sites to ASGM operations	• Gazette mapped out ASGM sites in different counties • Offer first priority to ASGM in identification of licensee area in consideration of equipment and capital base	Map of available areas for ASGM operations	MoPM	2022-2023	36.00	Allocate 3M per county for 2 years for 6 counties	GoK/Partners
	Facilitate gazettement and operationalization of the county mining committees	• Compile names of AMCs • Gazette AMCs • Operationalize the AMCs • Gazettement to be done in respective county mining offices	Functional County Mining Committees	MoPM	2022-2023	60.00	2M per county per year to facilitate operations of mining committees for 5 years for 6 counties	GoK/Partners
	Facilitate issuance of mining permits to qualified groups	• Artisanal miners to make applications • Applications are tabled before AMCs and decisions made • Artisanal miners are informed of the decision to grant or reject Artisanal mini ng permit • Identify and verify duly registered groups from active miners before presenting them to the licensing committee	Increased number of groups with Mining permits and processing license	Artisanal County Mining Committees	2022-2023	18.00	Lump sum figure to provide for waiving of some fees if required, logistical costs for mobilization etc.	GoK/Partners
	Facilitate process of acquisition of various licenses: e.g., EIA license, mining license, dealer processing licenses	• Shorten processing period and fast track licenses of ASGM. (The law has provided duration in the mining Act) Where possible, online application and processing to be done at county level	Compliance with other regulatory requirements by ASG miners	NEMA DOSH MoH KFS MoPM WRA	2022-2023	18.00	Lump sum figure to provide for waiving of some fees if required, logistical costs for mobilization etc.	GoK/Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Formalize all ASGM gold traders/dealers	Map out all traders, dealers and exporters of gold	• Map out all gold traders/dealers • Zone buyers per sub-county and encourage selling at a common point in an open manner for security and other reasons	All traders, dealers and exporters of gold mapped out in Kenya	MoPM KCM	2022-2023	10.00	Provide for consultancy	GoK/Partners
	Register and license gold traders and dealers	• Grant licenses to all gold traders / dealers • Maintain a monthly buying and selling register in the sub-county at agreed point(s)	Up to date data base of mineral dealers	MoPM KCM	2022-2023	36.00	Provide for 3M per county per year to set up and maintain an online data base of mineral dealers targeting 6 counties for 2 years	GoK/Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Carry out monitoring and enforcement of compliance in the sector	Review bottlenecks within legal frameworks to enhance compliance ASGM actors	• Carry out inspections on ASGM mining sites to ensure they comply with mining Act of 2016 and mining safety regulations. • Make a one-stop at county offices for all ASGM rights • Ensure the registered groups or societies have reliable and compliant leadership	Revised laws to favor ASGM	MoPM NEMA DOSHS MoIT&ED	2022-2023	6.00	Provide for consultancy	GoK/Partners
	Establish voluntary/non-regulatory compliance systems among ASGM actors	• Hold a consultative meeting with association of miners to come up with internal regulatory arrangements for ASGM.	Association of miners with internal regulatory arrangements	MoPM NEMA DOSHS MoIT&ED Miners' Associations	2022-2023	36.00	Allocate 3M per county per year for 2 years targeting 6 counties	GoK/Partners
	Conduct periodic assessments on the effectiveness of voluntary/non-regulatory and regulatory considerations to further enhance capacities for reducing mercury use in ASGM	• Carry out periodic assessment on the effectiveness of voluntary/non-regulatory methods of regulation. • Regular inspections by MoPM County officers and offer regular & relevant seminars	Enhance compliance by the sector through voluntary mechanisms	MoPM NEMA DOSHS MoIT&ED Miners' Associations	2022-2023	36.00	Allocate 3M per county per year for 2 years targeting 6 counties	GoK/Partners

	Enforce annual statutory requirements such as Environmental Audits, health and safety audits, tax compliance among ASGM actors	• Review EIA reports on the sector and ensure Fisheries Impact Assessment is taken into consideration. • Enforce section 48 and 49 of the fisheries management and development act no 35 of 2016 • Carry out fish quality monitoring on the 5 pre-determined sites under codex alimentarius • Carry out mercury levels monitoring in the fish, sediments and various fish species along rivers near gold mining areas. Renew of mining or trading rights subject to compliance in all other regulating/players' sectors	•ESIA/EA reports submitted to NEMA. •Health and safety reports to DOSHS	MoPM NEMA DOSHS KeFS WRA MOH KEMFRI	2021-2025	300.00	Allocate 10M per county per year for 5 years targeting 6 counties for compliance monitoring and enforcement	GoK/Partners
Total Cost						692,000,000.00		

Table 6: Work Plan for Strategy 2: Actions to Eliminate Worst Practices in ASGM (Objective 2)

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Design and implement awareness raising program for ASGM communities on human and environmental risks of mercury use in mining	Develop simplified training and awareness raising materials on health and environmental impacts of mercury Approximate numbers for the six counties e.g. 1,000 materials per county, 3 forums per county	• Develop training materials for training and awareness on environmental and health impacts of mercury • Offer training / seminars on alternative gold processing methods • Explore possibilities of pooling resources together and acquire equipment that can be used by all members in a group	Simplified awareness and training materials developed for miners on environmental and health impacts of mercury	ME&F MoPM MoH NEMA	2022/2023	50.00	Provide 8M to develop simplified awareness and training materials and 42Mfor printing and distribution of the materials to ASGM counties	GoK/Partners/CSOs, COG,
	Sensitize miners on worst practices	• Carry out educational and awareness in forums on worst practices in Migori, Kakamega, Vihiga, Siaya, Narok, Nandi • Mining sites all-expert seminar that highlights mercury dangers from buying to disposal	Education and awareness forums on worst practices targeting miners (4 in each hotspot county- Migori, Kakamega, Vihiga, Siaya, Narok, Nandi)	ME&F MoPM NGOs CBOs FBOs	2021-2025	180.00	Allocate 3M/county/ year targeting 6 counties for 5years	GoK/Partners CSOs, COG
	Design and conduct sensitization sessions on environmental and health impacts of mercury	• Design pictorial manuals showing impacts of mercury use • Regular movies and seminars all highlighting resultant environmental and health issues	• Education and awareness forums targeting miners (4 in each hotspot county- Migori, Kakamega, Vihiga, Siaya, Nandi, Narok) • Adverts on the impacts of mercury to health and environment circulated in the media	ME&F MoPM MoH NEMA NGOs CBOs FBOs	2021-2025 2021-2025	180.00 18.00	Allocate 3M/county/ year targeting 6 counties for 5 years Provide for 4 adverts/ year for 4 years	GoK/Partners, GOG/ CSOs
	Design and conduct trainings on possible best practices for environmental and health management	•Train ASGM on BETs/BAPs •Award the best mining group in observing best practices for environment and health management. •Regular seminars	Training sessions on BETs/BAPs	ME&F MoPM MoH KIRDI NEMA NGOs CBOs FBOs	2021-2025	180.00	Allocate 3M per county/per year for 6 counties for 5 years	GoK/Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Promote access to mercury free technologies based on Best Available Technologies (BAT)	Map and document viable and adaptable mercury free technologies for ASGM	• Document viable and adaptable mercury free technologies • Identify viable alternative mercury free processing technologies and promote them	• Viable and adaptable mercury free technologies in Kenya documented • Database of available BAT in ASGM	MoPM ME&F	2022/2023	5.00	Provide for consultancy	GoK/Partners
	Develop and pilot demonstration sites for mercury free technologies.	• Set out and install functional demonstration sites for mercury free extraction of gold in Narok, Siaya, and Migori. • Identify a mining group that can embrace new processing technology faster and can easily influence others	Functional demonstration site for mercury free production in Kakamega, Narok, Siaya and Migori	MoPM ME&F County Governments Miners' Organizations KIRDI	2022-2025	160.00	40M per county to purchase Jaw crushers, mill crushers, shaker tables etc., plus cost of setup for 4 counties	GoK/Partners
	Develop and pilot economic instruments for access to capital for miners	• Develop financing models and products for ASM actors. • Promote an arrangement where resources can be pooled in an account that guarantee each group member when one needs a loan	Financing models and products designed for ASM actors	MoPM ME&F County Governments Miners' Organizations KCM MoIT&ED Local Banks and Financial Institutions	2022/2025	200.00	Provide for 200M for initial collateral for financing products targeting ASGM	GoK/Partners Banking Institutions
	Establish partnerships with stakeholders such as financial institutions to provide financing for mercury free technologies	• Establish partnership with finance institutions • Provide recommendation letters for non-mercury users when seeking financial support	Partnerships with finance institutions established	MoPM ME&F County Governments Miners' Organizations KCM MoIT&ED Local Banks and Financial Institutions	2021-2025	60.00	Provide for 60M to facilitate engagement on partnerships	GoK/Partners Banking Institutions
	Training on efficient and cleaner production methods in mining including ore extraction, crushing and processing	• Adopt BAT in ASGM and eliminate whole ore amalgamation and leaching of mercury contaminated tailings • Training few representatives who can train in their respective groups	• Adoption of BAT in ASGM • Elimination of whole ore amalgamation and leaching of mercury contaminated tailing	KIRDI MoPM ME&F County Governments Miners' Organizations Tertiary Institutions	2022-2025	96.00	Provide 4M per county per year for 4 years for6 counties	GoK/Partners
	Conduct research and development on cleaner mining technologies	• Comparison of production effect / output of pre- and post-mercury free technologies	Publications on emerging technologies	MoPM KIRDI Tertiary Institutions (JKUAT, Taita Taveta University) MOH	2022/2023	10.00	Provide for consultancy	GoK Universities, colleges, TIVETS
Promote adoption of Best Environmental Practices (BEP)	Training programs on best environmental practices	• Prepare environmental programs tailored for ASGM	Adoption of BEPS	KIRDI MoPM ME&F NEMA County Government DOSH NGOs/FBOs/CBOs	2021-2025	Tied to strategy 2.1		GoK/Partners NGOs

