REPUBLIC OF KENYA

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National Guideline on Mine Site Decommissioning and Rehabilitation

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Foreword

The National Environment Management Authority (NEMA) in consultation with the relevant stakeholders pursuant to section 9 (n) of EMCA, 1999 has developed the mine site closure, decommissioning and rehabilitation Guideline.

Planning for mine site closure, decommissioning and rehabilitation is a critical component of environmental management in the mining sector. Globally as evidenced by best practical approaches, planning for mine site closure should be done during the planning and design phase of the particular mining activity and sustained throughout the life time of the mine. This approach will ensure that the costly rehabilitation and remediation works at the end of a mine life is not incurred thus less financial burden to the mine operator, the government and the local community and the relevant stakeholders.

Several best practices have been borrowed from Australia and Sweden among others in the process of developing these Guideline. The objective of these Guideline is to ensure that, any mine site in Kenya is decommissioned, rehabilitated and closed in a well-planned process that ensures ecological sustainability and protection of the human health.

Therefore, it is envisaged that all the relevant stakeholders in the mining sector (including government agencies, the private sector, the civil society and the general public) will adopt, adhere to and implement this Guideline.

The Guideline is further expected to uphold the polluter pays principle, enhance vibrant and sustainable management of mining operations and safeguard the environment and human health. This will efficiently and effectively contribute to ecological and environmental stability, social economic development, and cultural benefits.

Emilio Mugo
Chairman
NEMA Board of Directors

Acknowledgment

The process of preparing these Guideline benefited immensely from the financial support from Swedish International Development Agency (SIDA) through the Swedish Environmental and Protection Agency (SEPA) and United Nations Development Programmee (UNDP) Kenya.

Many thanks to the Project Technical Committee Sincere appreciation to the Project Technical Committee comprising the following officers; Peterson Kamau from Ministry of Environment, Forestry, and Climate Change, Thomas Kipngeny and Joshua Boiwo from the State Department of Mining; UNDP-Kenya; Brian Muthoka and Ken Oluoch from Council of Governors (CoG); John Waweru and Mary Mwangi from Directorate of Occupational Safety and Health Services (DOSHS); James Mwenda and Stella Wangechi from Kenya National Commission on Human Rights (KNCHR); Moses Njeru from Kenya Chamber of Mines (KCM); Zephaniah Ouma, Oceanic Sakwa, Selelah Okoth, Maureen Njeri, Edward Wabwoto, Cynthia Sakami, Reagan Awino, Marcellah Ojiambo, Anne Owino, W. Omondi Were, Lencer Obondo, Lynnete Cheruiyot, Cindy Shigoli, Lydia Ago, Mikal Anyango, Felister Njoki and Esther Ayuyo all from the National Environment Management Authority (NEMA).

NEMA Board of Management provided substantive guidance, advice and managerial assistance and support throughout the process. It is my hope that the National Guideline on Mine Site closure, decommissioning and rehabilitation will provide viable and practical bottom up strategy. This will ensure that the process of mine closure is not cumbersome and painful for the mine operators. I urge the policy makers, lead agencies, experts and the mining sector players to make good use of these Guideline on mine Site closure, decommissioning and rehabilitation.

The mine site closure, decommissioning and rehabilitation Guideline is a living document that will undergo review, development and continuous improvement, from time to time with focus on the emerging issues during mines site closure. The Guideline is not meant to replace the various existing regulatory framework in the mining sector and protection of the environment but to enhance them for the better management of the environment.

Mamo B. Mamo, EBS
Director General,
National Environment Management Authority

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Acronyms

ASM	Artisanal and Small-scale Miners
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CEC	County Environment Committee
COK	Constitution of Kenya, 2010
CSO	Civil Society Organizations
DOM	Directorate of Mines
DoGS	Directorate of Geological Surveys
DoMP&VA	Directorate of Mineral Promotion and Value Addition
DOSHS	Directorate of Occupational Health and Safety Services
EA	Environmental Audit
ELC	Environment and Lands Court
EMCA	Environmental Management and Coordination Act, 1999
ESIA	Environmental and Social Impact Assessment,
ESMPs	Environmental and Social Management Plans
KFS	Kenya Forest Services
KWS	Kenya Wildlife Services
KNCHR	Kenya National Commission on Human Rights
MCDAs	Ministries, Departments, Counties and Agencies
MOH	Ministry of Health
NECC	National Environment Complaints Committee
NEMA	National Environment Management Authority
NET	National Environment Tribunal
NETFUND	National Environment Trust Fund
NLC	National Land Commission
NMC	National Mining Corporation
NORMs	Naturally occurring radioactive material
PAPs	Project Affected Persons
PPP	Polluter-Pays Principle
PPEs	Personal Protective Equipment
PTC	Project Technical Committee
TPH	Total Petroleum Hydrocarbons
TSF	Tailings Storage Facility
WRA	Water Resources Authority

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Definition of Terms

Abandoned mine site - Non-operational mines where mining tenure no longer exists and the responsibility for rehabilitation cannot be allocated to any individual, company or organization responsible for the mining activities. Such sites are also called "derelict", "orphan" or "former" mines.

