



PERFORMANCE AUDIT REPORT
ON
MONITORING OF ARTISANAL MINING OPERATIONS
BY
THE MINISTRY OF PETROLEUM AND MINING



November 2022

VISION

Making a difference in the lives and livelihoods of the Kenyan People

MISSION

Audit Services that impact on effective and sustainable service delivery

CORE VALUES

Integrity

Credibility

Relevance

Accountability

Independence

MOTTO

Enhancing Accountability

FOREWORD BY THE AUDITOR – GENERAL

I am pleased to present this Performance Audit Report on Monitoring of Artisanal Mining Operations by the Ministry of Petroleum and Mining. My Office carried out the audit under the mandate conferred on me by Section 36 of the Public Audit Act, 2015. The Act mandates the Auditor - General to examine the economy, efficiency and effectiveness with which public money has been expended pursuant to Article 229 (6) of the Constitution of Kenya, 2010.

Performance, financial and compliance audits form the three-pillars of the audit assurance framework that I have established to give focus to the varied and wide scope of the audit work done by my Office. The framework is intended to provide a high level of assurance to stakeholders that public resources are not only correctly disbursed, recorded and accounted for, but their use results in positive impacts on the lives and livelihoods of the citizens. The main goal of our performance audit is to ensure effective use of public resources and promote service delivery to the citizens.

Our performance audits examine compliance with policies, obligations, laws, regulations, standards and whether the resources are managed in a sustainable manner. They also examine the economy, efficiency and effectiveness with which public resources have been expended. I am hopeful that corrective action will be taken in line with our recommendations in the report.

The report is submitted to Parliament in accordance with Article 229 (7) of the Constitution of Kenya, 2010 and Section 39 (1) of the Public Audit Act, 2015. I have also submitted copies of the report to the Principal Secretary, the Ministry of Petroleum and Mining, the Principal Secretary, The National Treasury and the Secretary, President's Delivery Unit.



CPA Nancy Gathungu, CBS

AUDITOR-GENERAL

04 November, 2022

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LIST OF ABBREVIATIONS

AIE	Authority to Incur Expenditure
AM	Artisanal Mining
AMC	Artisanal Mining Committee
DFID	Department for International Development
GDP	Gross Domestic Product
INTOSAI	International Organisation of Supreme Audit Institutions
ISA	International Standard on Audit
MoPM	Ministry of Petroleum and Mining
NEMA	National Environmental Management Authority
OECD	Organisation for Economic Co-operation and Development
RMO	Regional Mining Officers
WHO	World Health Organisation

DEFINITION OF TERMS

Adit	A horizontal passage leading into a mine for the purposes of access or drainage.
Alluvial	Loose clay, silt, sand, or gravel that has been deposited by running water in a stream bed or on a floodplain.
Amalgam	Mixture or blend of gold particles and mercury.
Amalgamation	Process of combining or uniting gold particles to mercury.
Blowers	Device or tool for creating a current of air used by miners to pump air from the surface to the mines.
Borax	It is a chemical used in gold extraction and whose cost compares well with mercury.
Crashers	A machine designed to reduce large rocks into smaller rocks, gravel, sand or rock dust.
Delineation	The process of indicating the exact position of a border or boundary.
Leaching	An industrial mining process used to extract precious metals such as gold from ore using a series of chemicals.
Mapping	The process of identifying areas where artisanal miners are concentrated.
Mineral rights	Ownership claims against the natural resources located beneath a parcel of land.
Prospecting	To search or explore a region for mineral or any other natural resource.
Shaft	A vertical passageway made in the earth for accessing mining ore and underground excavations.
Shaker table	An apparatus or tool in form of table used in gold extraction by separating gold particles from ores.
Sluice boxes	Long narrow "boxes" that water passes through when put in a creek or stream used to separating and recovering gold from the placer gravel by the use of running water.

EXECUTIVE SUMMARY

Background of the Audit

1. Artisanal mining is a traditional and subsistence mining operation characterised by use of minimal machinery. Artisanal miners extract valuable natural resources such as gold, sand, quarry materials and gemstone from either underground, open surfaces or in riverbeds.
2. According to a 2018 study on the economic contribution of artisanal and small-scale mining in Kenya, about 140,000 people were directly engaged in artisanal and small-scale mining activities, while 800,000 were dependent on it¹. Despite the importance of Artisanal Mining in generating income for low income groups, there have been reports on health, safety and environmental concerns surrounding it. These include incidences of fatal accidents in various mining sites, particularly where gold and gemstone are mined and the use of mercury in gold mining processes.
3. The Mining Act, 2016 and its applicable regulations provide for the formalisation and regulation of artisanal mining. Formalisation and regulation were aimed at mainstreaming artisanal mining for better monitoring of the sub- sector. The Ministry of Petroleum and Mining (MoPM) is tasked with the responsibility of monitoring artisanal mining activities.
4. The Office conducted the audit after taking into consideration a number of factors, including; deliberations in Parliament on health and safety concerns of artisanal miners and the significance of the artisanal mining sub-sector in job creation and economic development of communities living in mining areas. In addition, the mining sector is regarded as one of the key pillars of economic growth as its contribution to the GDP was expected to increase from 0.1% in the year 2013 to 10% by the year 2030. Further, the audit

¹ Barreto, M.L., Schein, P., Hinton, J.J., Hruschka, F. (2018). 'Understanding the Economic Contribution of Small-scale Mining in East Africa'. Somerset, UK: Pact UK. Project funded by the UK Department for International Development (DFID) through the Research for Evidence Division (RED).

considered SDG 12 on responsible consumption and production, which advocates for countries to aim at achieving sustainable management and efficient use of natural resources by the year 2030.

Audit Objective and Scope

5. The objective of the audit was to assess the measures put in place by the Ministry of Petroleum and Mining (MoPM) to enhance the monitoring of artisanal mining operations. The audit examined the activities of MoPM with regard to artisanal mining for the financial years 2016/2017 to 2021/2022. The focus of the audit was on the measures put in place to ensure formalisation of artisanal mining operations in Kenya and how resources were planned and allocated to enhance monitoring. Further, the audit assessed health, safety and environmental concerns faced by miners and the community as a result of artisanal mining operations. 7 out of the 18 regions covered by the Ministry were sampled for the audit. These were Kakamega, Migori, Kisumu, Kitui, Taita Taveta, Eldoret and Mombasa Counties.

Summary of Findings

6. A review of documents and interviews with relevant MoPM officials revealed that there were challenges in monitoring of artisanal mining operations. This was due to delays in the full implementation of regulatory provisions on artisanal mining, as well as inadequate planning and allocation of resources.

A. Partial Implementation of Provisions in the Act to Formalise and Regulate Artisanal Mining Operations

i. Delay in the Establishment and Operationalisation of Artisanal Mining Committees

7. According to Section 94 (1) of the Mining Act, 2016, Artisanal Mining Committees (AMC) should be established in every county. The role of the Committee is to advise the representative of the Director of Mines (DoM) in granting, renewal or revocation of artisanal mining permits. The permits regulate activities of artisanal miners and assist the Ministry to monitor the sub sector. The Ministry's Strategic Plan for the period 2018 to

2022 indicates that 23 Artisanal Mining Committees (AMCs) were to be established within the 5-year period of the strategic plan. However, the audit revealed that only 9 Committees had been gazetted at the time of the audit. These were Migori, Kakamega, Vihiga, Siaya, Taita Taveta, Kitui, Turkana, Kisii and Narok Artisanal Mining Committees. The delay in the formation of AMCs was attributed to delays in the appointment of nominees to the Committee by the various institutions that are to be represented in the Committee. Further, there was no evidence of efforts made by the Ministry to follow up on the formation of the Committees by way of correspondence with the affected institutions.

8. Further, the audit established that despite the formation of AMCs in the nine Counties, they were yet to commence operations. This was attributed to the lack of; budgetary provisions to facilitate the Committees' operations and guidelines for the Committee members in discharging their roles. In the absence of AMCs, the issuance of artisanal mining permits could not take place.

ii. Delay in the Mapping and Delineation of Land for Artisanal Mining

9. The Ministry of Petroleum and Mining (MoPM) was expected to map, delineate and gazette land for artisanal mining. Mapping and delineation of land is a prerequisite for the declaration of an area as an artisanal mining zone. Artisanal miners would then be issued with permits based on the zones. According to MoPM Strategic Plan 2018-2022, 85 artisanal mining permits were to be issued within the 5-year period. Out of the 7 regions sampled, mapping of artisanal miners had only commenced in Kakamega and Migori regions, which are areas of high concentration of artisanal miners. However, at the time of the audit, the process was yet to be completed. The delays were attributed to inadequate personnel and inadequate funds. There is a risk of continued delays in the issuance of artisanal mining permits if the Ministry does not delineate zones and regions where artisanal miners can operate from.

iii. The Ministry has Supported Miners to Form Cooperatives and Associations in Readiness for Issuance of Permits

10. According to the Mining Act, 2016, the representative of the Director of Mines is required to assist miners to form cooperatives and miners' associations. This is to ease the process of issuance of permits, compliance with the existing laws and regulations and enable them access credit. In addition, the cooperatives and associations assist artisanal miners to bargain for better prices for their minerals and make it easier for relevant authorities to collect fees and royalties. The audit confirmed that in the 7 sampled regions, miners had formed cooperatives and associations and were awaiting the issuance of permits.

B. Training of Miners was Mainly Conducted by the Ministry's Stakeholders

11. According to Section 93 (3) (d) of the Mining Act, 2016 the representative of the Director of Mines should provide training facilities and assistance necessary for effective and efficient artisanal mining operations. However, the audit revealed that out of the sampled regions, the Ministry had only conducted training in Kakamega, Migori and Eldoret regions. Interviews with miners in all the sampled regions revealed that they had attended training and workshops facilitated by the Ministry's stakeholders, namely; Planet Gold, Impact Facility, Haki Madini, National Council of Churches in Kenya (NCCCK), National Environmental Management Authority (NEMA), Taita Taveta University and county governments. The training covered; health and safety practices, environmental conservation and financial management.

C. Inadequate Planning and Allocation of Resources

i. Inadequate Funding for Monitoring Mining Operations

12. One of the key roles and responsibilities of mining officers is the monitoring of operations in mining sites to ensure that regulations, guidelines and health and safety standards are complied with. The mining officers' activities should ideally be field based. The audit found that the funds allocated for fieldwork activities for the years under review ranged from 3% to 13% of the total allocation of funds to regional offices. Further, despite discrepancies in

the workload of the sampled regional offices, they had been allocated equal amounts of funds for their operations.

ii. Inadequate Staff for Monitoring Mining Operations

13. The Directorate of Mines had an authorized technical staff establishment of 235. However, the total staff in post at the time of the audit was 89, leaving a deficit of 146 staff. Interviews with key Ministry personnel and Regional Mining Officers revealed that the staff deficit had affected the monitoring of mining activities. Further, the audit established that Migori and Kitui Regional Offices did not have drivers in post. Therefore, the regions were dependent on drivers from other government institutions who were not always available when required.

iii. Unreliable Vehicles in Regional Offices

14. The audit revealed that logistical operations in the sampled regional offices were a challenge as vehicles allocated to the offices were unreliable. Although each regional office had been allocated a vehicle, interviews with Regional Mining Officers indicated that the vehicles were old and frequently broke down. At the time of the audit, the vehicles allocated to Taita Taveta, Kitui and Kisumu Regional Offices were grounded. This negatively affected their operations as they had to rely on vehicles borrowed from other departments.

iv. Regional Offices did not have Work Plans

15. The audit revealed that the sampled regional offices did not have work plans in place. A work plan is important as it enhances the prioritisation of activities and proper utilization of resources.

v. Lack of a Clear Mechanism for Supervision of Regional Mining Activities

16. The audit revealed that the Ministry did not have a clear mechanism for field officers' supervision and reporting. Interviews with ministry officials and Regional Mining Officers (RMOs) revealed that even though teams from the head office were supposed to undertake field visits, they were not doing so due to lack of funds. In addition, reports

from the regional offices to the head office were unstructured in terms of content, nature and frequency.