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Enhancing capacity of ASGM actors in safe and efficient mining through vocational training	Develop training curriculum on safe and efficient ASGM mining practices	• Offer the trainings in the mining sites or share training manuals	National ASGM training curriculum in place and used for training of ASG miners	MoPM KICD ME&F	2022/2023	10.00	To facilitate development of curriculum	GoK/Partners
	Training on efficient crushing methods, mining, BAT/BEP, Health and safety etc.	• Offer local and safe techniques during ore crushing		KIRDI MoPM ME&F NEMA County Government DOSH NGOs/FBOs/CBOs	2021-2025	Tied to Strategy 2.1	-	GoK/Partners
	Sensitize on available technologies for mercury recycling systems such as retorts	• Enforce adoption of retorts among miners and gold dealers to reduce mercury releases • Train miners how to process ore and recoup mercury used	Adoption of retorts among miners to reduce mercury releases	KIRDI MoPM ME&F NEMA County Governments DOSH NGOs/FBOs/CBOs	2021-2025	Tied to strategy 2.2	-	GoK/Partners
	Develop ASGM centers of excellence to provide technical training to ASGM workers on alternative and mercury free technologies	• Develop functional centers of excellence for ASGM • Identify a central mining site within the county where others can learn	Functional centers of excellence for ASGM	MoPM NITA KIRDI TVET, JKUAT	2021-2025	300.000	Cater for the cost of establishing the ASGM Centres of excellence in two regions	GoK/ partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Total						1,449,000,000.00		

Table 7: Work Plan for Strategy 3: Strategies for Promoting Reduction of Emissions, Releases and Risks of Exposure to Mercury (Objective 2 & 3)

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Promote access to mercury free technologies	Pilot centralized sites for gold processing (4 in total)	• Establish functional central facility for processing in Narok, Vihiga, Kakamega and Migori • Equipping the identified sites	Functional central facility for processing in Narok, Vihiga, Kakamega and Migori	MoPM ME&F County Governments Miners' Organizations Universities KIRDI	2022-2025	Tied to strategy 2.2	-	GoK/Partners
	Conduct miner's sensitization forums on worst practices	• Educate and carry out awareness on worst practices in each hotspot county (Migori, Kakamega, Vihiga, Siaya, Narok, Nandi) • Rehabilitating the open sites left after mining	Education and awareness forums on worst practices targeting miners (4 in each hotspot counties of Migori, Kakamega, Vihiga, Siaya, Narok, Nandi)	ME&F MoPM NGOs CBOs FBOs	2021-2025	Tied to strategy 2.1	-	GoK/Partners CSOs, COG
	Training on efficient and cleaner production methods in mining including ore extraction, crushing and processing	• Adopt BEPs • Offering technical skills to the miners on site	Adoption of BEPs	KIRDI MoPM ME&F NEMA County Governments DOSH MOH NGOs/FBOs / CBOs	2021-2025	Tied to strategy 2.1	-	GoK/Partners NGOs

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Monitoring of mercury emissions to land, air and water	Conduct regular and systematic samplings of soil, air, water and biota for mercury and other heavy metal contamination in ASGM Counties and others.	• Setting up laboratory & purchase of AAS (with VGA) and other equipment for Hg and other heavy metal analysis in water	Air, soil ,water and biota quality status reports generated every 4 months	WRA NEMA KALRO KMD KFS KeFS MOH KEMFRI	2021-2025	180.00	Purchase of equipment at 20M per county for 6 counties, regular monitoring at 2M per county per year for 6 counties for5 years	WRA, NEMA, KALRO, KMD, KFS
	Mapping of contaminated sites for purposes of rehabilitation	• Locking out any human or animal activity in the contaminated areas	Contaminated sites report	NEMA KALRO WRA	2021/2025	6.00	Provide for consultancy	GoK/partners/
	Conduct annual baseline emissions quantifications from the ASGM sector	• Give limit of amount of processing products to used	Baseline emissions report	ME&F MoPM	2022-2023	25.00	Provide for consultancy at 5M per year for 5 years	GoK/Partners
	Develop and implement rehabilitation programs for contaminated sites	• Systematically rehabilitate starting with the highest risk mines	Mercury contaminated site rehabilitated	ME&F NEMA WRA	2021-2025	100.00	Lump sum for environmental conservation and rehabilitation programs	GoK/Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Promote sound environmental management practices in ASGM sites	Develop simplified community guide on environmental management for ASGM miners	• Introduce simple adaptable environnemental practices	Simplified environmental management guide developed for ASG miners	NEMA	2022/2023	5.00	Provide for consultancy	GoK/Partners
	Design and conduct Sensitization and trainings on possible best practices for environment management/ conservation practices	• Sensitize and train Artisanal Miners on BEPs	Sensitization and training sessions on BEPs	ME&F MoPM MoH KIRDI NEMA NGOs CBOs FBOs	2021-2025	Tied to Strategy 2.1	-	GoK/Partners
	Conduct compliance monitoring and enforcement of environmental laws / regulations	• Ensure environmental compliance before any mining permit is issued	ESIA/EA reports submitted to NEMA	NEMA MoPM WRA	2021-2025	Tied to Strategy 1.4	-	NEMA
Promote adoption of safe work practices including use of Personal Protective Equipment	Sensitize miners on work safety practices	• Offer safety mining gear to the most active members in mining circles	Miners observing work safety practices in the mines	MoPM DOSH MOH NGOs	2021-2025	72. 00	Allocate 3M per county per year targeting 6 counties for 4years	GoK/Partners/ NGOs
	Design and conduct trainings on health and safety in mines		Training sessions on work safety practices	MoPM DOSH MOH NGOs CBOs FBOs	2021-2025	72.00	Allocate 3M per county per year for 6 counties for 4 years	GoK/Partners
Total						**460,000,000.00**		

Table 8: Work Plan for Strategy 4: Managing Trade and Preventing Diversion of Mercury and Mercury Compounds by Year 2024 (Objective 4)