Authority – Means the National Environment Management Authority (NEMA) established under section 7 of Environmental Management and Coordination Act, 1999.

Beneficiation- It is any process that improves or benefits the economic value of the ore by removing the gangue (commercially valueless material) minerals which results in a higher grade product or concentrate and a waste stream or tailings.

"Biological Diversity" means the variability among living organisms from all sources including, terrestrial ecosystems, aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, among species and of ecosystems.

Boundary of a landform - The edge of a landform is taken as being the base of the slope. This may be the battered footprint or the non-battered footprint. The footprint must not exceed the area specified in approval documentation.

Closure - A whole-of-mine-life process, which typically culminates in tenement relinquishment. It includes decommissioning and rehabilitation.

Contaminated, in relation to land, water or a site, - means having a substance present in or on that land, water or site at above background concentrations that presents, or has the potential to present, a risk of harm to human health, the environment or any environmental value. This definition may apply to the artificial concentration (localized accumulation) of natural substances or minerals which have the potential to present a risk of harm to human health, the environment or any environmental value through this accumulation, such as mineral processing sites or tailings storage facilities.

Decommissioning - A process that begins near, or at, the cessation of mineral production and ends with removal of all unwanted infrastructure and services.

Key stakeholders - refers to post-mining land owners/managers and relevant regulators.

Life of mine - Expected duration of mining and processing operations.

Mine Waste– the residue of mining operations that includes top soil overburden, waste rock, and tailings that are discarded in the course of mining operations.

Mineral processing facilities - Includes all processing facilities for ore treatment including crushing plants, grinding, vat leach, heap leach, dump leach and tailings disposal facilities.

Mineral Win - getting or extracting a mineral from the mines.

Pits - All open excavations including active mineral rock, gravel, sand, clay, bauxite and salt-pan extraction areas.

Post-mining land use - Term used to describe a land use that occurs after the cessation of mining operations.

Rehabilitation - Reinstatement of degrees of ecological structure and function but not restored ecosystem.

Remediation - Rehabilitation, clean-up, rehabilitation, post-care, maintenance and compatible after-use activities.

Restoration - the reestablishment of ecological structure and function to prior state or replicate to a prior state.

Safe - A condition where the risk of adverse effects to people, livestock, other fauna and the environment in general has been reduced to a level acceptable to all stakeholders.

Stable - A condition where the rates of change of specified parameters meet agreed criteria.

Stakeholder - A person, group or organization with an interest in a particular decision, either as individuals or representing a group, with the potential to influence or be affected by the process of, or outcome of, mine closure.

Tailings – residue that result after the extraction of valuable material through processing.

Tailings storage facility - An area used to store and consolidate tailings, and may include one or more tailings storage features.

Unacceptable liability - Closure should not lead to regulators, or the community, or landowners or land managers having to take on responsibility for ongoing management, maintenance or monitoring above that which applied before mining, or that which applied to managing land uses comparable to the agreed land uses.

Waste dumps - Includes all mullock and waste rock disposal areas (also called Overburden Storage Area, Waste Rock Landform, or Waste Rock Storage/or Area), low grade stockpiles and mineralized waste stockpiles.

Executive Summary

The mining sector in Kenya has grown over the years however, the practices have been unsustainable. Mine sites are hardly closed and decommissioned in line with the existing but rather inadequate environmental standards and international best practices. This guideline has been developed to enhance environmental performance and sustainability during mine site decommissioning and rehabilitation. The guideline is divided into three chapters as outlined.

Chapter 1 provides a situational analysis of the sector in Kenya; defines the objectives and scope of the guideline. The sector largely defined by artisanal and small scale miners has been challenged by practices that lead to inappropriate management of tailings, disused open pits and collapsed mine sites.

Chapter 2 provides an in-depth analysis of Policy, Legal and Institutional frameworks that are relevant to the sector. The review of this chapter provides great insights into the existing frameworks that can support sustainable mining practices. The analysis of these frameworks takes cognizance of gaps that have undermined environmentally sound and safe mine sites decommissioning and rehabilitation. The guideline provides a focused approach that addresses the existing uncoordinated requirements and considerations for mine site decommissioning and rehabilitation.

Chapter 3: is divided into three key thematic areas namely; mine site decommissioning and rehabilitation plan, a content guide of the plan and key issues in the mine site decommissioning and rehabilitation plan and finally the review of the plan. This chapter provides the detailed requirements for a typical plan that should be developed by the regulated facility. As part of good practice, the Plan should be submitted as part of the ESIA report and will be subject to review after every five years or as may be advised by the Authority from time to time.

CHAPTER 01

Introduction

1.1 Background

Kenya is endowed with many mineral resources, both metallic and non-metallic with the exploitation of commercially recoverable minerals yet to reach peak level. It is a requirement that the quality of the environment needs to be maintained as an essential sector for the country while undertaking the mining operations in a safe, clean and healthy environment by the mine owners. This is significant in view of upcoming new developments in the mining sector and considering that the Government of Kenya has recognized it as a key player for Vision 2030 and the Sustainable Development Goals (SDGs).