Negative Health, Safety, Environmental and Economic Effects Attributed to Artisanal Mining Operations

i. Frequent Accidents in Mining Sites

17. A review of documents and interviews with RMOs revealed that there were frequent accidents in mines, especially in the gold mining regions. The accidents were mostly due to the collapse of poorly constructed shafts, suffocation due to lack of oxygen in the shafts and drowning. For the period 2016/17 to 2021/22, there were a total of 60 deaths reported; 27 in Kakamega, 15 in Migori, 15 in Kisumu and 3 in Taita Taveta regions. Further, interviews with RMOs revealed that some deaths were not reported as miners feared that operations in the mines would be negatively affected if all the accidents were reported.

ii. Handling of Hazardous Chemicals Without Personal Protective Equipment

18. During field inspections, the audit team observed that mercury was used in the processing of gold. However, despite mercury being a hazardous chemical, miners handled it using bare hands. In addition, miners in the sampled regions did not wear gas masks when roasting gold amalgam to separate gold from mercury. Therefore, their health was at risk due to inhaling toxic mercury fumes produced during the process. According to the World Health Organization, mercury exposure may have serious effects on; the nervous, digestive and immune system, as well as organs such as the kidney, lungs skin and eyes. Interviews with miners in the sampled gold mining regions revealed that most of them could not afford personal protective equipment such as gloves, safety boots and gas masks.

iii. Unsafe Disposal of Effluent from Mining Sites

19. The audit team observed that contaminated effluent from mining sites was disposed of in shallow pans and in some instances, it flowed into the nearest rivers and streams.

Therefore, posing a risk to the community and their animals as exposure to mercury and other metals contaminates water and soils nearby.

iv. Environmental Degradation

20. Physical verification of the sampled mining sites revealed that artisanal miners did little to reclaim and restore land after extracting minerals. Instead, it was left bare and susceptible to erosion. In addition, miners left mining shafts open without back filling, posing risks to the community and livestock. Further, heaps of waste from extracted gold were left on the surface. This waste was a health risk as it had mercury contamination.
21. Interviews with RMOs revealed that artisanal miners interfered with the pillars that protected decommissioned mines from collapsing. Therefore, posing a risk to the environment and communities living around the mines by weakening them and making them susceptible to collapse. For instance, the Osiri Mining Site had cracks on the ground surface, occasioned by mining activities in the old mines. Further, at Roster Man Mining Site, a dining hall at Kakamega Vocational Training Centre caved in and had to be demolished.

v. The Government Could Not Assess and Collect Revenue from Artisanal Mining Activities

22. According to sections 182 and 183 of the Mining Act, 2016, applicants and holders of mineral rights are liable to pay application, renewal and other fees, as may be prescribed under the mineral right. In addition, miners are required to pay royalties for the minerals they mine, except where the mineral extracted is a sample. However, artisanal miners had not been issued with mining permits. Therefore, the Government could not assess and collect revenue due from artisanal mining activities. Interviews with miners in sampled regions established that they sold minerals to middlemen who dictated the price of the minerals. Further, there was no system in place for tracking the minerals bought by middlemen, raising the risk of the minerals being smuggled out of the country without the revenue due being paid to the government.

Conclusion

23. Artisanal mining has been in existence for a long time, however, the old Mining Act, Cap 306 did not recognise and provide for its regulation. The Mining Act, 2016 has provisions in place for the regulation of artisanal mining. The Ministry of Petroleum and Mining is expected to implement the provisions to enhance the monitoring of artisanal mining operations.
24. Audit findings revealed that the Ministry had not developed sufficient measures to monitor artisanal mining operations. The Ministry has made efforts in supporting miners to organise themselves into associations and cooperatives in readiness for issuance of permits. However, the critical processes of formation and operationalisation of Artisanal Mining Committees, mapping and delineation of land are yet to be finalised. These processes are a prerequisite to the issuance of permits to artisanal miners. The permits would enable artisanal miners to be better organized; in terms of carrying out mining activities in a defined area, adherence to permit conditions and self-regulation through associations. Further, an organized artisanal mining sub sector would enhance the ability of the Ministry to monitor artisanal mining operations. Delays in the implementation of the provisions are attributed to inadequate funding, personnel and delays in the nomination of Artisanal Mining Committees members by the various institutions that are to be represented in the committee.
25. In addition, there are areas where artisanal miners are operating and yet they are already licensed to prospecting and mining companies and individuals. This complicates the process of mapping and delineation of land for artisanal miners.
26. Besides the delays in the implementation of provisions to regulate artisanal miners, other factors that have impacted monitoring of artisanal mining operations included inadequate planning and allocation of resources. There is also lack of clear mechanisms to monitor the work of regional officers.

27. In the absence of proper mechanisms for monitoring artisanal miners' activities, they continue to engage in unsafe mining methods that endanger their lives, cause pollution and degradation of the environment.
28. Most of the miners sold their minerals to middlemen who bought them at relatively low prices in comparison to selling them through cooperatives and licensed dealers. Therefore, miners did not accumulate the minerals to sell in relatively large quantities that would fetch better prices.

Recommendations

29. In view of the findings and conclusion of this audit, the Auditor - General proposes the following recommendations for implementation by the Ministry of Petroleum and Mining.
 - i. The Ministry should fast track the formalisation and regulation of artisanal mining operations and ensure that artisanal miners are issued with permits. This would enable the Ministry to better monitor artisanal mining activities and enhance miners' adherence to health and safety standards. Further, the permits would enable artisanal miners to be recognised formally, hence increasing their ability to access financial credit to invest in more efficient mining methods.
 - ii. For sustainable and consistent training of miners, the Ministry should develop a framework for training artisanal miners on health and safety practices and environmental conservation.
 - iii. The Ministry, in collaboration with relevant agencies, should explore alternatives to the use of mercury and harmful chemicals by artisanal miners in the processing of gold.
 - iv. For effective monitoring of artisanal mining activities, the Ministry should develop a robust and clear mechanism for supervising the work of its field officers.
 - v. For artisanal miners to receive value for their minerals and avoid exploitation, the Ministry should develop a mechanism for valuation and value addition to the minerals.

- vi. The Ministry should fast track the operationalisation of the Voi Gemstone Value Addition Centre. This would ensure that gemstone miners benefit from the identification, valuation and value addition services, as well as access to better markets.

1.0 BACKGROUND TO THE AUDIT

Introduction

- 1.1 Artisanal mining is a traditional and subsistence mining operation characterised by the use of minimal machinery. Artisanal miners extract valuable natural resources such as gold, sand, quarry materials and gemstone from either underground, open surfaces or in river beds.
- 1.2 According to a 2018 study on the economic contribution of artisanal and small-scale mining in Kenya, about 140,000 people were directly engaged in artisanal and small-scale mining activities, while 800,000 were dependent on it². Despite the importance of artisanal mining in generating income for low income groups, there have been reports on health, safety and environmental concerns surrounding it. These include incidences of fatal accidents in various mining sites, particularly where gold and gemstone are mined and the use of mercury in gold mining processes.
- 1.3 The Mining Act, 2016 and its applicable regulations provide for the formalisation and regulation of artisanal mining. Formalisation and regulation were aimed at mainstreaming artisanal mining for better monitoring of the sub-sector. The Ministry of Petroleum and Mining (MoPM) is tasked with the responsibility of monitoring artisanal mining activities.

Motivation for the Audit

- 1.4 The Auditor-General authorized the audit after consideration of the following factors:
 - i. Reports on environmental and safety issues surrounding artisanal mining, on both print media and broadcast, have raised concerns of the government and the public. For

² Barreto, M.L., Schein, P., Hinton, J.J., Hruschka, F. (2018). 'Understanding the Economic Contribution of Small-scale Mining in East Africa'. Somerset, UK: Pact UK. Project funded by the UK Department for International Development (DFID) through the Research for Evidence Division (RED).

instance, a Standard Newspaper article dated February 06, 2020, indicated that four people died, while sixteen others were injured after a gold mine collapsed at Osiri Matanda in Nyatike, Migori County³. Further, the Kenya News Agency on 24 June, 2020 reported the death of a miner in a gemstone mine in Mwatate, Taita Taveta County⁴.

- ii. The use of hazardous chemicals such as mercury in artisanal gold mining processes pollutes the environment and exposes miners to health risks. An article by The East African Newspaper dated 7 August, 2019 highlighted the effects of the use of mercury on health of women in Macalder mines in Nyatike Constituency, Migori County. Some of the reported effects include the impairment of the nervous system, still births and general body weakness⁵.
- iii. Deliberations in Parliament on issues affecting artisanal mining in the Country, focusing on the health and safety concerns of artisanal mining. Further, there have been discussions on the significance of the artisanal mining sub sector in job creation and economic development of communities living in mining areas⁶.
- iv. Under the Kenya Vision 2030, the mining sector is regarded as one of the key pillars of economic growth, as its contribution was expected to increase from 0.1% of the Gross Domestic Product (GDP) in the year 2013 to 10% by the year 2030. The Government has also committed to effectively manage mineral resources by enhancing technology in mineral exploration and promoting responsible mining that will consider environmental and social impacts⁷.

³ Vision 2030-economic and macro-economic pillar-oil and other mineral resource

⁴ <https://www.kenyanews.go.ke/miner-suffocates-to-death-in-mwatate-mines/>

⁵ The East African effects of mercury dated 7th August 2019

⁶ Hansard Report 13 May, 2021

⁷ Vision 2030-economic and macro-economic pillar-oil and other mineral resource

v. Sustainable Development Goal 12 on responsible consumption and production advocates for countries to aim at achieving sustainable management and efficient use of natural resources by the year 2030. It also advocates for sound management of chemicals and all waste, to reduce their release into the environment ⁸.

⁸ <https://www.unep.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-12>

2.0 DESIGN OF THE AUDIT

Audit Objective

- 2.1 The objective of the audit was to assess the measures put in place by the Ministry of Petroleum and Mining to enhance the monitoring of artisanal mining operations.
- 2.2 The audit sought to answer the following questions.
- i. To what extent has the Ministry of Petroleum and Mining (MoPM) implemented provision in the Mining Act, 2016, geared towards enhancing the monitoring of Artisanal Mining (AM) operations?
 - ii. Does MoPM plan and allocate resources appropriately to ensure effective monitoring of AM operations?
 - iii. To what extent does MoPM supervise and monitor the work of regional mining officers?
 - iv. What are the negative effects associated with artisanal mining operations?

Scope of the Audit

- 2.3 The audit team examined the activities of MoPM with regards artisanal mining for the financial years 2016/2017 to 2021/2022. The audit focused on the measures put in place to ensure the formalisation of artisanal mining operations in Kenya, as well as the planning and allocation of resources to enhance monitoring. Further, the audit assessed the health, safety and environmental concerns faced by miners and the community as a result of AM operations.

Methods used to Gather Audit Evidence

- 2.4 The methods used to gather audit evidence for the audit include document reviews, interviews, physical inspection and observation.

Document Reviews

- 2.5 To understand the role of MoPM in supervising and monitoring of artisanal mining activities and gather audit evidence, the audit team reviewed various documents. Details of the documents reviewed and the purpose for which they were reviewed is shown in **Appendix 1**.

Interviews

- 2.6 To gain an in depth understanding of artisanal mining operations and the role of the Ministry in regulating and monitoring the sub sector, the team conducted interviews with staff at the Ministry head quarters and its regional offices. In addition, the audit team interviewed miners and relevant stakeholders in the sector. The list of the interviewees and the reason for the interviews is shown in **Appendix 1**.

Physical Verification

- 2.7 The team carried out physical inspection and observation of the mining processes and the status of the sampled mining sites. This enabled the team to understand and assess the safety, health and environmental risks faced by miners and the community. The sampled sites are as detailed in **Appendix 2**.

Sampling

- 2.8 The audit team sampled 7 out of the Ministry's 18 regional offices. The sampling was based on the extent of artisanal mining activities and the health and safety issues raised from the regions. The sampled regional offices are Kakamega, Migori, Kisumu, Eldoret, Mombasa, Taita-Taveta and Kitui. Out of the minerals mined by artisanal miners in the sampled regions, the audit focused on gold, gemstone and manganese. The regional offices cover a cluster of counties as detailed in **Table 1**.

Table 1: Cluster of Counties Covered by Each of the Sampled Regional Offices

Region	Counties Covered	Common Minerals
Kakamega	Kakamega, Vihiga, Bungoma and Busia	Gold
Migori	Migori, Kisii, Homa-Bay, Nyamira and Narok	Gold
Kisumu	Kisumu and Siaya	Gold
Eldoret	Uasin-Gishu, Nandi, Trans-Nzoia and West Pokot	Gold
Mombasa	Mombasa and Kilifi	Manganese
Taita Taveta	Taita Taveta	Gemstone
Kitui	Kitui and Makueni	Gemstone

2.9 The audit team randomly sampled mining sites in these regions, as shown in **Appendix 2**.

Audit Criteria

2.10 The assessment criteria for the audit was drawn from the legal and institutional framework contained in the; Constitution of Kenya, 2010, Mining Policy, 2016, Mining Act, 2016, Mining (License and Permit) Regulations, 2017 and the Government of Kenya Human Resource Policy Manual, 2015. The detailed audit criteria are shown in **Appendix 3**.