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (Years)	Cost in Millions (KSh)	Budget note	Funding source
Identify sources (imports and exports) of mercury in Kenya	Undertake inventory on mercury imports, use and exports (both legal and illegal) in Kenya	• Undertaking an inventory on mercury imports and exports.	Inventory of mercury imports, use and exports	ME&F MoPM KRA	2022/2023	10.00	Provide for consultancy	GoK/Partners
	Develop a database of mercury importers, handlers and exporters in Kenya	•Development of a register of all mercury dealers.	Database of mercury importers and exporters established	MoIT&ED ME&F MoPM KRA KEBS	2022/2023	40.00	Cost for developing an online and maintaining online data base for 5 years	GoK/Partners
Regulate trade and supply and use of mercury to avoid diversion into ASGM sector	Develop and implement regulation on imports, export and use of mercury in Kenya		Mercury regulations in place	MoE&F NEMA MoIT&ED	2022-2025	10.000		GoK/partners
	Establish customs code for mercury to identify mercury import		Customs code for mercury established and is used	KRA ME&F MoIT&ED MOH KEBS	2022-2024	10.00		GoK/partners
	Sensitize customs officials on identification of mercury customs codes and surveillance if illegal imports		Reduction of diversion of mercury to ASGM	ME&F KRA NEMA MoIT&ED NGOs	2021-2025	24.00	Provide for at least 3 sensitization forums, each at 2M per year for 4 years	GoK/partners
	Prosecute illegal mercury importers		Reduction of illegal imports	ODPP JSC NEMA KRA KEBS	2021-2025	20.000		GoK/partners
Total						**460,000,000.00**		

Table 9: Work Plan for Strategy 5: Strategies for involving stakeholders in the implementation and continuing development of the NAP

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (Years)	Cost in Millions (KSh.)	Budget note	Funding source
Formulating an inter-agency coordinating mechanism comprising membership from all relevant agencies	Put in place inter-agency coordinating mechanism comprising membership from all relevant agencies	• Set up a coordinating mechanism.	Effective coordination of NAP activities	ME&F	2022/2023	2076.00	Stakeholder consultation and administration cost for 5 years	GoK/Partners
Set up a NAP coordination office with relevant staffing	Set up a NAP coordination office with relevant staffing	• Allocate funds for the NAP coordination office.	Effective coordination of NAP implementation process	ME&F	2021-2025			GoK/partners
Quarterly reporting as per the government reporting frameworks	Develop mechanisms for quarterly reporting as per government reporting frameworks	• Allocate sufficient funds and technical capacity • Track NAP progress implementation on quarterly basis • Report on EIAs reviewed and Fisheries Impact Assessments done • Report on regular fish quality assessment. • Report on regular assessment of rivers on the mercury levels in sediments, water and various fish species	Tracking progress of NAP implementation	ME&F MOH MoPM WRA KFS NEMA DOSHs	2021-2025			GoK/partners
Regularly hold consultative meetings with stakeholders to report on progress made in implementing relevant strategies	Hold regular consultative meetings with stakeholders to report on progress made in implementing relevant strategies	• Allocate sufficient funds and technical capacity • Participate in the consultative meetings to present and discuss the reports on fish quality assurance, water sediment and fish monitoring in rivers near mining sites.	Strong sense of ownership among stakeholders and effective implementation of the NAP	ME&F MoPM	2021-2025			
Total						**2,076,000,000.00**		

Table 10: Work Plan for Strategy 6: Public Health Strategy to Reduce Exposure of Artisanal and Small-Scale Gold Miners and Their Communities (Strategic Objective 3)

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (Years)	Cost in Millions (KSh.)	Budget notes	Funding source
Sensitize health workers on mercury poisoning and protocols for managing mercury poisoning	Conduct sensitization forums on cases of mercury poisoning for health care workers in ASGM counties (captured under budget)	• Enhanced skills for health promotion in ASGM communities	Health workers are able to diagnose mercury poisoning cases at county level	MOH County governments DOSH	2021/2025	60.00	Provide for one sensitization forum at 2M per county per year for 6 counties for 5 years	GoK/Partners
Empower miners and local communities with knowledge on risks of exposure to mercury and other heavy metals poisoning	Conduct sensitization forums for miners and local communities at community & health facilities levels in ASGM Counties (in budget note) ii) Develop and disseminate mercury and heavy metals poisoning communication strategy (by use of available county structures, e.g. Barazas & vernacular radios)	• Emergency preparedness, prevention and response of mercury poisoning in the context of the International Health Regulation.	• Miners are able to make informed decisions regarding use of best practices and personal protective equipment at mines. • Miners & local communities have adequate knowledge on risks of mercury & heavy metals poisoning	MOH ME&F MoPM County Governments	2021/2025	60.00 20.00	Provide for 4 sensitization forums at 500,000 per County per year for 6 Counties for 5 years Support for consultancy for communication strategy, field data collection, pre-testing & dissemination	GoK/Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (Years)	Cost in Millions (KSh.)	Budget notes	Funding source
Build capacity of health workers on diagnosis and management of mercury poisoning	Develop health curricula on ASGM to be used in continuous training programs implemented by the ministry of health	• Health curricula for continuous monitoring, information dissemination and reporting is in place	Continuous training program focusing on mercury and heavy metal poisoning diagnosis and treatment (once/ year/ county starting in 2021)	MOH KICD KMPDU County Governments	2022/2023	15.00		GoK/Development partners
	Develop mercury prevention, diagnosis and treatment protocols as part of heavy metal poisoning	• Health assessment among ASGM communities	Adoption of protocols for diagnosis, reporting and treatment of mercury poisoning	MOH County Government NGOs	2022/2023	12.00	Provide for consultancy or in-house development	GoK/Development partners
	Train and sensitize health care workers on identification and protocols of mercury and other heavy metal poisoning symptoms for handling heavy metal poisoning	• Identification and management of mercury poisoning.	Healthcare workers in the ASGM hotspots areas testing and giving care to patients with mercury poisoning cases (with formalization, the rate of miners changing site will change) (The Kenyan situation is that the miners are the ones to seek medical attention from the health facilities within the county)	MoH Respective County Governments Health sector Regulatory bodies NGOs Institutions of higher learning (Universities)	2021-2025	120.00	5M per county for six counties, internal capacity development for 4 years	GoK/partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (Years)	Cost in Millions (KSh.)	Budget notes	Funding source
Strengthen the capacity of local health facilities to diagnose and give care to affected persons	Equip healthcare facilities in ASGM counties to diagnose and treat cases of heavy metal poisoning	• Occupational health and safety protocols on mercury. • Toxicology and poison control centers capabilities.	Well-equipped hospitals at selected sub-counties	MoH Respective County Governments	2022- 2024	300.00	Provide for 50M for equipping hospitals and initial running costs in 6 counties	GoK, Development Partners / County Governments
	Strengthen the capacity of KEMRI regional research centers on heavy metal poisoning	• Equipping and strengthening laboratory facilities. • Inter-sectoral engagement	KEMRI regional Centers testing for mercury poisoning	MOH KEMRI	2022-2024	60.00	Cost for Equipping 2 Regional KEMRI Labs	GoK, Development Partners
	Provide adequate budgets for health care workers trainings and opportunities for continuous capacity building	• Strengthening of core functions and systems	Budgetary provisions for training of healthcare workers on mercury poisoning	MOH National Treasury Respective County Governments	2021-2025	300.00	Provide for running costs of 10M per county for 6 counties for 5 years	GoK, Development Partners
Strengthen health surveillance and gathering of data on mercury poisoning	Conduct health surveillance and assessment of mercury poisonings cases in ASGM counties	• Health promotion in ASGM communities Environmental health in ASGM counties	Surveillance system for mercury poisoning	MOH Respective County Governments	2021-2025	100.00		GoK, Development Partners
	Document and set up a database of all cases of mercury poisoning	• Setting up and equipping Public Health Unit's database systems.	Disaggregated data of mercury poisoning cases in ASGM hotspot counties	MOH Respective County Governments	2022/2024	40.000	Cost for developing and maintaining an online data base for 4 years	GoK, Development Partners
	Establish surveillance and response systems including field outreach to test and diagnose ASGM workers for mercury poisoning	• Responding to needs of special groups, e.g., children, pregnant women, others.	• Surveillance and response system in place	MOH Respective County Governments	2022-2025	360.00	Provide for 10M for 2 outreaches per year per county for 3 years for 6 counties	GoK, Development Partners
	Integrate mercury poisoning surveillance in other health programs	Strengthening of core functions and systems			2022/2024	50.00		GoK, Development Partners
Total		**Total**				**1,417,000,000.00**		