Failure by mine operators to undertake decommissioning and rehabilitation has negatively affected the sector. It portrays the sector in a negative light to the community due to the abandoned mines which often leave scars on the environment resulting into endangerment of the community health and their property. This has justified the need for development of Guideline for mine site closure, decommissioning and rehabilitation that should help the sector grow in an environmentally sustainable way for wealth creation.

National Environment Management Authority (NEMA) recognizes there is need for environmental rehabilitation at the end of life of a mine with a view to environmental sustainability. As such, mine site decommissioning planning should be part of the mining sector objectives to ensure sustainability during the after-use plan of the mining site. This requires that the environmental issues are well-thought-out throughout the mining life cycle through integration of the various environmental principles, requirements and considerations into the mining activities including the closure aspects. Proper management of the mines ensures that appropriate mitigation measures of potential environmental impacts and human health are integrated in the entire mining cycle.

The enactment of EMCA, 1999 and its subsidiary legislations is informed by several principles including the Polluter-Pays Principle. The principle provisions that any polluter to the environment must bear full responsibility of its clean up and rehabilitation. This obligates the mine operators to undertake activities such as appropriate decommissioning and rehabilitation to restore the mine site and other environmental resources within the project area.

1.2 Objective of the Guideline

The overall objective of the Guideline is to assist the mining operators, Ministries, Departments, Counties and Agencies (MCDAs), environmental experts, private sector, Civil Society Organizations (CSOs), communities and mass media in ensuring that the mining sites are decommissioned and rehabilitated after the cessation of the mining operations. This will ensure protection of the environment as well as public health and safety through elimination of adverse environmental effects resulting from the mining activities. It is therefore important to establish conducive conditions that are consistent with the agreed after-use plan and enhancement of the monitoring mechanisms in the decommissioned mine site area.

The objectives of this Guideline are:

i. To provide guidance on the preparation of mine site decommissioning and rehabilitation plans to meet regulatory requirements and best practices;
ii. To adopt best practices on mine site decommissioning and rehabilitation; and
iii. To promote effective engagement and inclusive participation of Project Affected Persons (PAPs) and communities in decision making processes relating to mine site decommissioning, rehabilitation and after use.
iv. To provide safety and stability of abandoned infrastructure and mines.
v. To provide potential for beneficial afteruse plan after mine closure and adequate rehabilitation

CHAPTER

02.

Policy, Legal and Institutional Frameworks

2.1 Constitution of Kenya, 2010

Article 42 of the Constitution on environment states that every person has the right to a clean and healthy environment, which includes the right:

a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and

b) to have obligations relating to the environment fulfilled under Article 70.

2.2 Relevant National Policy, Legal and Institutional framework

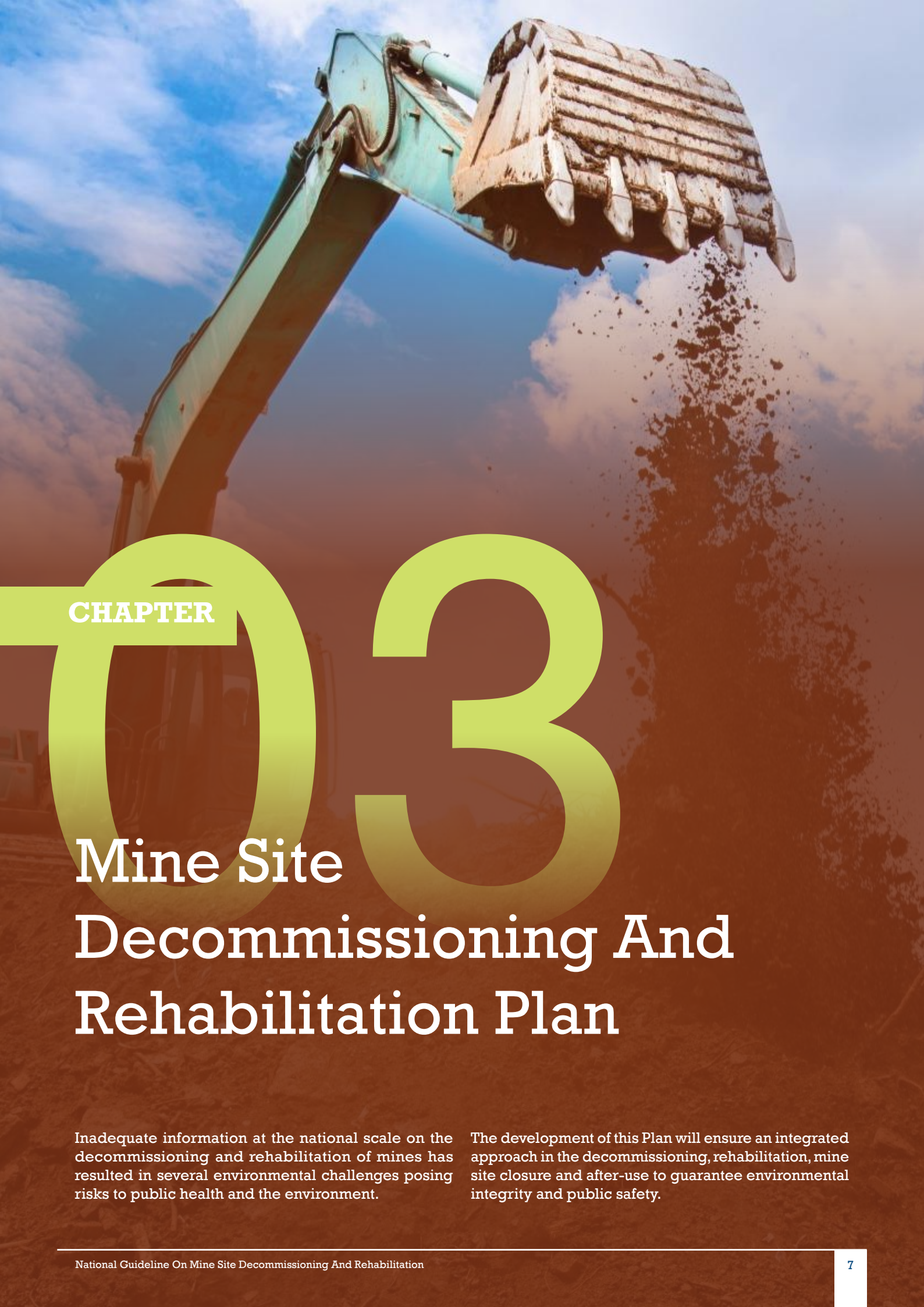
There are other policy, legal and institutional framework that enable the functioning of the Constitution. The matrix below highlights the relevant statues.