3.0 DESCRIPTION OF THE AUDIT AREA

The Role of the Ministry of Petroleum and Mining

- 3.1 The mandate of the Ministry of Petroleum and Mining is outlined in the Executive Order No. 1 of 2020, the successor of Executive Order No.1 of 2018. The Ministry's mandate is to oversee the development of petroleum and mining policies, create a favourable legal and regulatory environment for investments and build capacity for effective management of programs and projects.
- 3.2 The Ministry's vision is to promote sustainable development of the extractives sector. The mission is to enhance the commercialization of discoveries, develop the requisite skills and infrastructure for the production of oil, gas and other minerals, and improve access to competitive, reliable and secure supply of petroleum products.
- 3.3 The mining sector strategic objectives include:
- i. To formulate and strengthen the policy, legal and institutional frameworks for the development of the extractive sector;
 - ii. To promote artisanal and small-scale mining;
 - iii. To promote mine environmental management, health and safety requirements;
 - iv. To enhance mineral value addition and competitiveness; and
 - v. To enhance revenues from the mining sector.

The Ministry's Organization Structure

- 3.4 The Ministry of Petroleum and Mining is headed by a Cabinet Secretary, who is assisted by a Chief Administrative Secretary and a Principal Secretary as the accounting officer. The role of the Principal Secretary is to direct and coordinate the general functioning of the Ministry within the operational guidelines of government policies and ensure effective delivery of its mandate.

- 3.5 There are two directorates that execute mining functions; The Geological Survey and Geo Information Management Directorate and the Directorate of Mines. Artisanal mining operations are under the Directorate of Mines.
- 3.6 The Directorate of Mines has four divisions, namely; Mineral Audit, Explosives Inspection, Mines Inspectorate and Mineral Value Addition Divisions. The role of the Directorate in AM operations includes:
- i. Formulation and administration of policies on management of minerals, mining and quarrying;
 - ii. Issuance of mining licenses and permits;
 - iii. Ensuring compliance with conditions relating to mineral licenses and permits;
 - iv. Provision of mining technical services; and
 - v. Monitoring and enforcement of mine safety, health and environmental regulation.

Regional Mining Officers

- 3.7 The Ministry has 18 regional offices across the Country that are headed by Regional Mining Officers (RMOs) who report administratively to the Permanent Secretary and functionally to divisional heads. The regional offices are to be staffed with at least an inspector of mines, a geologist and an inspector of explosives. The Regional Mining Officers (RMOs) is in charge of a cluster of counties.
- 3.8 The Ministry's organisation structure is shown in **Appendix 4**.

Policies and Legislation Governing Artisanal Mining Operations

The Constitution of Kenya, 2010

- 3.9 Article 62, Section (f) of the Constitution of Kenya, 2010, provides that “all minerals and mineral oils as defined by law” are held in trust for the people of Kenya by the

Government. In addition, article 66 (2) states that Parliament shall enact legislation ensuring that investments in property benefit local communities and their economies.

The Mining Policy, 2016

- 3.10 The policy recognizes various challenges facing artisanal mining operations, including; health and safety risks, smuggling, tax evasion and child labour. To mitigate these challenges, the Policy calls for the development of a framework for mainstreaming and formalizing artisanal mining operations. Mainstreaming and formalizing artisanal mining was expected to enhance the contribution of AM to the mining industry, by way of employment and income, widening the tax base and adoption of safer, healthier and environmentally friendly standards.

The Mining Act, 2016

- 3.11 The Mining Act, 2016 defines artisanal mining and provides for its regulation. Section 93(3) of the Act highlights the functions of the Director of Mines in management and regulation of artisanal mining. Sections 30,31 and 93 to 100 relate to the management of artisanal mining at the county level and conditions for issuance and revocation of artisanal mining permits.

The Mining (License and Permit) Regulations, 2017

- 3.12 The Regulation guides the process of application and renewal of artisanal mining permits.

The Mining (Reporting of Mining and Mineral Related Activities) Regulations, 2017

- 3.13 The Regulation requires a holder of any mineral right to make quarterly and annual reports to the Cabinet Secretary in charge of mining. The reports include payments made to the National and County Governments, sales volume, gross sales revenue from sale of minerals and the total number of persons employed directly by the mineral rights holder.

Regulation of Artisanal Mining

3.14 The Mining Act, 2016 provides for formalisation of artisanal mining activities in order to enable monitoring of the sub sector. Section 93 to 100 of the Act prescribes the establishment of various offices and functions towards formalising artisanal mining, as discussed below.

a. The Establishment of the Directorate of Mines Offices at the County Level

3.15 The Mining Act, 2016 mandates the Cabinet Secretary for Petroleum and Mining to establish county offices to be headed by a representatives of the Director of Mines (DoM). The functions of the representative of DoM are to:

- i. Grant, renew or revoke artisanal mining permits;
- ii. Compile a register of artisanal miners;
- iii. Supervise and monitor the operations and activities of artisanal mining;
- iv. Advice and provide training facilities and assistance necessary for effective and efficient artisanal mining operations;
- v. Facilitate the formation of artisanal mining groups, cooperatives and promote fair trade by artisanal miners; and
- vi. Submit to the Director of Mines reports, documents and information on artisanal mining activities within the county, as prescribed in the regulation.

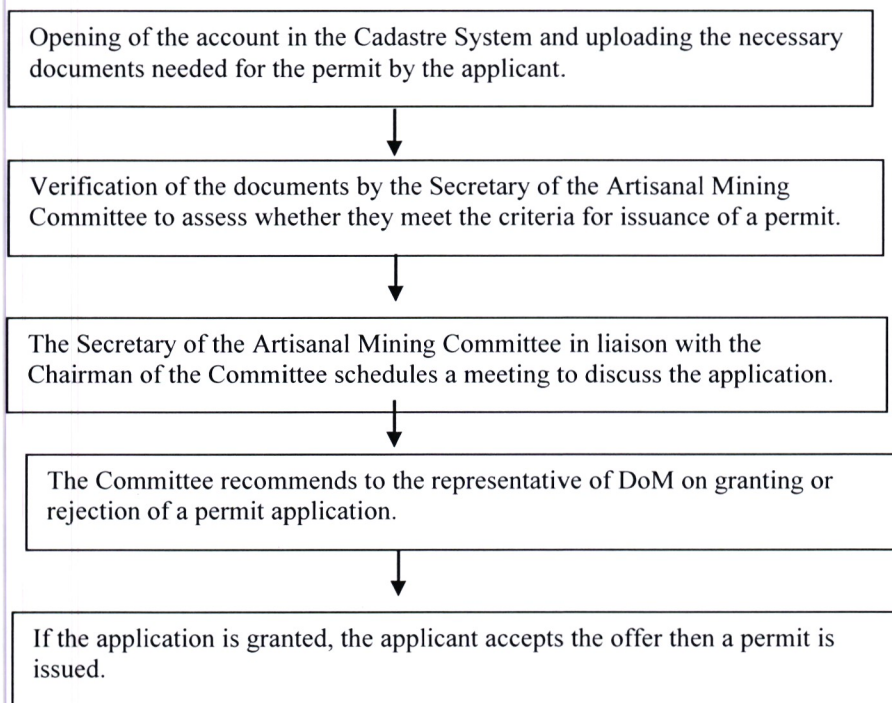
b. The Establishment of Artisanal Mining Committees

3.16 An Artisanal Mining Committee was to be established in every county. The role of the Committee is to advise the representative of the Director of Mines in granting, renewal or revocation of artisanal mining permits. The Committee is composed of the representative of the Governor as the chairman, representative of the Director of Mines as the secretary, three persons elected by associations of artisanal miners, representative of the Inspectorate Division of the Ministry, representative of the National Environmental Management Authority (NEMA) and a representative of the County Lands Board.

c. The Mining Permit Application Process

3.17 An artisanal miner is required to open an account in the Cadastre System and upload the documents required for permit application. The representative of the Director of Mines, who is the Regional Mining Officer, then downloads the documents and checks whether they meet the prescribed criteria. The representative, being the Secretary to the Artisanal Mining Committees, consults with the chairman of the Committee and schedules a meeting to discuss the application. At the meeting, a decision will be made on whether to grant an offer to the applicant or decline. An applicant who is granted an offer for the permit must accept the offer for the permit to be issued.

Figure 1: The Process Description for Issuance of Artisanal Mining Permits



Source: OAG analysis of interview minutes

Monitoring of Artisanal Mining Activities

3.18 Monitoring of artisanal mining operations involves checking whether miners adhere to health, safety and environmental regulations at all times. Monitoring and inspection of mines should be carried out regularly to confirm compliance with the set regulations. The inspectors of mines based in the regions should carry out monitoring on a quarterly basis. Additionally, to compliment monitoring and inspection efforts by regional staff, inspectors from the headquarters are required to visit the regions on regular basis to monitor mining operations.

The Artisanal Mineral Extraction Process

Figure 2: The Gold Extraction Process

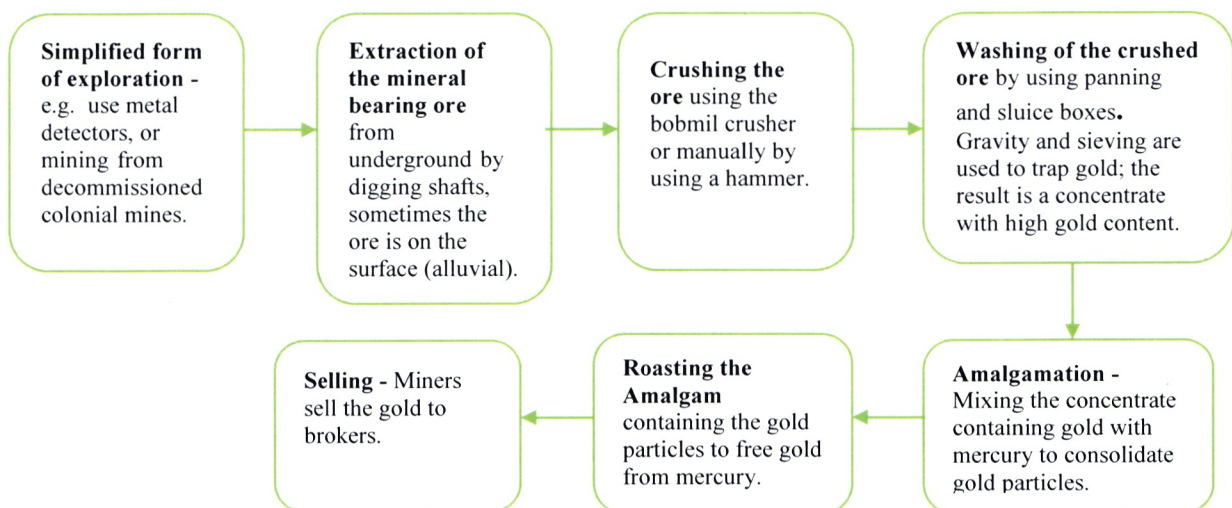


Figure 3: The Manganese Mining Process

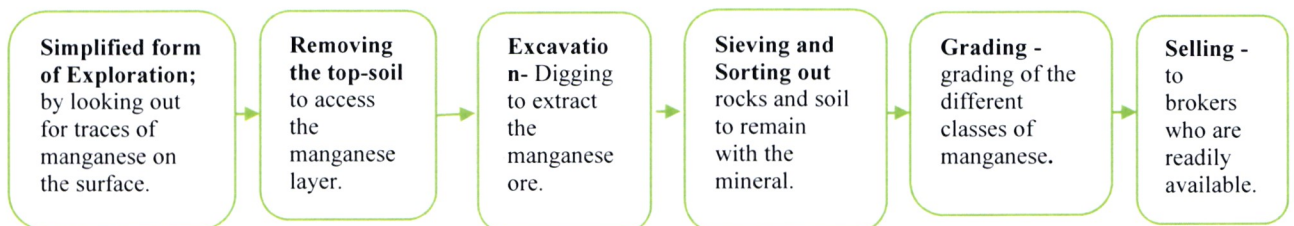
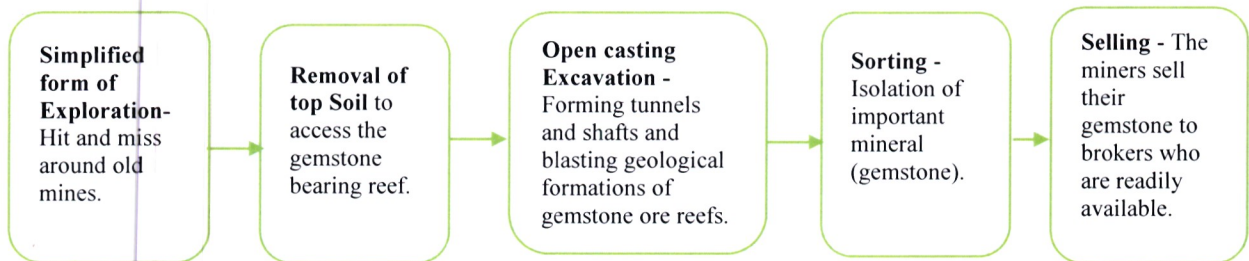


Figure 4: The Gemstone Mining Process



Major Stakeholders in Artisanal Mining

The Kenya Mineral Rights Board

3.19 The Kenya Mineral Rights Board is charged with the responsibility of advising and recommending to the Cabinet Secretary matters related to issuance of minerals rights, determination of suitable areas for artisanal mining, fees and royalties payable for mineral rights.