Table 11: Work Plan for Strategy7: Prevent Exposure of Vulnerable Populations, Particularly Children and Women of Childbearing Age to Mercury Use in ASGM

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (Years)	Cost in Millions (KSh.)	Budget notes	Funding source
Identify key health needs and challenges in ASGM areas	Conduct baseline study to identify key health needs and challenges in ASGM areas	• Conduct situational analysis to identify key health needs and challenges in ASGM areas.	Disaggregated report on key health issues in ASGM areas	MOH County Governments NGOs	2022-2024	18.00	Provide for consultancy	GoK/Partners
Promote mercury free alternatives through technical assistance programs targeting vulnerable groups to reduce exposure	Develop and Pilot demonstration sites for mercury free technologies	• Develop pilot demonstration for mercury free technologies in Kakamega, Narok, Siaya and Migori • Organize leadership to pool resources to secure alternative processing equipment/ technology	Demonstration sites for mercury free production in Kakamega, Narok, Siaya and Migori Counties	MoPM ME&F County Governments NGOs CBOs KIRDI	2022-2025	Tied to Strategy 2.2	-	GoK/partners
Promote information sharing and awareness creation among vulnerable groups	Develop information, education and communication (posters, leaflets etc.) materials for the vulnerable groups, including local languages	• Prepare pictorial manuals and where possible in local language	Radio programs on health and environmental issues, newspaper articles and posters	MOH Media County Governments NGOs	2021-2025	30.00	Provide for media coverage	GoK/partners
Enhance access to health care for the affected persons	Develop a community monitoring and reporting system for cases of mercury poisoning for miners and their community	• Keep clear record of mercury chain of suppliers and users	Functional community monitoring systems	MoPM ME&F MOH County Governments NGOs CHWs	2021-2025	600.00	Provide for 20M annually per county for 6 counties for 5 years	GoK/Development Partners
Total		**Total**				**648,000,000.00**		

Table 12: Work Plan for Strategy 8: Strategies for Providing Information to Artisanal and Small-Scale Gold Miners, Gold Processors and Affected Communities

Strategy	Actions	Priority	Expected results	Activity lead	Timeline (Years)	Cost in Millions (KSh.)	Funding Source
Develop outreach and information sharing mechanism to ASG miners, gold processors and affected communities	Develop a communication and outreach plan for ASG miners, gold processors and affected communities	• communication strategy	Communication and outreach plan in place for communication with gold miners, processors and affected communities	ME&F MoPM MOH County Governments NGOs KCM	2022/2023	10.00	GoK/ Development Partners
	Disseminate information through forums such as barazas, local radio station, TV station and sensitization workshops (2 per county per year)	• Technical person to attend as many barazas as possible and give valuable interview time to media houses	Print and electronic programs	ME&F MoPM County Governments NGOs	2021-2025	36.00	GoK/ Development Partners
	Organize forums for communities to share good practices and advanced technology related to sound practices in ASGM (2 per counties per year)	• Facilitate trainers or key persons with key tools	Regular sensitization and awareness programs Forums for information exchange	ME&F MoPM County Government NGOs	2021-2025	Tied to Strategy 2	GoK/ Development Partners
Collaborate with media to regularly disseminate and broadcast information on the health risks and environmental problems associated with ASGM activities	Organize sensitization forums for journalists on mercury poisoning (2 per county per year)	• Media engagement	Increased media coverage on the health and environmental impacts of mercury use in ASGM	ME&F Media Houses NGOs	2021-2025	20.000	GoK Development Partners
Customize and engage miners on use of mining cadaster to handle ASGM information Avail information in maps and fact sheets available at county level.	Customize the cadaster to handle ASGM information	• Train Artisanal Miners on use of cadaster •Make cadaster accessible to all ASGM (2 per county per year) Cadaster system accessible to miners providing all key information for ASM MoPM 2022-2024				10.00	GoK / Development Partners
	Avail information in maps and fact sheets (1 per county per year)		Printed maps and factsheets at local mining offices		2022-2024	6.00	GoK
				Total		**82,000,000.00**	

Table 13: Work Plan for Strategy 9: Strategies for Market Access and Value Addition

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Partnerships and value addition	Identify areas of partnership	• Local community to offer land • Government to build and equip the value addition centers	Memorandum of understanding between MoPM, miners and investors for valued addition	MoPM Miners Cooperatives /Associations NGOs KCM	2021-2025	-		GoK/Partners
	• Develop training programs for value addition that appreciates the formalization of the sector, improved purification and streamlining of the market accessibility • Develop one training manual for value addition	• Develop training programs for value addition	• Training materials / forms of value addition • One training manual for value addition	MoPM Miners Cooperatives /Associations NGOs KCM	2024/2025	36.00	Allocate 3Mper county per year for 2 years for 6 counties	GoK/Partners
Establish National Gold trading Platform	Put in place system for Gold trading (Exchange Bar)	• Offer technical advice	Functional National Gold trading Platform	MoPM KCM NGOs National Treasury State Department of Trade KRA	2024/2025	100.00		GoK/Partners
	Provide seed capital for assay tests, and purchase of Gold up to 1,000 kgs (initial) (security will be up-scaled if need be)	• Provide initial seed capital for purchase of gold up to 1,000 kgs	Miners accessing loans through seed funding	MoPM TNT Licensed Gold dealers	2024/2025	300.00		GoK/Partners/Investors
Develop National Gold Processing Refinery	Provide capital for refinery establishment in select county	• Set up a gold refinery for ASGM	ASGM is locally refined before export	MoPM KCM TNT	-	500.00		

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Develop a certification system for ASGM gold	Establish a certification body	Certification of mercury free gold	Certification system in place	MoPM KCM TNT		200.00		
Total						1,136,000,000.00		

Table 14: Work Plan for Strategy 10: Strategies for Gender Mainstreaming

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Assessment of gender issues in the ASGM sector	Conduct baseline study by collecting gender segregated data in ASGM sector	Conduct the baseline study by collecting gender segregated data in ASGM sector	Identified gender issues in ASGM	ME&F MoPM County Governments State Department of Gender and Social Services	2022/ 2023	10.0	Provide for a study	GoK/ Partners
	Identify barriers for effective women engagement in the sector	Conduct a study to identify barriers for effective women participation in the sector	Identified barriers for effective women participation in the ASGM sector	MoPM KCM MOH NGOs ME&F State Department of Gender and Social Services	2024/ 2025	10.00	Provide for a study	GoK/ Partners

Strategy	Actions	Priority	Expected Results	Activity Lead	Timeline (years)	Cost in Millions (KSh.)	Budget Notes	Funding Source
Mainstream gender in the ASGM sector	Develop a gender mainstream framework for the ASGM sector	Develop a gender mainstream framework for the ASGM sector	Gender mainstreaming framework for the sector	MoPM ASGM leadership County Governments	2022/2023	10.00	Provide for consultancy	GoK/ Partners
	Conduct training forums for women miners on safe extraction and processing of gold.	Conduct training forums for women miners	• Training forums on safe and efficient mining • Adoption of BATs and BEPs by women miners	MoPM ASGM leadership County Governments	2022-2025	54.00	Allocate 3M per county per year for 3 years for training forums	GoK/ Partners
	Empower women miners to access mining permits as applicable	Facilitate women miners to access mining permits as applicable	Women miners accessing mining and processing permits	Local Miners Leadership MoPM County Governments	2022-2025	72.00	Provide for 3M annually for 6 counties for 4 years	GoK/ Partners
	Facilitate women miners' access to finance and technology for ore extraction and processing	• Promote financial packages that are friendly to women.	Increased women investments in ASGM.	Local Miners Leadership MoPM County Governments Financial institutions	2022-2025	72.00	Provide for 3M annually for 6 counties for 4 years	GoK/ Partners
	Facilitate women investments in the production value chain (value addition)	Offer simple smelting pans/crucibles and encourage selling only to women who do value addition		Local Miners Leadership MoPM County governments	2022-2025	72.00	provide for 3M annually for 6 counties for 4 years	GoK/ Partners
Total						**300,000,000.00**		

Table 15: Implemented activities in line with the NAP on Artisanal and Small-Scale Gold Miners, Gold Processors and Mining Communities.