Table 1: Policy, Legal and Institutional Frameworks Matrix

No.	Policy and Legal Frameworks	Key Applicable Provisions	Regulations	Institutions
Policy				
1.	National Environment Policy, sessional paper no 10 of 2013	Chapter 4 which also covers minerals in Kenya which encourages sustainable mining		• Ministry of Environment and Forestry • NEMA
2.	Mining and Minerals Policy, sessional paper no 7 of 2016	Mining Act 2016 and the Mining Regulations		• Directorate of Mines • Directorate of Geological Survey • Directorate of Mineral Promotion and Value Addition • National Mining Cooperation
Laws				
3.	EMCA, 1999	Section 3, 9, 24, 28, 29, 31, 57A, 58, 68, 108, 117, 125,	Environmental (Impact Assessment and Audit) Regulations, 2003 Environmental Management and Coordination (Waste Management) Regulations, 2006 Environmental Management and Coordination (Noise & Excessive Vibrations) Regulations, 2009 Environmental Management and Coordination (Water Quality) Regulations, 2006 Environmental Management and Coordination (Air Quality) Regulations, 2014 Environmental Management and Coordination (Conservation of Biological Diversity and resources, access to genetic resources and benefit sharing) resources, 2006	• NEMA • National Environmental Tribunal • National Environment Complaints Committee • National Environment Trust Fund • County Environment Committe

No.	Policy and Legal Frameworks	Key Applicable Provisions	Regulations	Institutions
4.	Mining Act 2016	The entire Act is applicable	Mining (Work Programmes and Exploration Reports) Guideline, 2017 Mining (Licence and Permit) Regulations, 2017. Mining (Dealings in Minerals) Regulations, 2017. Mining (Community Development Agreement) Regulations, 2017. Mining (Strategic Minerals) Regulations, 2017. Mining (Mine Support Services) Regulations, 2017. Mining (Award of Mineral Rights by Tender) Regulations, 2017.	• Ministry of Petroleum & Mining • National Mining Corporation • Minerals and Metals Commodity exchange
5.	OSHA 2007	Section 9, 11, 14, 16, 21 44, 49, 50, 52, 64, 101	Eyes protection rules L.N 44/1978 Building operations and works of engineering construction rules L.N 40/1984 Electric power special rules L.N 340/1979 First aid rules- L.N 160/1979. Health and safety committee rules-L.N 31/2004 Medical examination Rules L.N 24/2005 Noise prevention and control Rules L.N 25/2005 Fire Risk Reduction Rules L.N. 59/2007 Hazardous Substances Rules L.N. 60/2007	• Directorate of Occupational Safety and Health Services
6.	Explosives Act, Cap 115	Section 18, 20, 21, 24, 28	Explosives (Blasting and explosives) rules	• Ministry of Petroleum and Mining, Director of Mines
7.	Work Injury Benefits Act, 2007	Section 7, 10, 21, 45,		• Directorate of Occupational Health and Safety Services
8.	Employment Act, 2007	Section 4, 6, 17, 26, 27, 29, 30, 31, 32, 33, 34, 35	Employment general rules of 2014	• Ministry of Labour • Employment and Labour relations Court
9.	Land Act, 2012	Section 11, 19,		• National Land Commision
10.	Environment and Land Court Act, No. 19 of 2011	Section 4, 13, 14, 16		• Environment and Land Court