County Governments

3.20 The role of county governments as stipulated in the Mining Act, 2016 is provision of consents for licensing operations and surface rights, promoting community engagement in mining operations and selection of the mining sector operators. In addition, county governments are expected to work together with the National Government, local community and investors in creating employment opportunities, while ensuring the proper regulation of mining operations within the county where the mineral is mined.

The National Environment Management Authority

3.21 The role of the National Environment Management Authority (NEMA) is to exercise the general supervision and co-ordination over all matters relating to the environment. In the mining sector, NEMA is responsible for reviewing and approving Environmental Impact Assessments (EIA) reports, advising MoPM on environmental issues and monitoring mining activities for impact on the environment. The Artisanal Mining

Committee has a representative from NEMA who advises on the issuance of artisanal mining permits.

Sources of Funds and Funding Levels

3.22 The Ministry of Petroleum and Mining receives funding from the exchequer. There was no specific funding earmarked for artisanal mining operations. **Table 2** shows the mining activities' budget and expenditure from the financial year 2016/17 to 2020/21.

Table 2: Funding for Mining Activities

Financial Year	Approved Estimates (Kshs)			Expenditure (Kshs)			Surplus/Deficit		
	Recurrent	Development	Total	Recurrent	Development	Total	Recurrent	Development	Total
2016/2017	885,652,150	1,321,134,978	2,206,787,128	852,006,218	1,371,002,247	2,223,008,465	33,645,932	(49,867,269)	(16,221,337)
2017/2018	1,538,309,626	185,746,795	1,724,056,421	1,513,768,213	147,864,017	1,661,632,230	24,541,413	37,882,778	62,424,191
2018/2019	917,166,585	308,000,000	1,225,166,585	907,371,777	326,177,729	1,233,549,506	9,794,808	(18,177,729)	(8,382,921)
2019/2020	535,965,275	332,521,918	868,487,193	527,444,148	337,548,566	864,992,714	8,521,127	(5,026,648)	3,494,479
2020/2021	825,510,049	3,404,600,000	4,230,110,049	663,335,608	2,926,138,073	3,589,473,681	162,174,441	478,461,927	640,636,368
Total	4,702,603,685	5,552,003,691	10,254,607,376	4,463,925,964	5,108,730,632	9,572,656,596	238,677,721	443,273,059	681,950,780

Source: OAG analysis of budget documents

4.0 AUDIT FINDINGS

4.1 The Ministry of Petroleum and Mining (MoPM) is mandated to monitor the compliance with licensing, health and safety conditions and take enforcement action where it is deemed necessary. Inspectors of Mines, under the Ministry, have powers to access mining premises to ascertain whether the best mining and mineral processing methods are being followed. The Ministry's role includes enhancing mineral value addition and revenue collection. Interviews with ministry officials and Regional Mining Officers in the seven sampled regions revealed that there were challenges in the monitoring of artisanal mining operations, as discussed below.

A. Partial Implementation of Provisions in the Act to Formalise and Regulate Artisanal Mining Operations

4.2 The Mining Act, 2016 specifies the provisions that should be implemented to ensure the mainstreaming and regulation of artisanal mining. The audit established that not all the provisions had been implemented as at the time of the audit as detailed below.

i. Delay in the Establishment and Operationalisation of Artisanal Mining Committees

4.3 According to Section 94 (1) of the Mining Act, 2016, Artisanal Mining Committees (AMCs) should be established in every county. The role of the Committee is to advise the representative of the Director of Mines in granting, renewal or revocation of artisanal mining permits. The Ministry's Strategic Plan for the period 2018-2022 indicated that 23 AMCs were to be established within the 5-year period of the strategic plan.

4.4 Interviews with MoPM officials and document review established that out of the 23 Artisanal Mining Committees that were to be established, only nine had been gazetted as at the time of audit, as shown in **Table 3**.

Table 3: Counties whose Artisanal Mining Committees had been Gazetted

No.	Name of County	Date of Gazettement
1	Kakamega	27 March, 2020
2	Vihiga	27 March, 2020
3	Kitui	5 June, 2020
4	Taita-Taveta	29 January, 2021
5	Migori	12 February, 2021
6	Siaya	12 February, 2021
7	Kisii	12 November, 2021
8	Narok	12 November, 2021
9	Turkana	12 November, 2021

Source: OAG analysis of Kenya Gazette notices

- 4.5 Interviews with RMOs revealed that the delay in formation of AMCs was attributed to delays in appointment of nominees to the Committee by the various institutions that need representation in the Committee. Further, there was no evidence of efforts made by the Ministry to follow up on the formation of the Committees by way of correspondence with the affected institutions.
- 4.6 The audit established that despite the formation of AMCs in the nine counties, they were yet to commence operations. This was attributed to the lack of; a budgetary provision to facilitate the Committees operations and guidelines to enable members discharge their roles. According to the gazette notices on appointment of AMCs, the Ministry was to fund the activities of the Committees. However, at the time of the audit, MoPM was yet to be allocated funding for committee operations. In addition, MoPM was yet to finalize on the guidelines.
- 4.7 Artisanal Mining Committees are expected to play an advisory role in the issuance of permits to artisanal miners. Therefore, in the absence of the committees, the issuance of artisanal mining permits could not take place.

ii. Delay in the Mapping and Delineation of Land for Artisanal Mining

- 4.8 The Ministry of Petroleum and Mining was expected to map, delineate and gazette land for artisanal miners. Mapping and delineation of land are prerequisites for the Cabinet Secretary, Petroleum and Mining, to declare an area as an artisanal mining zone. Subsequently, artisanal miners would then be issued with permits based on the zones. According to MoPM Strategic Plan for the period 2018 to 2022, 85 artisanal mining permits were to be issued within the 5-year period.
- 4.9 Interviews with RMOs revealed that the mapping and delineation of land for artisanal mining had not been finalized at the time of the audit. Out of the 7 regions sampled, mapping of artisanal miners had only kicked off in Kakamega and Migori regions, where the Ministry had identified areas with a high concentration of artisanal miners. However, at the time of the audit, the process was yet to be completed. Interviews with the key Ministry staff at the headquarters and RMOs revealed that the delay was as a result of inadequate personnel and funding challenges.
- 4.10 Artisanal miners in gold mining regions operated in areas where companies that held prospecting and mining licenses over vast blocks of land were in existence. According to sections 75(1) and 108(1) the Mining Act, 2016, holders of prospecting and mining licenses have exclusive rights over the licensed areas. Consequently, artisanal miners in such areas could not be issued with mining permits unless the companies surrendered part of their blocks for declaration as artisanal mining zones. Therefore, there is a risk of delayed issuance of artisanal mining permits if the Ministry does not ensure availability of zones that artisanal miners can operate from. **Appendix 5** shows companies with mining or prospecting licenses and their details.
- 4.11 Additionally, interviews with RMOs and document reviews established that there were incidences of conflicts between artisanal miners and companies that held mining and prospecting licences. The conflicts were due to artisanal miners trespassing in licensed

areas. **Table 4** highlights incidences of conflicts between artisanal miners, prospecting and mining companies.

Table 4: Incidences of Conflicts between Artisanal Miners, Prospecting and Mining Companies

Company Name	County	Details on the Conflict
1. Auramutalum Mining Company	Migori	Mining land related conflicts
2. Karebe Mining Company	Nandi	Mining land related conflicts
3. Nichau International (Kenya) Company Limited	Homabay	Artisanal miners assessed tunnels used by the company and vandalised pipes.
4. Kilimapesa Gold Pty Limited	Narok	Encroachment of the mining area under the Kilimapesa mining lease.

Source: OAG analysis of interview minutes and incidence reports

4.12 Mapping and delineation of land is a prerequisite to the Artisanal Mining (AM) formalisation. The permits would enable the Ministry to better monitor AM operations since they come with conditions that the permit holders have to comply with. These conditions include health and safety standards and submission of reports, among others. Therefore, when artisanal miners do not have permits, they will continue facing these challenges as the Ministry cannot fully monitor their operations.

iii. The Ministry had Facilitated Miners to Form Cooperatives and Associations in Readiness for Issuance of Permits

4.13 According to the Mining Act, 2016, the representative of the Directorate of Mines is required to assist artisanal miners to form cooperatives and associations. This was to ease the process of issuance of permits, ensure they operate within the existing laws and regulations and enable them access credit. In addition, the cooperatives and associations were expected to assist artisanal miners to bargain for better prices for their minerals. Further, it would ensure easier collection of fees and royalties by government authorities.

- 4.14 The audit revealed that in the seven sampled regions, miners had formed several cooperatives and associations and were awaiting issuance of permits. **Table 5** shows the number of artisanal mining co-operatives and associations formed in the regions.

Table 5: Registered Cooperatives and Associations

No.	Region	No. of Cooperatives	No. of Associations
1	Kisumu	1	0
2	Migori	3	14
3	Kakamega	1	2
4	Eldoret	8	0
5	Mombasa	0	2
6	Taita Taveta	2	0
7	Kitui	0	3

Source: OAG analysis of interview minutes

B. Training of Miners was Mainly Conducted by the Ministry's Stakeholders

- 4.15 According to Section 93 (3) (d) of the Mining Act, 2016, the Directorate of Mines is to advise and provide training facilities and assistance necessary for effective and efficient artisanal mining operations.
- 4.16 Interviews with RMOs revealed that the Ministry was yet to conduct training for some of the miners in the sampled regions. The audit revealed that out of the seven sampled regions, the Ministry had only conducted training in Kakamega, Migori and Eldoret regions. This was attributed to budgetary constraints. However, interviews with miners in all the sampled regions revealed that they had attended training and workshops facilitated by the Ministry's stakeholders, namely; Planet Gold, Impact Facility, Haki Madini, National Council of Churches in Kenya (NCCCK), National Environmental Management Authority (NEMA), Taita Taveta University and county governments. The training covered; health and safety practices, environmental conservation and financial management.

C. Inadequate Planning and Allocation of Resources

i. Inadequate Funding for Monitoring Mining Operations

- 4.17 Interviews with Regional Mining Officers indicated that the funds allocated to their regions were inadequate for their operations. One of the key roles of RMOs is supervision and monitoring of mines to ensure compliance with regulations, guidelines and health and safety standards. Therefore, the activities of the technical staff in the regions should be mainly based in the field; inspectors of mines, inspectors of explosives and geologists. Further, besides monitoring of artisanal miners, RMOs monitor mining and prospecting companies, as well as mineral dealers operating in their respective regions.
- 4.18 A review of the Authority to Incur Expenditures (AIEs) for Migori, Eldoret, Mombasa, Kakamega and Kisumu regions revealed that the funds allocated for field activities was 7% of the total allocation. For instance, the average allocation for fuel and lubricants for the period 2016/17 to 2020/21 was 8% of the total allocation. Allocation for routine vehicle maintenance and domestic travel, subsistence and other transport allocation was also low. **Table 6** shows allocations under vote heads that are key for monitoring mining activities. Details of allocation under all vote heads is shown in **Appendix 6**.