No.	Strategy	Actions taken
1	Strategy 1: Steps to Facilitate Formalization/Regulation of the ASGM Sector (Strategic Objective 1)	• Mapped out all ASGM sites; • Enumerated different actors; • Artisanal Mining Committees gazetted and inducted; • Updated cadaster to reflect mapped ASGM sites; and, • Developed draft delineation guidelines to support ASGM licensing.
2	Strategy 2: Actions to Eliminate Worst Practices in ASGM (Strategic Objective 2)	• Developed training materials and trained miners on environmental and health impacts of mercury, access to finance and establishment and operations of cooperatives; • Held seminars and awareness raising programs on alternative gold processing methods and sensitization on worst practices; and, • Disseminated pictorial manuals showing impacts of mercury use.
3	Strategy 3: Strategies for Promoting Reduction of Emissions, Releases and Risks of Exposure to Mercury (Objective 2 & 3)	• Carried out an assessment of Gold/Mercury ratio; • Carrying out an assessment of analytical labs and consulting firms; and, • The IMKA GOLD project is procuring Personal Protective Equipment to promote adoption of safe work practices.
4	Strategy 5: Strategies for involving stakeholders in the implementation and continuing development of the NAP	• Set up a coordinating mechanism through the establishment of the multi-sectorial chemicals coordinating committee.
5	Strategy7: Prevent Exposure of Vulnerable Populations, Particularly Children and Women of Childbearing Age to Mercury Use in ASGM	• Promoted information sharing and awareness creation among vulnerable groups through posters and leaflets.
6	Strategy 8: Strategies for Providing Information to Artisanal and Small-Scale Gold Miners, Gold Processors and Affected Communities	• Held forums for communities to share good practices and advanced technology related to sound practices in ASGM; and, • Disseminated information through forums such as barazas, and sensitization workshops in Kakamega, Migori, Narok and Vihiga mining areas.
7	Strategy 9: Strategies for Market Access and Value Addition	• Identified partners in gold trade and linked them to the mining community.
8	Strategy 10: Strategies for Gender Mainstreaming	• Carrying out a baseline to assess gender dimensions on the regulatory framework of the ASGM sector and identify barriers for effective women participation in the sector; •Developed a gender strategy to mainstream gender in the ASGM sector

Table 16: Summary of Costs for implementing the NAP for five years

	Strategy	Cost in KSh.	Cos in US Dollars
1.	Formalization	692,000,000.00	6,407,407.41
2.	Eliminate All Worst Practice	1,449,000,000.00	13,416,666.67
3.	Reduction of Emissions, Releases and Risks of Exposure to Mercury	460,000,000.00	4,259,259.26
4.	Public Health Strategy	1,417,000,000.00	13,120,370.37
5.	Managing the Trade and Diversion	114,000,000.00	1,055,555.56
6.	Information Exchange	82,000,000.00	759,259.26
7.	Gender Mainstreaming	300,000,000.00	2,777,777.78
8.	Market Access and Value Addition	1,136,000,000.00	10,518,518.52
9.	Midterm Evaluation	2,500,000.00	23,148.15
10.	Prevent Exposure of Vulnerable Populations	648,000,000.00	6,000,000.00
11.	Involving stakeholders in the implementation and continuing development of the NAP and Admin Cost (support of operations of the coordination committee)	2,076,000,000.00	19,222,222.22
	Total Cost	**8,376,500,000.00**	**77,560,185.20**

Note: 1USD = KSh. 108

5.0 MONITORING AND EVALUATION

5.1 Evaluation Mechanism

The monitoring activities will be undertaken as part of implementation of the NAP. An evaluation of the NAP will be undertaken regularly after every three years. The baseline indicators below which were developed during the NAP development process will be used to evaluate progress of the NAP. Monitoring and evaluation will apply tools that are consistent with the National Integrated Monitoring and Evaluation System (NIMES) developed by Government of Kenya for the evaluation of government projects. Tables 16 to 21 shows a summary of the indicators that will be used to evaluate progress of the NAP implementation.

Table 17: Monitoring and Evaluation Framework for Strategic Objective 1

Strategic Objective 1: Steps for Formalization of the ASGM sector by the year 2022				Time Frame (Years)				
Strategy	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Fast track and facilitate registration of all ASGM actors across the value chain	• Enumerate and map out all ASGM sites and actors (baseline) • Maintain an up to date register of ASGM activities for each zone.	Mapping all ASGM in the 10 counties.	Disaggregated database of ASGM actors in the 10 counties.					
	Facilitate registration of mining groups	All active mining sites	No of registered mining groups					
Facilitate the issuance of ASGM permits in all ASGM areas	Map out current and potential ASGM areas in close partnership with other stakeholders	Map of current and potential ASGM sites in Kenya	• No of gazetted ASGM sites in each county • Uploaded ASGM sites in the mining cadaster					
	Gazette and operationalize county mining committees	10 county mining committees in the target counties	No of functional mining committees					
	Allocate sites to formalized ASGM groups	Mining permits issued to qualified groups in each zone	No of ASGM groups with formal allocated mining sites					
	Facilitate process of acquisition of various licenses: EIA, mining, dealer processing	• All registered mining groups with mining sites • All gold dealers in each county	• No of ASGM with proper documentation (Compliance level of licensed miners) • No of licensed dealers					
Licensing of gold traders/dealers across the supply chain	• Map out all traders, dealers and exporters of gold • Register and license gold traders and dealers	National register of all gold traders and dealers	• Number of gold trader and dealers registered • Annual state of ASGM report					

Strategic Objective 1: Steps for Formalization of the ASGM sector by the year 2022				Time Frame (Years)				
Strategy	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Enhance compliance level with existing laws	Review of bottlenecks with legal framework that hinder compliance in the ASGM sector	Revision and harmonization of legal barriers to ASGM	Friendly regulations targeting the ASGM sector					
	Establish voluntary/non-regulatory compliance systems among ASGM actors	Formation of ASGM association with internal control mechanisms at county level	No of functional miner group associations					
	Compliance to statutory requirements such as EIA and annual environmental audits, health and safety audits	• All ASG miners submitting ESIA/EA reports to be submitted to NEMA. • Health and safety reports submitted to DOSHS	No. of EIA licenses issued by NEMA to registered miner groups					

Table 18: Monitoring and Evaluation Framework for Strategic Objective 2 and 3

Strategic Objective 2and 3: Actions for Eliminating Worst Practices and Reduce Emissions, Releases and Risks of Exposure to Mercury				Time Frame (Years)				
Strategy	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Design and implement awareness raising program for ASGM communities on human and environmental risks of mercury use in mining	Develop simplified training and awareness raising materials on health and environmental impacts of mercury.	Awareness and training materials targeting miners in the 10 counties	No of awareness materials developed and distributed to ASG miners and mining communities.					
	Sensitization sessions for miners on technology, BEP and BAP.	4 sessions a year in 6 counties	No of sensitization sessions conducted.					
Reduction of Baseline emissions and exposure to mercury	• Adoption of BEP and BAT • Quarterly monitoring of emissions (air, land, water)	Emission reduction by 10% annually	Annual total emission to air, water and land					
Reduction of worst practices by 95% from baseline levels	• Adoption of BEP and BAT • Regular monitoring	Reduction of worst practices by 95% from baseline levels	Percentage of miners practicing worst practices					
Enhance access to mercury free technologies	• Setting up model demonstration sites •Partnerships with equipment suppliers • Financing mechanisms for miners	• 1 model site in Kakamega, Migori, Siaya and Narok Counties • Availability of appropriate BAT locally	• Active model sites • No. of suppliers dealing with BAT • Access to finance for technology upgrade					
Enhanced capacity of ASGM actors to engage in safe and efficient mining	• Capacity building programs targeting miners • Tertiary institutions to offer ASGM related artisan programs.	• Train at least 2,500 miners • At least 2 tertiary institutions in ASGM region have curriculum on mercury free and safe mining practices.	• No of miners trained in BAT/BEP • No of institutions training artisan courses related to mining.					