No.	Policy and Legal Frameworks	Key Applicable Provisions	Regulations	Institutions
11.	Community Land Act	Section 5, 6, 8, 27, 34, 35, 36	Community land Regulations, 2017	• Ministry of Lands • National Land commision • County Government • Environment and Land Court
12.	Water Act, 2016	Section 22, 23, 36	Water Resources Management Rules, 2007	• Water Resources Authority • Water Appeals Tribunal, Environmrmt and Land Court • Basin Water Resources Committee • Water Resource Users Associations
13.	Physical and Land Use Planning Act No. 3 of 2019	Section 14, 18	Physical and Land Use Planning (Development permission and control) (general) Regulations 2021	• County physical and land use planning consultative forum
14.	Forest Conservation & Management Act, 2016	Section 8, 20, 21, 30	Forest (Participation in Sustainable Forest Management) Rules, 2009	• Kenya Forest Service • County governments
15.	Wildlife Conservation and Management Act, 2013	Section 26, 45, 46,47	Wildlife Conservation and Management (Protection of Endangered and threatened ecosystems, habitat and species) Regulations, 2017 Wildlife Conservation and Management (Joint Management of Protected Water Towers) Regulations, 2017	• Kenya Wildlife Service
16.	National Land Commission Act, 2012	Section 5, 6	National Land Commission (Review of Grants and Dispositions of Public Land) Regulations, 2017	• National Land Commision
17.	County Government Act, 2012	Section 102, 103, 104, 105, 109, 110		• County Government
18.	Public Health Act	Section 21, 22, 38, 115		• Ministry of Health
19.	Kenya National Commission on Human Rights Act, 2011	Section 8, 28, 29, 33		• Kenya National Commission for Human Rights
20.	Climate Change Act, 2016	Section 23		• Environment and Lands Court



CHAPTER

03

Mine Site Decommissioning And Rehabilitation Plan

Inadequate information at the national scale on the decommissioning and rehabilitation of mines has resulted in several environmental challenges posing risks to public health and the environment.

The development of this Plan will ensure an integrated approach in the decommissioning, rehabilitation, mine site closure and after-use to guarantee environmental integrity and public safety.

3.1 Typical Structure of the Mine Site Decommissioning and Rehabilitation Plan

The Plan should be structured in the following format to ensure consistency across the mining sector to enable evaluation for adequacy, accuracy and completeness once submitted to NEMA:

1. Cover Page

The following information must be included on the cover page of the Plan but not limited to:

(i). Title of project;

(ii). The mine site location - L.R. Number and GPS Coordinates;

(iii). Date of submission;

(iv). ESIA License Number if applicable;

(v). Environmental Audit reference number;

(vi). Mining permit/license number;

(vii). Company name; and

(viii). Contact details (including the name, address and contact of the proponents and/or operator).

2. Table of Contents

The Table of Contents for the Plan (among other standard items) must include; an authentication page, list of figures, tables, photos of the project site intended for decommissioning (before and after) and maps as may be appropriate.

3. Scope and Purpose

This section describes why the Plan is being prepared and details out the scope of the Plan and other relevant introductory information.

4. Project Description

This section details site description, physical and geological characteristics of the site and mining operations being undertaken. The following information must be provided in the description but not limited to:

(i). Land ownership including occupancy, mining tenure, postal and site address, and contact details;

(ii). Location of the operation, including a list of all relevant tenements and maps showing tenement boundaries, nearby sensitive receptors and the location of the mine in relation to the local and regional setting;

(iii). An overview of the operations with a description of the major mine components; and a figure showing the mine site layout and identifying all disturbed areas;

(iv). Geology: Briefly describe the topography and general geology indicating rock types available, the chemical constituents of the rocks / minerals including toxic elements if any, at the mine site;

(v). Reserves: Indicate the types of the mineral reserves available in the lease area estimated in the last mining plan / mining scheme approved along with the balance mineral reserves at the proposed mine closure including its quality available (for final mine closure plan only);

(vi). Mining Method: Describe in brief the mining method followed to win the mineral, extent of mechanization, mining machinery deployed, auxiliary equipment, production level, chemicals among others;

(vii). Mineral Beneficiation: Describe in brief the mineral beneficiation practice if any indicating the process description; and

(viii). Indicate discharge details of any tailings/ middling's and their disposal/utilization practice followed and management of

3.2 Key Issues in the Mine Site Decommissioning and Rehabilitation Plan

Planning for mine closure involves consideration of a number of often complex issues including technical, legal, financial and socio-economic aspects. The focus here is on the technical issues that relate to environmental degradation caused by the mining and its subsequent rehabilitation.

Below is a list of key mine site decommissioning and rehabilitation parameters and monitorable indicators to be addressed but not limited to;

3.2.1 Water Quality and Quantity:

(i). Reference should be made to the baseline water quality and quantity status prior to the mining operations.

(ii). Describe in detail the existing surface and ground water bodies available in the mining areas and the measures to be taken for protection of the same. These should include control of erosion, sedimentation, siltation, water treatment, diversion of water courses. Additionally, measures for protection of contaminated ground and surface water in particular considering leach pads, waste facilities with sulfidic mine waste, collection ponds or any material containing chemical products or contaminated water, sediments, soils or waste.

(iii). Quantity and quality of surface water bodies should also be indicated and corrective measures proposed to meet the water quality standards.