Table 6: Allocation of Funds for Monitoring Activities Versus the Total Amount for Authority to Incur Expenditure

Vote Head	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
	Ksh	Ksh	Ksh	Ksh	Ksh
Fuel and lubricants	54,572 3%	140,416 8%	140,416 7%	80,841 8%	130,135 13%
Domestic travel and subsistence and other transport	200,076 12%	166,744 10%	133,386 7%	30,444 3%	50,933 5%
Routine maintenance- vehicles and other transport	65,332 4%	133,332 8%	113,332 6%	36,943 4%	101,304 10%

Source: OAG analysis of regional offices' AIEs

- 4.19 Further, the audit revealed that RMOs received equal allocations despite disparities in the mining activities being carried out, coverage areas by field officers and human and

material resource required. There was also a notable trend of decline in the funds allocated to the regions. **Table 7** shows allocations to each of the regional offices.

Table 7: Equal Allocation of Funds to Regional Mining Offices

Region	2017/2018	2018/2019	2019/2020	2020/2021
	Ksh	Ksh	Ksh	Ksh
Kakamega	1,686,223	1,999,314	965,987	996,923
Kisumu	1,686,223	1,999,314	965,987	996,923
Mombasa	1,686,223	1,999,314	965,987	996,923
Migori	1,686,223	1,999,314	965,987	996,923

Source: OAG analysis of regional offices AIEs

ii. Inadequate Staff for Monitoring Mining Operations

4.20 According to the Ministry's staff establishment, the Directorate of Mines had an authorised technical staff establishment of 235. However, the total staff in post at the time of the audit was 89, resulting in a deficit of 146 staff. Interviews with ministry personnel and RMOs revealed that the deficit in staff had negatively affected the inspection and monitoring of mining activities. **Table 8** and **Appendix 7** shows the staff establishment in the Directorate of Mines headquarters and regional mining offices.

Table 8: The Directorate of Mines Staff Establishment

Location	Designation Title	Authorised Establishment	In-post	Deficit
Head-Quarter	1 Chief Inspector of Mines/ Director of Mines	1	1	0
	2 Deputy Director/Senior Principal Superintending Inspector of Mines	4	4	0
	3 Asst. Director /Chief Superintending Inspector of Mines	8	5	-3
	4 Senior Superintending Inspector of Mines	33	16	-17
	5 Inspector of Mines II/I/ Inspector of Explosives I/II	70	6	-64
	6 Chief Inspector of Explosives	1	0	-1
	7 Chief Superintending Inspector of Explosives	2	0	-2
	8 Principal Superintending Inspector Inspector of Explosives	8	2	-6
		127	34	-93
Regional Offices	1 Chief Superintending Geologist/ Inspector of Mines/ Inspector of Explosives	11	12	1
	2 Senior Principal Superintending Geologist/Inspector of Mines/ Inspector of Explosives	1	1	0
	3 Senior Superintending Geologist/ Inspector of Mines/ Inspector of Explosives/Principal *	35	37	2
	4 Geologist II,I Inspector of Mines II,I Inspector of Explosives	53	5	-48
	5 Gemologist	2	0	-2
	6 Gemstone Cutter/ Facetor	5	0	-5
	7 Marketing Officer	1	0	-1
		108	55	-53
	Total	235	89	-146

Source: OAG analysis of the Ministry's staff establishment

4.21 Further, the audit established that Migori and Kitui Offices did not have drivers and were dependent on other government institutions for drivers who were not always available when required.

iii. Unreliable Vehicles in Regional Offices

4.22 The audit revealed that the sampled regional offices had unreliable vehicles, leading to failure to carry out regular inspection and supervision of artisanal mining operations. Each regional office had been allocated one vehicle, however, interviews with RMOs indicated that the vehicles were old and frequently broke down. Further, the vehicles allocated to Taita Taveta, Kitui and Kisumu regions were grounded at the time of the audit. This negatively affected their operations as they had to rely on vehicles borrowed from other departments.

iv. Regional Offices did not have Work Plans

4.23 Section G7(1 & 2) of the Government of Kenya Human Resource Policy Manual, 2015 requires departments to prepare work plans based on their strategic plans, prior to the beginning of a performance period. Individual performance targets should then be derived from the departmental work plans and officers' job description. The work plan should briefly describe performance targets or expected results on specific assignments and activities for which a staff member is responsible for during the performance year. However, the audit revealed that the sampled regional offices did not have work plans in place. Work plans are important as they enhance prioritisation of activities and the proper utilization of available resources. In addition, work plans would enable the assessment of whether the monitoring of artisanal mining activities is prioritised and the extent of achievement of planned activities and identify challenges for non-achievement.

v. Lack of a Clear Mechanism for Supervision of Regional Mining Activities

4.24 The audit revealed that the Ministry had not provided a clear mechanism for field officers' supervision and reporting. Interviews with ministry officials and RMOs

revealed that teams from the head office were required to undertake field visits. However, head office teams did not carry out field visits due to lack of funds. Additionally, reports from the regional offices to the headquarters were unstructured in terms of content, nature and frequency.

D. Negative Health, Safety, Environmental and Economic Effects Attributed to Artisanal Mining Operations

i. Frequent Accidents in Mining Sites

- 4.25 Review of documents and interviews with Regional Mining Officers revealed that there were frequent accidents, especially in the gold mining regions. The accidents were mostly occasioned by collapse of poorly constructed shafts, suffocation due lack of oxygen in the shafts and drowning. For the period 2016/17 to 2021/22, there were a total of 60 deaths reported: 27 in Kakamega, 15 in Migori, 15 in Kisumu and 3 in Taita Taveta regions.
- 4.26 Interviews with RMOs revealed that some deaths were not reported as miners feared that operations in the mines would be negatively affected if all the accidents were reported. According to the representatives of Migori County Miners' Association, injuries ranging from bruises, broken limbs and cuts suffered in mining sites were often not reported. **Table 9** illustrates the number of reported deaths and injuries sustained by miners in the sampled mines for the period 2016/17 and 2021/2022. A detailed analysis of the causes of deaths and injuries for Kakamega and Migori regions is shown in **Appendix 8**.

Table 9:Deaths and Injuries in Mining Sites for the Period 2016/2017 to 2021/2022

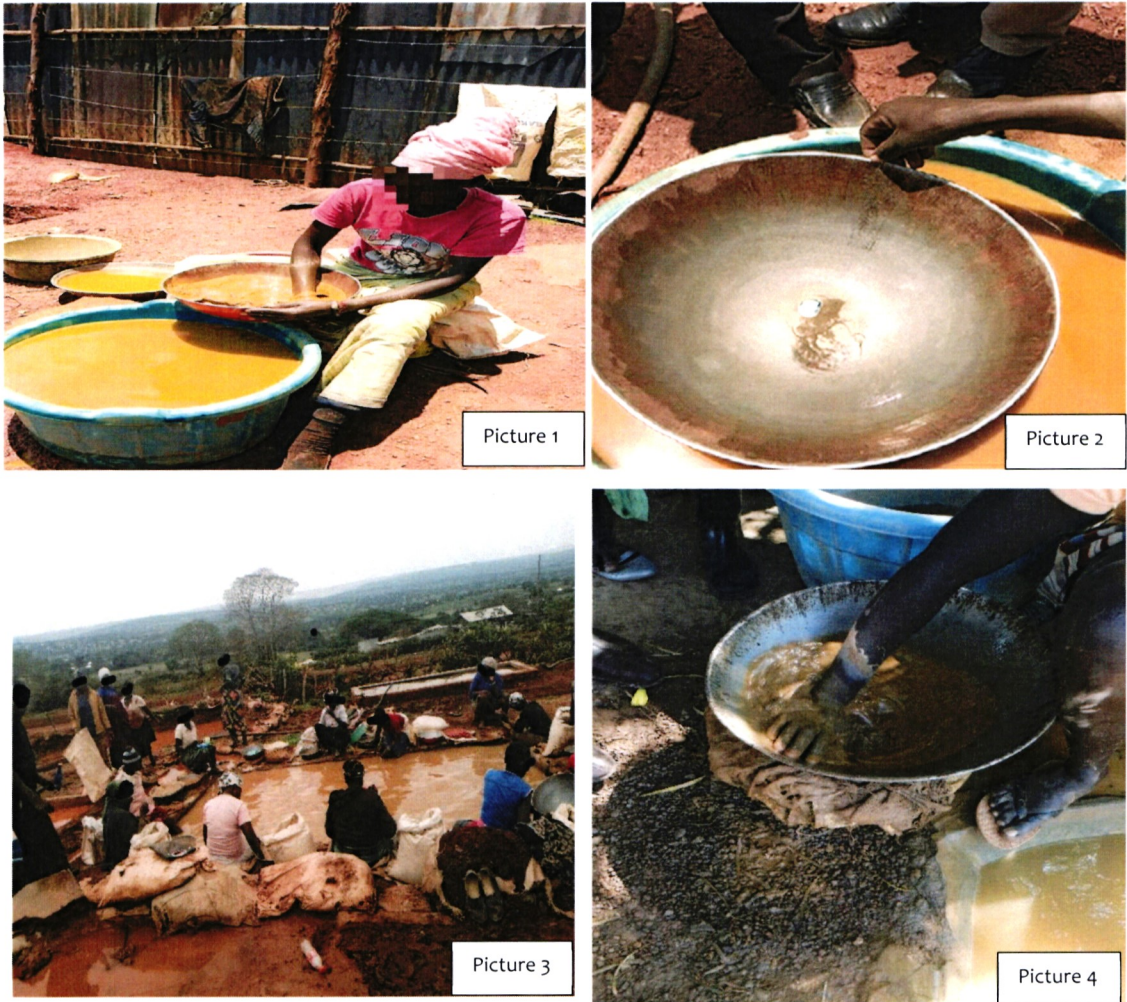
Region	Number of deaths	Number of injuries
Kisumu	15	30
Migori	15	10
Kakamega	27	19
Eldoret	0	0
Mombasa	0	0
Taita- Taveta	3	0
Kitui	0	0
Total	60	59

Source: OAG analysis of data from interview minutes and incidence reports

ii. **Handling of Hazardous Chemicals Without Personal Protective Equipment**

- 4.27 During field inspections, the audit team observed that mercury was used in the processing of gold. However, despite mercury being a hazardous chemical, miners handled it using bare hands. Further, when roasting gold amalgam to separate gold from mercury, artisanal miners did not wear gas masks. This exposed them to health risks due to inhaling of mercury fumes produced in the process.
- 4.28 Mercury is listed by the World Health Organization (WHO) as one of the top ten chemicals of major public health concern. Exposure to mercury may cause serious effects on the nervous, digestive and immune system, as well as organs such as the kidney, lungs, skin and eyes.
- 4.29 Interviews with miners in the sampled gold mining regions revealed that most miners could not afford personal protective equipment such as gloves, safety boots and gas masks. **Figure 5** shows miners using bare hands during the amalgamation process.

Figure 5: Miners using Mercury in the Amalgamation Process



Picture 1 and 2: Miners handle mercury with bare hands in the amalgamation process in Viyalo, Vihiga County.

Picture 3: Miners handling mercury in the amalgamation process in Lolgorian, Narok County.

Picture 4: Nango mining site in Siaya County.

iii. Unsafe Disposal of Effluent from Mining Sites

4.30 The audit team observed that contaminated effluent from mining sites was disposed of into shallow pans and in some instances, it flowed into the nearest rivers and streams. This posed a risk to the community and their animals as exposure to mercury and other hazardous metals from mining sites leads to contamination of water and soils. The Water Resources Authority commissioned water quality tests in Rosterman Mining Site in Kakamega County in February 2021. Results from the test showed that water around the mining area had traces of mercury, cyanide, lead, fluoride and chromium. According

to the report, heavy metals such as mercury and lead, if ingested by fish and other aquatic organisms can build up in their organs to high levels and can easily enter the human food chain⁹. **Figure 6** shows unsafe wastewater disposal from the mining sites.

Figure 6: Unsafe Disposal of Effluent from Mining Sites



Picture 5- Effluent from gold processing in Rosterman Mining site in Kakamega. **Picture 6-** Viyalo Mining Site in Vihiga County. **Picture 7-** Macalder Mining Site, Migori County. **Picture 8-** Bushiangala Mining Site in Kakamega County.

4.31 The unsafe use of mercury was attributed to artisanal miners' inability to access alternative safer methods, either because they are expensive, or they have other disadvantages. Some of the alternative methods are the use of borax and shaker tables. However, borax is less preferred due to low gold extraction rates and shaker tables are expensive; The estimated cost of a shaker table about Kshs.3 million.