Table 19: Monitoring and Evaluation Framework for Strategic Objective 3

Strategic Objective 3: Public Health Strategy and Prevent Exposure of Vulnerable Populations, Particularly Children and Women of Child Bearing Age to Mercury Use			Time Frame (Years)					
Strategies	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Reduce exposure to mercury by vulnerable populations	Identify key health challenges in ASGM sites.	Assessment of key health challenges undertaken in the 10 counties.	Disaggregated report on key health issues in ASGM areas.					
	Organize sensitization forums on health and environmental impact of mercury exposure.	2,500 women actively involved in mining.	• No of women benefiting from the forums. • Percentage reduction in unsafe practices such as open burning of amalgam, burning in residential areas.					
	Develop a community monitoring and reporting system for cases of mercury poisoning for miners and their community	One CMS in each of the hotspot counties (Kakamega, Siaya, Migori, Narok)	Functional CMS					
Build the capacity of health workers on mercury poisoning and protocols for managing mercury poisoning cases	Develop health curricula on ASGM to be used in continuous training programs on mercury poisoning	National curricular for healthcare workers on mercury poisoning and treatment in all the training schools in Kenya	• Availability of national training curricular for health care professionals • No of health training schools using the curriculum on mercury poisoning					
	Train and sensitize health workers on heavy metal poisoning diagnosis, reporting and treatment	10 Health workers from each hotspot county	• No of health workers trained on heavy metal poisoning diagnosis and treatment • No of sensitization forums held for healthcare workers					
	Integrate heavy metal poisoning surveillance in infectious diseases among other health programs	Standard operating procedures in sub - county hospitals in the 10 counties	Systems for health surveillance for heavy metal poisoning in all the ASGM counties					

Strategic Objective 3: Public Health Strategy and Prevent Exposure of Vulnerable Populations, Particularly Children and Women of Child Bearing Age to Mercury Use				Time Frame (Years)				
Strategies	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Build capacity of local health facilities to diagnose and give care to affected persons	Build capacity of health facilities to diagnose and treat heavy metal poisoning	At least one sub-county hospital in each hotspot	No of health facilities equipped to diagnose and treat cases of heavy metal poisoning					
Enhance health surveillance and gathering of health data	Set up a data base of all recorded cases of mercury poisoning	Data base of mercury poisoning in county hospitals in each of the 10 counties	No. of sub-county hospitals reporting cases of mercury poisoning					
	Set up surveillance systems including field outreach to test and diagnose ASGM workers for heavy metal poisoning	Surveillance systems in 4 ASGM hotspot counties (Kakamega, Siaya, Migori and Narok)	• No. of counties with functional surveillance systems • No of surveillance done in each of the 4 counties					

Table 20: Monitoring and Evaluation Framework for Strategic Objective 4

Strategic Objective 4. Managing trade and preventing diversion of mercury and mercury compounds			Time Frame (Years)					
Strategies	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Identify sources (imports and exports) of mercury in Kenya	• Undertake an inventory on mercury imports, use and exports in Kenya. • Develop a database of mercury importers, handlers and exporters in Kenya	• Identify and monitor all formal and informal mercury entry points • Regulation to be in place by year 2	• Database for formal mercury imports, trade and use. • Regulation on mercury import, use and export.					
Regulate trade and supply and use of mercury to avoid diversion into ASGM sector	Develop and implement regulation on mercury imports, export and use	Regulation to be in place by year 2						
	Licensing all dealers in mercury	All dealers (formal and informal)	Data base of all mercury handlers, quantities of imports and use					
	Sensitization of customs officials on need for increased surveillance	Relevant custom officials in Busia, Malaba, Namanga and Sirare borders, JKIA and Mombasa Port (at least 2 from each point)	Number of custom officials sensitized					

Table 21: Monitoring and Evaluation Framework for Strategic Objective 8

Strategy 8. Strategies for Provision of information to artisanal and small-scale miners and affected communities				Time Frame (Years)				
Strategies	**Actions**	**Target**	**Indicators**	**1**	**2**	**3**	**4**	**5**
Outreach ad information sharing to ASG miners, gold processors and affected communities	Sensitization training sessions targeting behaviors change. BAT/ BEP adoption.	Reach 100% of miners by 2024 (20% reach per year).	Knowledge, awareness and practice behaviors among miners.					
	Encourage media to regularly disseminate and broadcast information on the health risks and environmental problems associated with ASGM activities	Reach 80% of communities by 2022	Knowledge, awareness and practice behaviors among communities in mining areas.					
	Develop and implement outreach plan.	All artisanal and small-scale gold miners, processors and affected communities in the 10 mining counties.	Number of outreach programs for miners.					
	Develop community guides for sound environmental management in ASGM areas.	All artisanal and small-scale gold miners, processors and affected communities in the 10 counties.	Knowledge, awareness and practice behaviors among communities in mining areas.					

Table 22: Monitoring and Evaluation Framework for Strategic Objective 10

Strategy 10: Gender Mainstreaming in ASGM Sector				Time Frame (Years)				
Strategies	**Actions**	**Target**	**Indicators**					
Analysis of gender issues in the ASGM sector.	Carry out baseline assessment on the gender issues in the ASGM sector.	All the ASGM sites in the 10 counties.	Disaggregated report of gender issues in ASGM sector in Kenya					
Promote women participation in ASGM sector.	Develop gender mainstreaming framework for the ASGM sector.	Gender mainstreaming framework in place by 2021	Documented gender mainstreaming framework for the ASGM sector.					
	Support women participation in ASGM value chain	At least one permit reserved for women and youth led groups in Kakamega, Siaya, Narok and Migori Counties.	No of counties that have issued exclusive permits for women and youths.					
	Enhance access to credit facilities by women and youth.	At least 20 women and youth miners in each of the four counties (Migori, Siaya, Kakamega and Narok).	No of women involved in value addition along the value chain.					
	Training of women and youth miners on safe and efficient mining.	At least 2,500 active women and youth miners in all the mining counties.	Number of women and youths trained.					

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7.0 ANNEX 1: TERMS OF REFERENCE

LEAD CONSULTANT TEAM

Scope of Work:

The Lead Consultant will use three other thematic consultants to gather national information on the following, using the methodology developed by the UN Environment and contained in the UNEP document for guidelines towards development of National Action Plan on Artisanal Gold Mining.

a) Legal and regulatory status of ASGM in Kenya;

b) Analyze Kenya's commitments under all the relevant articles of the Minamata Convention on Mercury

c) Baseline estimates of mercury emissions and releases from the ASGM sector; Using the Minamata Convention guidelines;

d) Baseline estimates of mercury emissions and releases from the ASGM sector; Using the Minamata Convention guidelines;

e) Policies surrounding ASGM as detailed in the convention;

f) Geographic distribution of ASGM;

g) Economics, such as earnings per capita, mercury supply, use and demand, information on gold trade and export, cost of living, and access to finance for miners. The project will search in particular for information about gender and children aspects of the ASGM economics;

h) Size of the formal and informal ASGM economy;

i) Information about access to basic education, health care (including health effects of mercury exposure) and other services in mining communities;

j) Information about access to technical assistance for miners;

k) Leadership and organization of ASGM at national and local levels.

l) Information gaps at the local and national scale that can be addressed;

m) Known information about the influence of ASGM practices and policies in neighboring countries.

n) Plan team field trips (e.g. choose ASGM areas to visit, schedule trip, etc.) and make needed logistical arrangements; Collect and analyze data during field research trips (e.g. visit mining sites, interview miners and their families, etc.), based on UN Environment toolkit and NAP guidance document;

o) Conduct desk research on available information on ASGM sector in Kenya, according to the categories listed above;

p) Develop a draft and finalize national overview of legal and policy aspects of the ASGM sector, and develop problem statement list.