(iv). Report of hydrological study carried out in the area may also be submitted.

(v). The water balance chart should be given.

(vi). If there is potential of acid mine drainage the method of prevention and treatment should be given.

(vii). Sampling and analysis of the applicable parameters such as heavy metals, PH, total hardness, calcium hardness, magnesium hardness, chlorides, sulfates and total dissolved solids, grease, Total Polyaromatic Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene, Xylene (BTEX) should be considered among others.

3.2.1 Air Quality:

(i). Reference should be made to the baseline air quality status prior to the mining operations.

(ii). Describe the existing air quality status covering the gaseous emissions and particulate matter among others.

(iii). The corrective measures to be taken for prevention of air pollution should be described.

(iv). Particular consideration should be given to tailings storage facilities or similar where mine waste can be removed and transported by wind.

(v). Analysis should be done to establish the presence of Fibrous (including asbestiform) materials and the safety and management measures put in place to address the same.

(vi). Sampling and analysis of the applicable parameters such as SO_x, NO_x, heavy metals, radioactivity, PM_{10}, $PM_{2.5}$ should be considered among others.

3.2.3 Waste Management:

(i). Describe the type, quality and quantity of overburden, waste rock, tailings, mine water, mineral rejects available and their disposal practice.

(ii). If no utilization of waste material is proposed, the manner in which the waste material will be stabilized should be described.

(iii). The protective measures to be taken for prevention of siltation, erosion and dust generation from these waste materials should also be described.

(iv). If toxic and hazardous elements are present in the waste material, the protective measures to be taken for prevention of their dispersal in the air environment, leaching in surface and ground water, in soils and sediments should be described.

(v). Sampling and analysis of the applicable parameters should be considered.

(vi). Measures to be put in place to provide for the safe transportation of tailings for processing or disposal as guided by the Environmental Management and Coordination (Waste Management) Regulations,2006.

3.2.4 Soil Quality:

(i). Reference should be made to the baseline soil quality status prior to the mining operations.

(ii). The top soil, the overburden and the waste rock available at the site and their recovery, storage as well as their utilization should be described.

(iii). In-situ and ex-situ treatment to remove the contaminants or reduce the associated hazards to acceptable level should be discussed.

(iv). Radioactivity - Analysis should be done to establish the presence of Naturally Occurring Radioactive Materials and the safety and management measures put in place to address the same.

(v). Sampling and analysis of the other applicable parameters such as heavy metals, PH, total hardness, calcium hardness, magnesium hardness, chlorides, sulfates and total dissolved solids, grease, TPH, BTEX, should be considered among others.

3.2.5 Biodiversity

Biodiversity is a key component of the ecosystem and must therefore be protected. It is advisable that biodiversity assessment is done during ESIA process and a clear framework for its protection and management to be in place during the decommissioning and rehabilitation planning. The following information should be provided in the Plan but not limited to:

(i). The biodiversity parameters that should be assessed are; flora & fauna, fresh water & marine, Critical habitats/Fragile ecosystems as is applicable;

(ii). Reference should be made to the biodiversity assessment studies including ecologically sensitive areas, threatened species which were done prior to the mining operations;

(iii). Offset: Indicate the biodiversity offset as a compensation to the loss of biodiversity;

(iv). Opportunity cost: Discuss lost opportunity that might result from the implementation of the mining activity with the desire to have a win-win scenario between mining activities and conservation; and

(v). Indicate the status of the ecological recovery at the site.

3.2.6 Tailing Storage Facility (TSF) Management

(i). The steps taken for protection and stability of tailings dam, periodic desilting, stabilization of tailings material and its utilization

(ii). Measures to prevent water pollution from tailings arrangement for surplus water overflow along with detail design, structural stability studies, the embankment seepage loss into the receiving environment and ground water contaminant if any should be given.

(iii). Post-care and maintenance plan for the TSF to be described

(iv). Provide details of the mineralogical studies done to characterize tailings and cover material and identify the presence and nature of potentially acid producing sulfides and any other liquids remaining in the TSF and their treatment prior to discharge or evaporation.

3.2.7 Disused and abandoned mine pits

Develop compatible after-use plans in consultation with the PAPs and other stakeholders for the disused mine pits.

3.2.8 Infrastructure

(i). The existing infrastructural facilities available such as roads, aerial rope-ways, conveyor belts, railways, power lines, buildings & structures, water treatment plant, transport, water supply sources in the area among others and their future utilization should be evaluated on a case by case basis.

(ii). If retained, the measures to be taken for their physical stability and maintenance should be described.

(iii). If decommissioning proposed, dismantling and disposal of building structures, support facilities and other infrastructure like electric transmission

line, water line, gas pipeline, water works, sewer line, telephone cables, underground tanks, transportation infrastructure like roads, rails, bridges, culverts, electrical equipment's and infrastructures like electric cables, transformers to be described in connection with restoring land for further use.

3.2.9 Disposal of Mining Machinery and Equipment

(i). The decommissioning of mining machineries and their possible post mining utilization and disposal options, if any, to be described.