4.32 Besides health risks, mercury is not efficient in processing gold from ore. Interviews with the mining officers and miners revealed that use of mercury only extracts about 40% of gold from the ore, leaving out 60 % to waste in the form of tailings. The audit

⁹ Consultancy for assessment of impacts of gold mining in Ikolomani-Rosterman, develop framework of stakeholders' engagement for compliance and protection of water resources from pollution.

established that artisanal miners sell the tailings to individuals and companies who use leaching method to further extract gold from the tailings. The leaching method uses cyanide to extract gold particles. Cyanide is extremely poisonous and requires careful handling. In Migori and Eldoret regions, incidences of cyanide poisoning have been reported. In both cases, cattle died as a result of drinking water contaminated with cyanide from leaching plants established around artisanal mining sites.

iv. Environmental Degradation

- 4.33 Physical verification of the sampled mining sites revealed that artisanal miners did little to reclaim and restore land after extracting minerals. Mined areas were left bare and susceptible to erosion. In addition, miners left mining shafts open without back filling, posing risks to the community and their livestock. Heaps of waste from which gold had been extracted were left bare on the surface, despite some of the waste being contaminated with mercury.
- 4.34 Further, the audit established that some gold and gemstone miners were mining in old mines that had been decommissioned by mining companies previously operating in the area. Interviews with Regional Mining Officers revealed that artisanal miners interfered with the pillars that protect the mines from collapsing. Interference with such pillars posed a risk to the environment and communities living around the mines as they weakened the pillars, making them susceptible to collapse. In addition, the audit team observed cracks on the ground at Osiri Mining Site as a result of mining activities in the old mines. At Rosterman Mining Site, a dining hall for Kakamega Vocational Training Centre had caved in and had to be demolished. **Figure 7** shows some of the environmental effects of artisanal mining.

Figure 7: Effects of Artisanal Mining on the Environment



Picture 9- Cracks at Osiri Mining Site in Migori County as result of underground mining activities. **Picture 10-** Environmental degradation at Macalder Mining Site, Migori County. **Picture 11-** A heap of mining waste(tailings) at Lolgorian Mining Site. **Picture 12-** Mining waste at Nango Mining Site in Siaya County.

v. The Government Could Not Assess and Collect Revenue from Artisanal Mining Activities

- 4.35 According to sections 182 and 183 of the Mining Act, 2016, applicants and holders of mineral rights are liable to pay application, renewal and other fees, as maybe prescribed under the mineral rights. They are also required to pay royalties for the minerals they mine, except where the mineral is extracted as a sample.
- 4.36 Since artisanal miners were not regulated, it was not possible for the Government to assess and collect revenue, as miners had not been issued with mining permits that would form the basis for enforcing applicable fees. Interviews with miners in the

sampled regions established that they sold the minerals to middlemen who dictated on the buying prices. The middlemen operated from the mining sites where the minerals were mined, making it easier for the middlemen to interact and transact with the miners. In addition, the audit established that miners' cooperatives were yet to offer marketing services. Further, there was no system in place to track the minerals bought by the middlemen, raising the risk of the minerals being smuggled out of the country without the revenue due being paid to the Government.

- 4.37 Interviews with mining officers in Taita Taveta County revealed that gemstone miners had a challenge of identifying the type of gemstone extracted, as there are of many varieties with different values. Therefore, there were instances where miners obtained a type of gemstone that could fetch a high price. However, due to lack of knowledge on the types of gemstones, miners sold the high value gemstones to middleman at a lower price. The Voi Gemstone Value Addition Centre was established in 2018 to aid in legitimizing the trade in gemstones, curb smuggling, provide identification valuation, value addition services and better markets for gemstone miners. However, the Centre was not operational at the time of the audit. Further, the Center was expected to have booths for buying and selling gemstones and safes for safe custody. Physical verification revealed that only a few booths had been put in place. Delays in operationalising the Center were attributed to lack of funding from the Ministry of Petroleum and Mining.

The Ministry's Response to Audit Findings and Recommendations

- 4.38 At the conclusion of the audit, an exit meeting was held. Subsequently, the audit report was sent to the Ministry of Petroleum and Mining, requesting for their comments on the audit findings and recommendations. The comments from the Ministry are presented in **Appendix 9**.

5.0 CONCLUSION

- 5.1 Artisanal mining has been in existence for a long time, however, the old Mining Act, Cap 306 did not recognise and provide for its regulation. The Mining Act, 2016 has provisions in place for the regulation of artisanal mining. The Ministry of Petroleum and Mining is expected to implement the provisions to enhance the monitoring of artisanal mining operations.
- 5.2 Audit findings revealed that the Ministry had not developed sufficient measures to monitor artisanal mining operations. The Ministry has made efforts in supporting miners to organise themselves into associations and cooperatives in readiness for issuance of permits. However, the critical processes of formation and operationalisation of Artisanal Mining Committees, mapping and delineation of land are yet to be finalised. These processes are a prerequisite to the issuance of permits to artisanal miners. The permits would enable artisanal miners to be better organized; in terms of carrying out mining activities in a defined area, adherence to permit conditions and self-regulation through associations. Further, an organized artisanal mining sub sector would enhance the ability of the Ministry to monitor artisanal mining operations. Delays in the implementation of the provisions are attributed to inadequate funding, personnel and delays in the nomination of Artisanal Mining Committees members by the various institutions that are to be represented in the committee.
- 5.3 In addition, there are areas where artisanal miners are operating and yet they are already licensed to prospecting and mining companies and individuals. This complicates the process of mapping and delineation of land for artisanal miners.
- 5.4 Besides the delays in the implementation of provisions to regulate artisanal miners, other factors that have impacted monitoring of artisanal mining operations included inadequate planning and allocation of resources. There is also lack of clear mechanisms to monitor the work of regional officers.

- 5.5 In the absence of proper mechanisms for monitoring artisanal miners' activities, they continue to engage in unsafe mining methods that endanger their lives, cause pollution and degradation of the environment.
- 5.6 Most of the miners sold their minerals to middlemen who bought them at relatively low prices in comparison to selling them through cooperatives and licensed dealers. Therefore, miners did not accumulate the minerals to sell in relatively large quantities that would fetch better prices.

6.0 RECOMMENDATIONS

6.1 In view of the findings and conclusion of this audit, the Auditor - General proposes the following recommendations for implementation by the Ministry of Petroleum and Mining.

- i. The Ministry should fast track the formalisation and regulation of artisanal mining operations and ensure that artisanal miners are issued with permits. This would enable the Ministry to better monitor artisanal mining activities and enhance miners' adherence to health and safety standards. Further, the permits would enable artisanal miners to be recognised formally, hence increasing their ability to access financial credit to invest in more efficient mining methods.
- ii. For sustainable and consistent training of miners, the Ministry should develop a framework for training artisanal miners on health and safety practices and environmental conservation.
- iii. The Ministry, in collaboration with relevant agencies, should explore alternatives to the use of mercury and harmful chemicals by artisanal miners in the processing of gold.
- iv. For effective monitoring of artisanal mining activities, the Ministry should develop a robust and clear mechanism for supervising the work of its field officers.
- v. For artisanal miners to receive value for their minerals and avoid exploitation, the Ministry should develop a mechanism for valuation and value addition to the minerals.
- vi. The Ministry should fast track the operationalisation of the Voi Gemstone Value Addition Centre. This would ensure that gemstone miners benefit from the identification, valuation and value addition services, as well as access to better markets.

9.0 APPENDICES

Appendix 1: Methods Used in Gathering Audit Evidence

Method	Government entities and stakeholders contacted	Document reviewed and or officers, stakeholders interviewed	Information obtained
Document Review	The Ministry of Petroleum and Mining	<ul style="list-style-type: none"> - Strategic Plan 2018-2022 - Mining Laws and Regulations, 2011 - Ministry work plans - Approved annual budgets reports and the Ministry's Authority to Incur Expenditure - Progress reports on the implementation of planned activities - Minutes of meetings concerning ASM - Accidents and incidence reports 	<ul style="list-style-type: none"> - Mandate in formalizing, setting and implementing standards for ASM activities. - The legal framework. - Budgeted versus the allocated funds. - The progress in formalizing ASM. - Issues discussed in the minutes concerning ASM operation. - Training plans - Challenges in the implementation of the Mining Act, 2016. - Accident statistics.
Interviews	The Ministry of Petroleum and Mining	<ul style="list-style-type: none"> - The Director of Mines and senior staff at the head office and Regional Mining Officers. 	<ul style="list-style-type: none"> - Information about the operations of the Directorate of Mines. - Understanding the audit area, functions, activities and processes involved in the management of artisanal miners in Kenya.
	The National Environment Management Authority	<ul style="list-style-type: none"> - County Directors in Charge of Kakamega, Migori, Nandi and Siaya. 	<ul style="list-style-type: none"> - The role of NEMA in regulating environmental pollution from artisanal mining.
	Miners	<ul style="list-style-type: none"> - Various miners in the sampled sites 	<ul style="list-style-type: none"> - Mining processes. - Marketing of their minerals. - Challenges in formalization of the industry. - Challenges in health and safety of the miners.
Field inspections Observation		<ul style="list-style-type: none"> - Visited various sites as outlined in annexure 2 	<ul style="list-style-type: none"> - Status of mining sites and health, safety and environment risks associated with the mining practices.

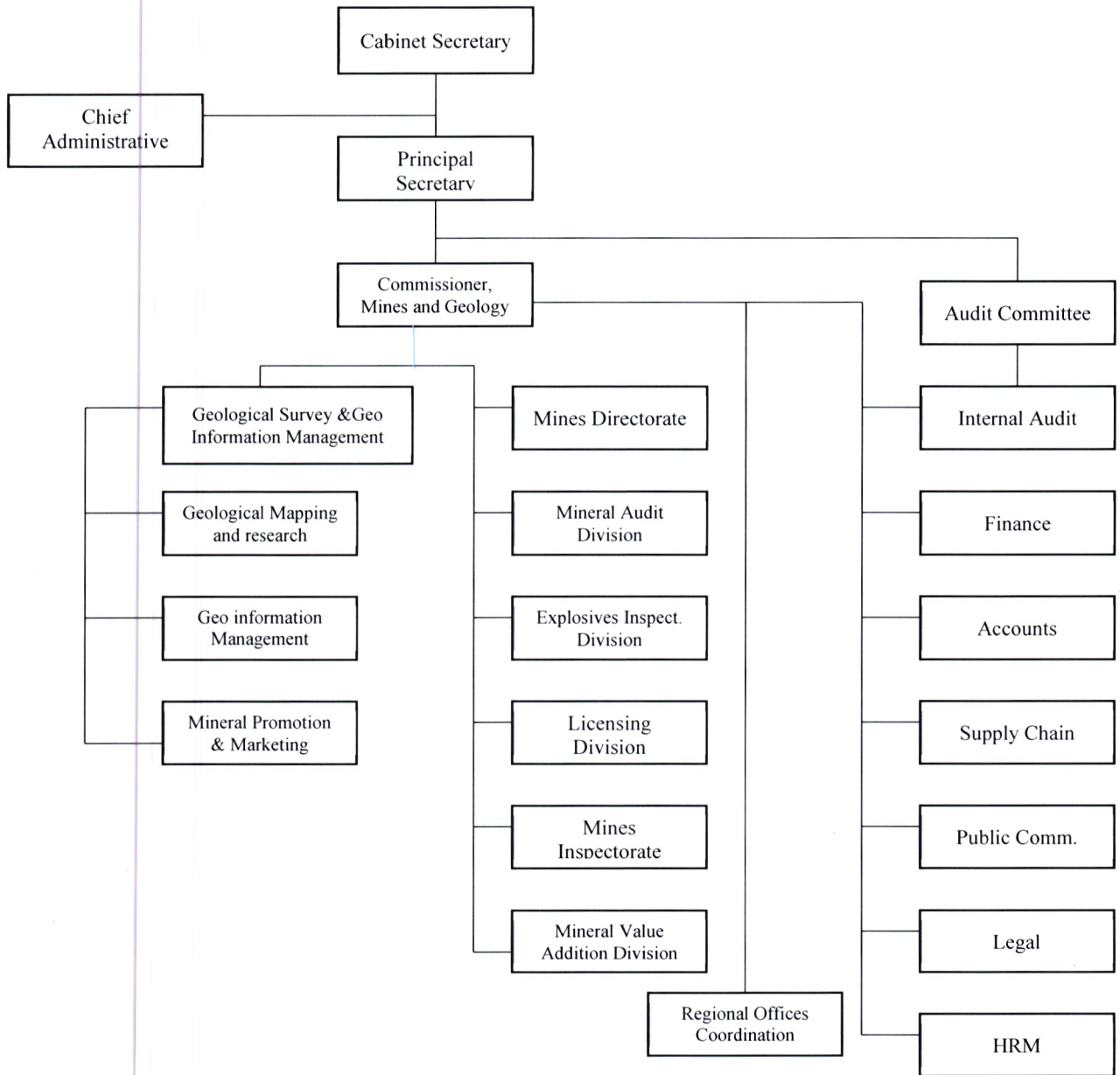
Appendix 2: List of Mining Sites Visited by the Audit team