LEGAL AND POLICY CONSULTANT TEAM

Scope of Work:

The Legal and Policy Consultant will gather national information on the following, using the methodology developed by the UN Environment.

a) Legal and regulatory status of Mining in general and artisanal gold mining (ASGM) in particular;
b) Policies surrounding ASGM; Geographic distribution of ASGM;
c) Economics, such as earnings per capita, mercury supply, use and demand, information on gold trade and export, cost of living, and access to finance for miners. The project will search in particular for information about gender and children aspects of the ASGM economics;
d) Size of the formal and informal ASGM economy;
e) Information about access to basic education, health care (including health effects of mercury exposure) and other services in mining communities;
f) Information about access to technical assistance for miners;
g) Leadership and organization of ASGM at national and local levels.
h) Information gaps at the local and national scale that can be addressed;
i) Known information about the influence of ASGM practices and policies in neighboring countries.

ECONOMIC AND FINANCIAL CONSULTANT TEAM

Scope of Work:

The Economicc and Financial Consultant will gather national information on the following, using the methodology developed by the UN Environment.

a) Economics and financial status of ASGM;
b) Baseline estimates of mercury emissions and releases from the ASGM sector; Using the Minamata Convention guidelines;
c) Research and analyze economic status on ASGM
d) Conduct surveys and collect data
e) Analyze data using mathematical models and statistical techniques
f) Prepare reports, tables, and charts that present research results
g) Interpret and forecast market trends;
h) Economics, such as earnings per capita, mercury supply, use and demand, information on gold trade and export, cost of living, and access to finance for miners. The project will search in particular for information about gender and children aspects of the ASGM economics;
i) Size of the formal and informal ASGM economy;
j) Information about access to basic education, health care (including health effects of mercury exposure) and other services in mining communities;
k) Conduct desk research on available information on ASGM sector in Kenya, according to the categories listed above;
l) Develop a draft and finalize national overview of legal and policy aspects of the ASGM sector, and develop problem statement list.

EDUCATION, INFORMATION AND TECHNOLOGY CONSULTANT TEAM

Scope of Work:

The Education, Information and Technology Consultant will gather national information on the following, using the methodology developed by the UN Environment.

a) Baseline estimates of mercury emissions and releases from the ASGM sector:
   Using the Minamata Convention guidelines;
b) Policies surrounding ASGM;
c) Geographic distribution of ASGM;
d) Economics, such as earnings per capita, mercury supply, use and demand, information on gold trade and export, cost of living, and access to finance for miners. The project will search in particular for information about gender and children aspects of the ASGM economics;
e) Size of the formal and informal ASGM economy;
f) Information about access to basic education, health care (including health effects of mercury exposure) and other services in mining communities;
g) Information about access to technical assistance for miners;
h) Leadership and organization of ASGM at national and local levels.
i) Information gaps at the local and national scale that can be addressed;
j) Known information about the influence of ASGM practices and policies in neighboring countries.

8.0 ANNEX 2: DATA COLLECTION TOOLS

Key Informant Interview Guide

HEALTH STAKEHOLDERS

Project: National Action Planning for ASGM

Background

Kenya has received a grant from the Global Environment Facility towards development of a National Action Plan (NAP) to address artisanal gold mining (ASGM) in Kenya under the

Minamata Convention on Mercury. The aim of the NAP is to reduce the use of mercury and mercury compounds in, and the emissions and releases to the environment from the ASGM mining and processing in accordance to annex C of the Minamata Convention.

Annex C explicitly calls for a public health strategy, which encompasses health surveillance, preventing exposure of vulnerable populations, particularly children and women of child bearing age, especially pregnant women, health care worker training and awareness raising.

In light of the above, we are collecting information that will give a national over view of the ASGM sector in Kenya, and feed into development of a National Action Plan.

We therefore request for kind participation in gathering the relevant data that will facilitate successful completion of this process.

Respondent Name:.....

Title: .....

Institution Name:.....

1. Kindly give a brief role of your institution in the implementation on implementation of the various aspects of the Minamata convention
2. Is there any data available of exposure to mercury in Kenya? If yes provide references
3. Are there any health surveillance measures or plans in place for monitoring exposure to mercury (give brief, also highlight if any special measures for women and children)
4. Have the health care workers been sensitized/trained on mercury poisoning surveillance and monitoring, treatment etc...provide info as appropriate
5. What strategies have been put in place to achieve the following?
    - Reduction in exposure
    - Awareness creation on mercury poisoning
    - Healthcare workers training
6. What health related strategies do you propose for inclusion in the NAP

    .....

Key Informant Interview Guide

Trade and Industrialization

FOCAL POINTS & NEMA

Project: National Action Planning for ASGM

Background

Kenya has received a grant from the Global Environment Facility towards development of a National Action Plan (NAP) to address artisanal gold mining (ASGM) in Kenya under the Minamata Convention on Mercury. The aim of the NAP is to reduce the use of mercury and mercury compounds in, and the emissions and releases to the environment from the ASGM mining and processing in accordance to annex C of the Minamata Convention.

Article 7 of the Minamata Convention on Mercury addresses ASGM in which mercury amalgamation is used to extract gold from ore. It requires that any country with such ASGM activities within its territory shall "take steps to reduce, and where feasible eliminate, the use of mercury and mercury compounds in ASGM, and the emissions and releases to the environment of mercury from such mining and processing".

In light of the above, we are collecting information that will give a national over view of the ASGM sector in Kenya, and feed into development of a National Action Plan. We therefore request for kind participation in gathering the relevant data that will facilitate successful completion of this process.

Respondent Name .....

Title.....

Institution Name .....

1. Kindly give a brief role of your institution in the implementation of the various aspects of the Minamata convention
2. What are the main sources of mercury used in ASGM in Kenya?
3. Have the sources been quantified Yes..... No.....
4. If yes, give breakdown the key sources
5. What legal/regulatory mechanism are in place to control the use of mercury in Kenya
6. Are there any weaknesses within the available framework that has made mercury readily available for use in ASGM? Give breakdown.
7. Are there available substitutes to mercury that your institution can vouch for? (give details)
8. What strategies can be put in place to reduce mercury use in ASGM to achieve the following?
    - Reduce use and exposure to mercury
    - Control illegal Trade in Mercury
    - Promote safe use of chemicals
    - Avail alternatives

Key Informant Interview Guide

Mining Stakeholders

FOCAL POINTS & NEMA

Project: National Action Planning for ASGMS

Background

Kenya has received a grant from the Global Environment Facility towards development of a National Action Plan (NAP) to address artisanal gold mining (ASGM) in Kenya under the Minamata Convention on Mercury. The aim of the NAP is to reduce the use of mercury and mercury compounds in, and the emissions and releases to the environment from the ASGM mining and processing in accordance to annex C of the Minamata Convention.

Article 7 of the Minamata Convention on Mercury addresses ASGM in which mercury amalgamation is used to extract gold from ore. It requires that any country with such ASGM activities within its territory shall "take steps to reduce, and where feasible eliminate, the use of mercury and mercury compounds in ASGM, and the emissions and releases to the environment of mercury from such mining and processing".

In light of the above, we are collecting information that will give a national over view of the ASGM sector in Kenya, and feed into development of a National Action Plan.

We therefore request for kind participation in gathering the relevant data that will facilitate successful completion of this process.