(ii). The closure plan must consider how rehabilitation works will be carried out if mining machinery is unavailable at the time of rehabilitation and closure.

(iii). Closure costs should include machine rental costs and costs of manpower on a normal commercial contractor basis.

(iv). Dismantling, segregation, reuse, recovery, recycling and final disposal to be described.

3.2.10 Safety and Security

(i). Explain the safety measures implemented to prevent access to surface openings, excavations and arrangements proposed during the mine decommissioning before the site is subjected to a compatible after-use plan.

(ii). Occupational safety and health requirements should be observed.

3.2.11 Disaster Management and Risk Assessment

(i). This should deal with action plan for high risk accidents like landslides, subsidence flood, inundation in underground mines, fire, seismic activities, tailing dam failure and emergency plan proposed for quick evacuation and ameliorative measures to be taken.

(ii). The capability of the mine owner and operator to meet such eventualities and the assistance to be required from the National and County Governments should also be described.

3.2.12 Care and maintenance during temporary discontinuance

(i). Provide an emergency plan for the situation of temporary discontinuance or incomplete programme due to court order or statutory requirements or any other unforeseen circumstances. This should include a plan indicating measures of care, maintenance and monitoring of status of unplanned discontinued mining operations expected to re-open in near future.

(ii). This should detail periodic and objective monitoring and maintenance programme.

3.2.13 Visual Amenity

(i). Reference should be made to the aesthetic baseline of the site prior to the mining operations.

(ii). The state of aesthetic recovery in comparison with the surrounding area.

(iii). Develop compatible after-use plans in consultation with the PAPs and other stakeholders.

3.2.14 Heritage and Cultural Aspects

(i). Protection of heritage and cultural site - mineral extractions should not be undertaken within the heritage and cultural sites.

(ii). Provide information on existing World Heritage and Cultural sites around the mine sites

(iii). Submit an undertaking on non-interference with the listed heritage and cultural site around the mine site

(iv). Provide information on the restricted no-go cultural sites and measures taken in liaison with the National Museums of Kenya (NMK) to protect these sites.

3.2.15 Grievance Redress Mechanism

In developing a mine closure plan, it is imperative that grievanceredress be considered for social acceptability. A proper GRM needs to be in place from the EIA phase, and be communicated by the miner to the project affected persons.

3.2.16 Post-Mining Land Use and Closure Objectives

The mine site decommissioning plan should identify all potential (or pre-existing) environmental legacies (including contaminated sites) which may restrict the post-mining land use. The following land use hierarchy provides a guide to determining post-mining land use(s):

i. Reinstate "natural" ecosystems to be as similar as possible to the original ecosystem. Biodiversity offsets can also be considered as long as no harm is posed to the environment and the public.

ii. Develop an alternative land use with higher beneficial uses than the pre-mining land use.

iii. Reinstate the pre-mining land use.

In the early stages of a mining project, it may be acceptable for provisional or proposed post mining land use(s) to be identified, provided that there has been adequate engagement with the government, PAPs, local communities and other key stakeholders. A clear process and timelines to further identify or refine the agreed post-mining land use(s), Human Rights-Based Approaches and Grievance Redress Mechanisms (GRM) should be communicated as part of the stakeholders' engagement process.

3.2.17 Identification of Closure Obligations and Commitment

All legal obligations relevant to rehabilitation and closure at a given mine site must be identified and provided in a suitable format. These include all legally binding conditions and commitments and/or legal obligations applicable under relevant National and County legislations. These include:

(i). The Mining Act, 2016

(ii). Environmental Management Coordination Act, 1999

(iii). Occupational Safety and Health Act , 2007

(iv). The Water Act, 2016

(v). The Land Act, 2012

(vi). The Physical and Land Use Planning Act, 2019

(vii). Agriculture Fisheries and Food Authority Act, CAP 318

(viii). Conditions prescribed in the ESIA license

(ix). Environmental Rehabilitation Orders and Improvement Orders

(x). The decommissioning specifications and standards (National and International best practices).

3.2.18 Engagement with the Project Affected Persons, Local Communities and other Stakeholders

The mine operator shall identify all the stakeholders to be engaged since stakeholder engagement is a key component of mine site decommissioning planning. Early and continuous engagement with stakeholders enables operators to better understand and manage stakeholder expectations and the potential risks associated with closure. Failure to undertake a stakeholder engagement program may compromise the approval process and mine closure outcomes.

Mine site decommissioning plan reporting requires that a tabulated summary on all engagement between the operator and the relevant parties be provided. It should include:

(i). Date of engagement;

(ii). A description of the nature of the engagement;

(iii). Level of information provided to stakeholders;

(iv). Who the stakeholders were;

(v). The comments and issues raised by the stakeholders;

(vi). How the operator has responded to the concerns raised and report the stakeholder response to the proposed resolution; and

(vii). Evidence of the stakeholder engagements and process. This should be in form of attendance lists, minutes, pictorials and videography

The operator shall ensure that adequate resources are provided/allocated to ensure effective engagement process.

3.2.19 Post closure Audits and Monitoring Responsibilities

Unless prescribed by the Authority on a case by case basis, the mine operator shall prepare and submit post closure audits annually to the Authority.