	Region	County		Name of Mining Site
1	Kakamega	Kakamega	1.	Bushiangala Mining Site
			2.	Ikolomani Mining Site
			3.	Rosterman Mining Site
			4.	Sigalagala Mining Site
		Vihiga	5.	Viyalo Mining Site
			6.	Shinyalu Mining Site
2	Migori	Migori	7.	Macalder Mining Site
			8.	Osiri-Matanda Mining site
		Narok	9.	Lolgorian Mining Site
3	Kisumu	Siaya	10.	Uyawi Mining Site
			11.	Abimbo Mining Site
			12.	Nango Mining Site
4	Eldoret	Nandi	13.	Chemase Mining Site
			14.	Kapsaos Mining Site
5	Mombasa	Mombasa	15.	Kadzandani Mining Site
		Kilifi	16.	Chivala Mining Site
			17.	Dzizoni Mining Site
6	Taita-Taveta	Taita-Taveta	18.	Mkuki Mining Site
			19.	Kasirawi Mining Site
7	Kitui	Kitui	20.	Kawala Mining Site

Appendix 3: Audit Criteria

Criteria	Source
<p>According to sections 182 and 183 of the Mining Act, 2016, applicants and holders of mineral rights are liable to pay application, renewal and other fees as maybe prescribed under the mineral right. They are also required to pay royalties for the minerals they mine except where the mineral is extracted as a sample.</p>	<p>Sections 182 and 183 of the Mining Act, 2016</p>
<p>There shall be established in every county an Artisanal Mining Committee. The function of the committee is to advice the representative of Director of Mines on issuance, renewal and revocation of artisanal mining permits.</p> <p>According to the Ministry’s Strategic Plan for the period 2018to 2022, 23 Artisanal Mining Committees were to be established within the 5-year period of the plan.</p>	<p>Section 91(1) of the Mining Act, 2016</p>
<p>The Cabinet Secretary may designate an area to be an area reserved exclusively for small scale and artisanal mining operations.</p> <p>The Ministry of Petroleum and Mining was expected to map, delineate and gazette land for artisanal miners. Mapping and delineation of land is important because only then will the Cabinet Secretary for Petroleum and Mining declare an area as an artisanal mining zone.</p>	<p>Section 13 (2) of the Mining Act, 2016</p>
<p>The functions of the Director of Mines shall be to facilitate the formation of artisanal association groups or cooperatives.</p>	<p>Section 93(3)(f) of the Mining Act, 2016</p>
<p>The Director of Mines shall advise and provide training facilities and assistance necessary for effective and efficient artisanal mining operations.</p>	<p>Section 93 (3) (d) of the Mining Act,2016</p>
<p>According to section 196(2) of the Mining Act, 2016, the inspectors of mine are required to monitor compliance with the licensing, health and safety conditions and take enforcement action as maybe required under the Act. Among the powers of the Inspector of Mines is the power to enter into any premises to ascertain whether best mining and mineral processing methods are followed.</p>	<p>Section 196(2) of the Mining Act, 2016</p>
<p>Prior to the beginning of the performance period, departments will prepare work plans based on their strategic plans. Individual work plans will then be derived from the departmental work plans and officer’s job description. The work plan will briefly describe the performance targets or expected results on specific assignments and activities for which the staff member is responsible during the performance year.</p>	<p>Section G7(1 & 2) of the Government of Kenya Human Resource Policy Manual, 2015</p>

Appendix 4: The Ministry's Organisational Structure



Source: The Ministry's approved organisational structure

Appendix 5: Companies Holding Prospecting and Mining Licenses in the Sampled Regions

No.	Entity	Type	County	Application Date	Grant Date	Expiry Date	Status
1	Zhen Hua Company Ltd (100%)	Prospecting License	Kisumu and Nandi	03/05/2011	03/01/2017	02/01/2020	Active
2	Karebe Gold Mining Ltd (100%)	Mining License	Kisumu and Nandi	06/03/2018	01/04/2021	31/03/2046	Active
3	Aqualine Distributors Limited (100%)	Mining Permit	Nandi	18/03/2019	19/11/2019	18/11/2024	Active
4	Kenya Sunny Industries Company Limited (100%)	Prospecting License	Kisumu, Nandi and Vihiga.	17/07/2017	08/10/2018	07/10/2021	Active
5	Acacia Exploration Kenya Limited	Prospecting License	Kakamega and Vihiga.	30/01/2019	01/08/2019	31/07/2022	Active
6	Nichau International (Kenya) Company Limited	Prospecting License	Homa Bay and Migori.	02/11/2018	25/07/2019	24/07/2022	Active
7	Nichau International (Kenya) Company Limited	Prospecting License	Kisii, Migori and Narok.	03/11/2018	25/07/2019	24/07/2022	Active
8	B and M Mining Company Limited	Prospective License	Migori	10/08/2004	16/06/2021	15/06/2024	Active
9	Mid Migori Mining Company Ltd	Prospecting License	Migori	01/01/1988	03/08/2020	02/08/2023	Active
10	Mid Migori Mining Company Ltd	Prospecting License	Migori and Narok.	01/01/1995	03/08/2020	02/08/2023	Active
11	Wacho Investments Company Limited	Prospecting License	Migori	18/01/2013	06/08/2015	05/08/2017	Active
12	Wacho Investments Company Limited	Prospecting License	Migori	18/01/2013	06/08/2015	05/08/2017	Active
13	Ngira Exploration and Mining Works Ltd	Prospecting License	Homa Bay and Migori.	08/03/2007	26/09/2008	30/09/2014	Active - Lapsed
14	Kenya Sunny Industries	Prospecting License	Kakamega and Siaya.	18/07/2017			Application accepted,

No.	Entity	Type	County	Application Date	Grant Date	Expiry Date	Status
	Company Limited (100%)						evaluation in process.
15	Fenda International (Kenya) Company Limited (100%)	Prospecting License	Busia, Kakamega and Siaya.	07/10/2019			Application accepted, evaluation in process.
16	Edward Nyamboge	Artisanal Mining License	Migori	27/01/2019			Application accepted, evaluation in process.
17	Aurum Utalum Mining Company Limited	Mining License	Kenya and Migori.	19/09/2019			Application accepted, evaluation in process.
18	Copper Hill Exploration and Mining Resources Company Limited	Mining Permit	Migori	30/06/2020			Approved for granting - Pending Payment
19	Metal Mining (K) Limited (100%)	Prospecting License	Kakamega	14/02/2012	01/07/2014	30/06/2016	Mining license renewal evaluation in process
20	Kenya Sunny Industries Company Limited	Prospecting License	Kenya, Homa Bay and Migori.	05/07/2017			Approved by the Mining Rights Board.
21	Kenya Sunny Industries Company Limited	Prospecting License	Kenya, Migori and Narok.	21/06/2017			Approved by the Mining Rights Board.
22	Keda (Kenya) Ceramics Company Limited	Prospecting License	Kenya, Homa Bay, Kisii and Migori.	24/06/2017			Approved by the Mining Rights Board.
23	Zhengwei Technique Kenya Limited	Prospecting License	Migori	21/09/2015			Approved by the Mining Rights Board.
24	Kenya Sunny Industries Company Limited	Prospecting License	Migori and Narok.	05/07/2017			Approved by the Mining Rights Board.

No.	Entity	Type	County	Application Date	Grant Date	Expiry Date	Status
							Pending objections
25	Abba Mining Company Ltd	Prospecting License	Homa Bay, Kisii and Migori.	01/01/2010	22/01/2010	21/01/2016	The Mining Rights Board deferred decision (More Information Required)
26	Afriore International (Barbados) Ltd (100%)	Prospecting License	Kakamega, Nandi, Siaya and Vihiga.	01/01/2003	01/07/2003	30/04/2019	The Mining Rights Board transfer -Evaluation in process
27	Karebe Gold Mining Ltd (100%)	Prospecting License	Kisumu and Nandi.	09/06/2008	01/10/2008	30/09/2020	Pending renewal
28	Gold Rim Exploration Kenya Ltd (100%)	Prospecting License	Kakamega	16/05/2007	31/01/2019	30/01/2022	Pending renewal
29	Gold Rim Exploration Kenya Ltd (100%)	Prospecting License	Kakamega	16/05/2007	31/01/2019	30/01/2022	Pending renewal
30	Gold Rim Exploration Kenya Ltd (100%)	Prospecting License	Kakamega	16/05/2007	31/01/2019	30/01/2022	Pending renewal
31	Hengli International (Kenya) Limited	Prospecting License	Migori and Narok.	09/12/2014	01/07/2017	30/06/2020	Pending renewal
32	Aurum Utalum Mining Company Limited	Prospecting License	Migori	28/03/2018	12/11/2018	11/11/2021	Pending renewal
33	Karebe Gold Mining Ltd (100%)	Mining Permit	Nandi	15/04/2009	14/04/200	13/04/201	

Source: Analysis of data from the Ministry 's database

Appendix 6: Percentage of Fuel, Vehicle Maintenance and Domestic, Subsistence and Other Transport Allocation Versus Total Allocation

Vote Head	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Basic Wages- Temporary Employees	316,664	498,024	704,352	289,872	-
Utilities Supplies and Services	191,664	191,664	191,668	228,696	166,300
Communication, Supplies and Services	79,164	19,791	67,292	15,357	29,532
Domestic Travel and Subsistence and other transport	200,076	166,744	133,386	30,444	50,933
Printing, Advertising and Information Supplies and Services	18,664	21,875	27,414	14,722	19,062
Rentals of produced assets	-	-	-	-	-
Hospitality Supplies and Service	31,236	17,708	31,522	7,193	21,438
Specialised Materials and Supplies	102,496	135,832	135,832	69,617	128,218
Office and General Supplies and Services	315,684	87,296	109,932	59,042	91,184
Fuel Oil and Lubricants	54,572	140,416	140,416	80,841	130,135
Other Operating Expenses	200,000	200,000	200,000	91,303	164,501
Routine Maintenance- Vehicles and Other Transport	65,332	133,332	113,332	36,943	101,304
Routine Maintenance-Other Assets	99,090	73,541	144,168	41,957	94,316
Total Allocation	1,674,642	1,686,223	1,999,314	965,987	996,923
Regional Offices' Allocation per vote in Percentages					
	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Basic Wages- Temporary Employees	19	30	35	30	-
Utilities Supplies and Services	11	11	10	24	17
Communication, Supplies and Services	5	1	3	2	3
Domestic Travel and Subsistence and other transport	12	10	7	3	5
Printing, Advertising and Information Supplies and Services	1	1	1	2	2
Rentals of produced assets	-	-	-	-	-
Hospitality Supplies and Service	2	1	2	1	2
Specialised Materials and Supplies	6	8	7	7	13
Office and General Supplies and Services	19	5	5	6	9
Fuel Oil and Lubricants	3	8	7	8	13
Other Operating Expenses	12	12	10	9	17
Routine Maintenance- Vehicles and Other Transport	4	8	6	4	10
Routine Maintenance-Other Assets	6	4	7	4	9

Source: Analysis of the regional offices' AIEs

Appendix 7: The Directorate of Mines Staff Establishment

Cadre	No.	Description	Authorized Establishment	In-post	Variance
Head- Quarters					
Directorate of Mines	1	Chief Inspector of mines/Director of Mines	1	1	0
Licensing and Mineral Management Division	1	Deputy Director /Senior Principal Superintending Inspector of Mines	1	1	0
Licensing and Permitting Section	1	Asst. Director/ Chief superintending Inspector of mines	1	1	0
	2	Senior Superintending Inspector of mines	3	3	0
	3	Inspector of Mines II/1	6	0	-6
Mineral Rights and System Management Section	1	Asst. Director/ Chief superintending Inspector of mines	1	1	0
	2	Senior Superintending Inspector of mines	3	3	0
	3	Inspector of Mines II/1	6	0	-6
Mines Inspectorate Division	1	Senior Principal Superintending Inspector of mines	1	1	0
Mine Safety and Environment Section	1	Chief Superintending Inspector of mines	1	1	0
	2	Senior Superintending Inspector of Mines	5	3	(2)
	3	Inspector of Mines II/1(Licensing)	9	0	(9)
Compliance and Enforcement Section	1	Chief Superintending Inspector of mines	1	1	0
	2	Senior Superintending Inspector of Mines	5	3	(2)
	3	Inspector of Mines II/1(Licensing)	9	0	(9)
Local Content and Liaison Section	1	Chief Superintending Inspector of mines	1	1	0
	2	Senior Superintending Inspector of Mines	5	1	(4)
	3	Inspector of Mines II/1	9	1	(8)
Mineral Audit Division	1	Senior Principal Superintending Inspector of Mines	1	1	0
Production and Quality	1	Chief Superintending Inspector of mines	1	0	(1)
	2	Senior Superintending Inspector of Mines	4	2	(2)
	3	Inspector of Mines II	6	0	(6)
Financial Services	1	Chief Superintending Inspector of Mines	1	0	(1)
	2	Senior Superintending Inspector of Mines	4	0	(4)
	3	Inspector of Mines II/1	5	0	(5)
Explosives Inspectorate Division	1	Chief Inspector of Explosives	1	0	(1)
Explosives Licensing Section	1	Chief Superintending Inspector of Explosives	1	0	(1)
	2	Principal Superintending Inspector of Explosives	4	1	(3)
	3	Inspector of Explosives I/II	6	2	(4)