Respondent Name……

Title……

Institution Name ……

1) Kindly give a brief role of your institution in the implementation of the various aspects of the Minamata convention.
2) Are there available data on population of people engaged in ASGM in Kenya/ In the County/Sub County? (If yes, give figures, source).
3) Are there available data on economic contribution of ASGM in Kenya / In the County/Sub County? (If yes, give figures, source).
4) What are some of the worse practices recorded/reported relating to ASGM?
5) What legal gaps exist within the legal/regulatory framework for ASGM that has contributed to the worst practices?
6) What measures are being put in place to ensure compliance with the Minamata convention?
7) What would be the key challenges to compliance with the convention's provisions?
8) What mercury free technologies are available for use within the ASGM? (comment on adoption rates)
9) Comment on the progress towards formalization of ASGM activities, and the challenges faced.
10) What are the key issues and strategies that your institution will want included in the NAP?

9.0 ANNEX 3: LIST OF INTERVIEWED PERSONS

1. George Odhiambo – Official, Migori County Artisanal Miners Cooperative Society, MICA;
2. Joshua Ngwala – Chief Officer, Department of Environment, Migori County;
3. Danstan Sirinki – Mining Officer, Migori Regional Office, Ministry of Petroleum and Mining, State Department of Mining;
4. James Siaji – County NEMA Director, Migori County;
5. Tom Odhong – Community Health Officer, Office of the Deputy Director, Department of Health, Migori County;
6. John Baraza Wangwe – County Executive Committee Member, Ministry of Water, Environment and Natural Resources, Kakamega County;
7. Stansalus Palapala Muteshi – County Officer, Environment, Natural Resources, and Climate Change, Kakamega County;
8. Alex Muchai – Director, Ministry of Water, Environment and Natural Resources, Kakamega County;
9. Simon Tonui – County Director of Environment, NEMA, Kakamega County;
10. Kassim Were – County Executive Committee Member, Ministry of Trade, Kakamega County;
11. Everlyn Khabukwi Mulunji – County Officer, Ministry of Health Services, Kakamega County;
12. Dr. Arthur Andere - County Director of Medical Services, Ministry of Health, Kakamega County;
13. Hon. Morris Swaka Limera – Chairperson, Committee on Environment, Natural Resources, Energy, Water and Forestry Kakamega County; and
14. Mulama Djivetti – County Director of Environment, Ministry of Environment, Vihiga County.
15. Bonface Kashu - Equipment leasing company
16. Bismark Onyando -Official, Mining Community Programme (MICODEPRO)

10.0 ANNEX 4: LIST OF NAP DEVELOPMENT TEAM

No	NAME	INSTITUTION
1	Dr. Chris Kiptoo, CBS	ME&F – PS
2	Cyrus Mageria	ME&F
3	Dr. Lucy Ng'ang'a	ME&F
4	Francis Kihumba	ME&F
5	Augustine Kenduiwo	ME&F
6	Julius Kirima	MOITC
7	Mayiani Saino	ME&F
8	Purity Kamau	MOITC
9	Gregory Kituku	MoPM
10	Mercy Kimani	ME&F
11	Daudi Kamau	Ministry of Water, Irrigation and Sanitation
12	Nancy Narasha	ME&F
13	David Wanjala	MOITC
14	Dr. Isaiah Okuthe	ME&F
15	Meshack Ledama	ME&F
16	Anthony Wainaina	MOH
17	Muitungu Mwai	NEMA
18	Annie Syombua	ME&F
19	Joseph Kuria	Ministry of Mining
20	Maurice Ndeda	Ministry of Mining
21	Henry Kurgat	Ministry of Mining
22	Geoffrey Maina	Ministry of Mining
23	Ephraim Wairangu	State Depart for Fisheries
24	Andrew Kinyua	Ministry of Water
25	Emmah Akware	Office of Attorney General
26	Marcellah Ojiambo	NEMA
27	Kathy Njuguna	ME&F
28	Khadija Ismail	ME&F
29	Brian Kimtai	ME&F
30	Gamaliel Omondi	MOH
31	Gonzaga Mungai	Fairtrade Africa
32	Patrick Kiprono	ME&F
33	Henry Nyamae	ME&F
34	Convine Omondi	ME&F

35	Ruth Epwoka	ME&F
36	Sharon Chelangat	ME&F
37	James Githinji	Private Sector
38	Simon Jaramba	Lolgorian-Narok
39	Timothy Mukoshi	Roasterman-Kakamega
40	Eva Mageto	Office of Attorney General
41	Morris Otimbo	Siaya
42	Julius Opiyo	Migori
43	Dan Odido	Migori
44	James Baraza	Ikolomani-Kakamega
45	Eva Sawe	CoG
46	Samuel Ombicha	Kenya Fisheries Service
47	Moses Njeru	Kenya Chamber of Mines
48	Harun Enonda	Vihiga
49	Aron Kecha	CEJAD
50	Griffins Ochieng	CEJAD
51	Fredrick Onyango	CEJAD
52	Peter Morintat	McKay
53	Charles Kyengo	McKay
54	Alex Ntekerei	ISSITET
55	Dr. Karanja Ngugi	ISSITET
56	Pauline Mbae	ME&F
57	Marcus Gicheru	ME&F
58	Amos Tarayia	ME&F
59	Brian Kigame	ME&F
60	Irine Kairu	ME&F

11.0 ANNEX 5: SUMMARY CALCULATIONS FOR PRODUCTION

County	Mining Site	No. of Active Shafts	Average Gold ore production in 50 kg bags per Month	Ore production / month in Kilograms	Gold Ore production/ year in Tonnes	Average ore grade in grams per Tonne (ppm)	Gold production per year in Kilograms
Migori	**Kehancha**	**10**	**20**	**1,000**	**12.00**	**24.3**	**291.60**
	Masara – Gor Maria	6	22	1,100	13.20	21.2	279.84
	Mikei	13	16	800	9.60	23.6	226.56
	Osiri	23	45	2,250	27.00	24.7	666.9
	Nyarambo - Awendo	4	25	1,250	15.00	24.8	372.00
	Kademba – Rongo	3	6	300	3.60	30.8	110.88
Sub Total			**134**	**6,700**	**80.40**	**149.4**	**1,947.78**
Kakamega	Roasterman	8	26	1,300	15.60	30.6	477.36
	Ikolomani	42	43	2,150	25.80	17.6	454.08
	Shinyalu	28	39	1,950	23.40	20.3	475.02
Sub Total			**108**	**5,400**	**64.80**	**68.5**	**1,406.46**
Siaya	Abimbo	10	8	400	4.80	29.3	140.64
	Wagusu	5	6	300	3.60	19.8	71.28
	Nyamasare	4	5	250	3.00	23.5	70.50
	Bar Kalare	5	6	300	3.60	34.5	124.20
	Bar Kalare	5	6	300	3.60	32.6	117.36
Sub Total			**31**	**1,550**	**18.60**	**139.7**	**523.98**
Narok	Teng Teng	4	14	700	8.40	29.7	249.48
	Kilimapesa	1	12	600	7.20	34.5	248.40
	Got Kabongo	7	25	1,250	15.00	20.7	310.50
	Blure	5	46	2,300	27.60	21.4	590.64
	Nyatigile	6	7	350	4.20	28.9	121.38
Sub Total			**104**	**5,200**	**62.40**	**135.2**	**1,520.40**
Vihiga	Vyalo	10	27	1,350	16.20	29.9	484.38

Summary table of gold production (Grams) per county

Gold Production/County in Kilograms	
Migori	1,947.78
Siaya	523.98
Kakamega	1,406.46
Narok	1,520.40
Vihiga	1,385.04
Nandi	80.10
Total Production	**6,863.76**

12.0 ANNEX 6: THEMATIC REPORTS

1. Legal and Policy Report
2. Economic and Financial Report
3. Education, Information and Technology Report
4. Verification of Mercury to Gold Ratio Field Work Report



REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT AND FORESTRY
NHIF BUILDING, 12th FLOOR,
RAGATI ROAD, UPPERHILL
P.O BOX 30126-00100 Nairobi, Kenya
Tel: +254 20 2730808/9 / +254 20 2725707 / +254 20 2725707
Email: psoffice@environment.go.ke
Website: www.environment.go.ke
Twitter: @Environment_Ke
Facebook: @EnvironmentKe