Cadre	No.	Description	Authorized Establishment	In-post	Variance
Explosives Compliance Section	1	Chief Superintending Inspector of Explosives	1	0	(1)
	2	Principal Superintending Inspector of Explosives	4	1	(3)
	3	Inspector of Explosives I/II	6	3	(3)
Value Addition Division	1	Senior Principal Superintending Inspector of Mines	1	1	0
Mineral Processing and Value Addition Section	1	Chief Superintending Inspector of mines	1	0	(1)
	2	Senior Superintending Inspector of Mines	4	1	(3)
	3	Inspector of Mines II/1	8	0	8
			127	34	(93)
Regional Offices		Senior Principal Superintending Geologist /Senior Principal Superintending Inspector of Mines	1	1	0
Nairobi	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	0	(1)
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	3	3	0
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Mombasa	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	1	0
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	3	4	1
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	6	2	(4)
Kwale	1	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	2	1
	2	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Taita Taveta	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	2	1
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Voi Gemstone Centre	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1

Cadre	No.	Description	Authorized Establishment	In-post	Variance
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	1	0
	1	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	2	0	(2)
	2	Gemologist	2	0	(2)
	3	Gemstone Cutter/ Facetor	5	0	(5)
	4	Marketing Officer	1	0	(1)
Embu	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	0	(1)
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	3	1	(2)
	1	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	6	0	(6)
Meru	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	1	0
	3	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	3	0	(3)
Kitui	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	0	0
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	2	1
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Marsabit	1	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	2	1
	2	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Nyeri	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	1	0
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	2	1

Cadre	No.	Description	Authorized Establishment	In-post	Variance
	3	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	3	0	(3)
Nanyuki	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	1	0
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Garissa	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	0	(1)
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	2	2	0
	3	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	3	0	(3)
Nakuru	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	1	0
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	2	1	(1)
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Baringo	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	2	1
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Eldoret	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	3	2
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	1	(2)

Cadre	No.	Description	Authorized Establishment	In-post	Variance
Turkana	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	1	0
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Kakamega	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	1	0
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	2	1	(1)
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
Kisumu	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	1	0	(1)
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	2	3	1
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	2	(1)
Migori	1	Chief Superintending Geologist/ Chief Superintending Inspector of Mines/Chief Superintending Inspector of Explosives	0	1	1
	2	Senior Superintending Geologist/ Senior Superintending Inspector of Mines/ Principal Superintending Inspector of Mines	1	3	2
	3	Geologist I/II, Inspector of Mines I/II, Inspector of Explosives I/II	3	0	(3)
			108	55	(53)
		Total Staff Establishment	235	89	(146)

Source: Analysis of the Ministry's staff establishment

Appendix 8: Accidents Reported in Mining Sites in Kakamega and Migori Regional Offices

Region	Date	Location	Cause of Accident	No. of People Involved	No. Injured	No. Died
Migori	3/3/2017	Masara	Covered by sliding of soil in an open excavation.	1	0	1
	5/9/2017	Masara	Adits collapsed due to poor construction.	2	1	2
	12/11/2017	Masara	Fell in a 300ft shaft due to failure of the hoisting system.	2	0	2
	23/01/2021	Copper Hill Nyatike Kadem Macalder	Shear failure	4	3	1
	3/6/2021	Osiri Matanda	Lack of fresh air in the shaft due to compressor failure.	1	1	1
	27/4/2021	Apoyo Village	Fell in a 300ft shaft due to failure of the hoisting system.	4	0	1
	31/07/2021	Akala Village	Shear failure	4	3	1
	2016	Sigalagala, Khayega Ward, Shinyalu	Drowned in a colonial shaft.	1	0	1
Kakamega	2017	Mutaho, Idakho North, Ikolomani	Fell in a 300ft shaft due to failure of the hoisting system.	1	0	1
	2017	Rosterman, Shirere Ward, Lurhambi	Soil slide in an open cast excavation.	1	0	1
	2018	Shikoye Idhakho	Lack of fresh air in the shaft due to compressor failure.	1	0	1
	2019	Rosterman, Shirere Ward, Lurhambi	Adit collapsed due to lack of wall protection.	1	0	1
	2019	Lirhembe, Idhakho East, Ikolomani	Sliding of soil in an open cast excavation.	1	0	1
	2020	Rosterman, Shirere Ward, Lurhambi	Electrocuted in an adit.	1	0	1
	2020	Shing'oto, Isukha Central Shinyalu	Covered by mud while constructing an adit.	1	0	1
	10/9/2020	Rosterman, Shirere Ward, Lurhambi	Electricity fault in a submersion pump.	1	0	1

Region	Date	Location	Cause of Accident	No. of People Involved	No. Injured	No. Died
	2020	Madivini, Eregi	Ground subsidence during open cast mining.	5	4	1
	3/2/2021	Khayega, Isukha, Shinyalu	Breakage of hoisting ropes.	1	1	0
	6/4/2021	Masiyenze, Idhako East, Ikolomani	Buried by soil collapse in a shaft.	6	5	1
	6/4/2021	Sigalagala, Khayega Ward, Shinyalu	Sliding of soil in an open cast excavation.	1	1	0
	23/4/2021	Shikoye, Malinya	Lack of oxygen in the shaft.	1		1
	6/5/2021	Bushiangala	Cave-in at an adit due to lack of support of the overlying rock mass.	10	5	5
	21/5/2021	Viyalo Area	Drowning in the adit	0	0	2
	7/6/2021	Shitoli Area	Suffocation due to lack of oxygen in an abandoned shaft.	2	1	1
	11/7/2021	Musuitui Area	Adit roof collapse.	3	1	2
	17/7/2021	Kipiri forest-Hamisi	Open cast mine collapse.	3	1	2
	12/8/2021	Rosterman mining site	Collapse of an adit roof.	1	0	1
	25/8/2021	Kidivu area, Mukingi location	Shaft walls collapsed.	2	0	2

Source: Analysis of accident reports and interviews

Appendix 9: The Ministry of Petroleum and Mining Response to Audit Findings and Recommendations

Ref.	Audit Findings	The Ministry of Petroleum and Mining Response	OAG's Comments
4.3-4.7	<p>A. Provisions in the Act to Formalise and Regulate Artisanal Mining Operations had not been Fully Implemented</p> <p>i. Delay in the establishment and operationalising of Artisanal Mining Committees</p> <p>The Ministry's Strategic Plan for the period 2018 to 2022 indicated that 23 AMC's were to be established within the 5-year period of the plan. The role of the Committee is to advise the representative of the Director of Mines in granting, renewal or revocation of artisanal mining permits. Only nine had been gazetted as at the time of finalising data collection in April 2022.</p>	Agree	The finding remains as reported as the Ministry agrees with the observation.
4.8-4.12	<p>ii. Delay in the mapping and delineation of land for artisanal mining</p> <p>Mapping and delineation of land is important because only then will the Cabinet Secretary for Petroleum and Mining declare an area as an artisanal mining zone. Artisanal miners would then be issued with permits based on the zones. According to the Ministry of Petroleum and Mining (MoPM) Strategic Plan 2018-2022, 85 artisanal mining permits were to be issued within the 5-year period. The permits would have enabled the Ministry to better monitor AM operations since they come with conditions that the permit holders have to comply with.</p>	Partly agree. Delineation has not been done as reported. Lack of delineation of AM zones does not stop application for permits in other areas that are free for prospecting and mining.	The finding remains as reported since several regions with artisanal mining activities like Migori, Kakamega and Kisumu are affected by the presence of prospecting companies.
4.13-4.14	<p>iii. Ministry had facilitated miners to form cooperatives and associations in readiness for issuance of permits</p>	Agree	The auditee agrees with the finding.

Ref.	Audit Findings	The Ministry of Petroleum and Mining Response	OAG's Comments
			Therefore, it remains as reported.
	<p>B. Training of miners was mainly conducted by the Ministry's Stakeholders</p> <p>According to Section 93 (3) (d) of the mining Act, 2016 the Director of Mines is supposed to advise and provide training facilities and assistance necessary for effective and efficient artisanal mining operations.</p>	Agree	The auditee agrees with the finding. Therefore, it remains as reported.
4.20-4.21	<p>Inadequate staff for monitoring mining operations</p> <p>According to the Ministry's staff establishment the Directorate of Mines and the regional mining offices together have authorised technical staff establishment of 235. The total staff in post as at the time of the audit was 89, leaving a deficit of 146 staff. Interviews with key Ministry personnel and Regional Mining Officers revealed that deficit in staff had affected inspection and monitoring of mining activities.</p>	Agree	The Ministry agrees with the finding. Therefore, it remains as reported.
4.22	<p>Unreliable vehicles in regional offices</p> <p>The audit revealed that the regional offices had challenges in terms of reliable vehicles to enable them carry out regular inspection and supervision of artisanal mining operations. Each regional office had been allocated one vehicle, however, the Regional Mining Officers indicated that the vehicles were old and frequently broke down. As at the time of the audit the vehicle allocated to Taita Taveta, Kitui and Kisumu offices were grounded. This affected their operations as they had to rely on personal vehicles or borrow from other departments.</p>	Agree	The finding remains as reported as the Ministry agrees with the observation.
4.23	<p>Regional offices did not have work plans</p>	Partly agree	The finding remains as

Ref.	Audit Findings	The Ministry of Petroleum and Mining Response	OAG's Comments
	<p>Section G7(1 & 2) of the Government of Kenya Human Resource Policy Manual 2015 states that departments should prepare work plans based on their strategic plans prior to the beginning of a performance period. Individual performance targets should then be derived from the departmental work plans and officers' job description. The work plan should briefly describe the performance targets or expected results on specific assignments and activities for which the staff member is responsible during the performance year. The audit team sought to review the regional officers' work plans but they were not availed. The work plan was to help the team assess whether monitoring of artisanal mining is prioritised as well as the extent of achievement of activities on the work plan and challenges for non-achievement.</p>	<p>Work plans for technical work are derived from the respective directorate's work plan.</p>	<p>reported as the Regional Mining Officers did not provide the audit team with their work plans.</p>
4.24	<p>Lack of a clear mechanism for supervision of regional mining activities Interviews with Regional Mining Officers revealed that the ministry had not provided clear mechanisms on field officers' supervision and reporting. Returns to the head office were not defined in terms of content, nature and frequency. Interviews with key Ministry officials also revealed that, even though teams from head office are supposed to make field visits they were not doing so citing lack of funds.</p>	<p>Agree</p>	<p>The Ministry agrees with the finding. Therefore, it remains as reported.</p>
4.25-4.37	<p>Negative health, safety, environmental and economic effects attributed to artisanal mining operations</p> <ul style="list-style-type: none"> • Frequent accidents in mining sites • Handling of hazardous chemicals without personal protective equipment 	<p>Agree</p>	<p>The Ministry agrees with the findings. Therefore, it remains as reported.</p>

Ref.	Audit Findings	The Ministry of Petroleum and Mining Response	OAG's Comments
	<ul style="list-style-type: none"> • Unsafe disposal of effluent from the mining sites • Environmental degradation • Loss of revenue to the government and exploitation of miners 		
6.1	Marketing of minerals through cooperatives	<p>Formation of cooperatives is one of the ways through which miners can use to get better prices for their minerals BUT not the only means.</p> <p>The government's role is to support and not ensure that cooperatives are formed.</p>	<p>The recommendation has been amended in line with this comment.</p>