The operator shall also monitor environmental elements, parameters and measurable indicators to inform the measurement of environmental changes that have occurred towards achieving the required decommissioning specifications and standards.

In meeting the required decommissioning specifications and standards, the operator shall take into account the following factors:

(i). The public safety of the site;

(ii). The stability of the site under a range of seasonal conditions representative of that climate;

(iii). Ecological system recovery at the site;

(iv). The state of recovery in comparison to the surrounding area;

(v). The aesthetic value of the site;

(vi). Sampling and analysis of applicable parameters;

(vii). The compatible after-use plan of the site and the potential for improved future land use planning and /or site development;

(viii). Involvement of the PAPs, the local community and other stakeholders;

(ix). The timescales to meet the required decommissioning standards;

(x). The remediation of any contaminated sites;

(xi). Operation and monitoring information or other information that meets a specific purpose (e.g. maps, photos, area statistics, species lists or modelled environmental impacts); and

(xii). A history of closure implementation and past developments at the site.

The Authority in consultation with the relevant lead agencies shall undertake periodic multiagency environmental monitoring and/or control environmental audits, whenever it is deemed necessary to check compliance with environmental parameters and prescribed standards for the mine site.

3.2.20 Financial Provision for Closure

Current international practice requires that the financial guarantees need to be calculated and secured ahead of mining activities. Ideally, funds for mine closure should be available to close the mines at any stage of the mine life whether the operator is there or not.

The objective of financial provisioning for closure is to ensure that adequate funds are available at the time of closure and that the community is not left with an unacceptable liability. To that end, it is essential that the cost of closure be estimated as early as possible. The financial provisioning process and methodology has to be transparent and verifiable, assumptions and uncertainties have to be clearly documented, and they have to be based on reasonable, site-specific information and data throughout the life of the project. The closure cost estimates must be regularly reviewed to reflect changing circumstances and levels of risk. This will ensure that the accuracy of closure costs is refined and improved with time, and will assist with management and mitigation of high-risk issues.

The financing of decommissioning, rehabilitation and closure of the mine sites is within the provisions of the Polluter Pays Principle and as specified under section 28 of EMCA, 1999 as well as internationally applicable best practices. This should place the onus of expenditure for site assessment, management, decommissioning, remediation, waste treatment and disposal on those responsible for the pollution.

3.3 Review of Mine Decommissioning and Rehabilitation Plan

The Authority may liaise with the relevant lead agencies to review the mine decommissioning and rehabilitation plan based on set criteria in accordance with section 3.1 of this Guideline and issue a decision on the same. The decision of the Authority, together with the reasons thereof, shall be in writing and communicated to the operator within sixty (60) days from the date of submission of the Plan.

Where the Authority is satisfied with the content of the Plan, the Authority shall issue an approval with terms and conditions, as may be appropriate. If the Authority is not satisfied with the adequacy or reliability of information stated in the Plan, the Authority may request for additional information to enable it make an informed decision.

3.3.1 Indicators of successful mine site rehabilitation

The indicators for a successfully rehabilitated mine site include, but not limited to;

i. Satisfactory implementation of the rehabilitation plan

ii. Make up of plant communities visible after rehabilitation ie. plant and foliage density, species richness and diversity.

iii. Physical and chemical composition of the site soil, surface, and underground water quality.

iv. Downstream soil, surface, and underground water quality..

v. Landscape function analysis ie. erosion stability, infiltration/ runoff, and nutrient cycling

vi. Ambient air quality

References

Minamata Convention

Stockholm convention on Persistent Organic Pollutants

Rotterdam Convention on Prior Informed Consent

National Environment Policy, sessional paper no 10 of 2013

Mining and Minerals Policy, sessional paper no 7 of 2016

Environmental Management Coordination Act, 1999

Sustainable Waste Management Act

Mining Act, 2016

Occupational Safety and Health Act, 2007

Explosives Act, Cap 115

Work Injury Benefits Act, 2007

Employment Act, 2007

Land Act, 2012

Environment and Land Court Act, No. 19 of 2011

Community Land Act, 2016

Water Act, 2016

Physical and Land Use Planning Act No. 3 of 2019

Forest Conservation & Management Act, 2016

Wildlife Conservation and Management Act, 2013

National Land Commission Act, 2012

County Government Act, 2012

Public Health Act, Cap 242

Kenya National Commission on Human Rights Act, 2011

Climate Change Act, 2016

Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003

Environmental Management and Coordination (Waste Management) Regulations, 2006

Environmental Management and Coordination (Noise & Excessive Vibrations) Regulations, 2009

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Environmental Management and Coordination (Conservation of Biological Diversity and resources, access to genetic resources and benefit sharing) resources, 2006

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Mining (Work Programmes and Exploration Reports) Guideline, 2017

Mining (Licence and Permit) Regulations, 2017.

Mining (Dealings in Minerals) Regulations, 2017.

Mining (Community Development Agreement) Regulations, 2017.

Mining (Strategic Minerals) Regulations, 2017.

Mining (Mine Support Services) Regulations, 2017.

Mining (Award of Mineral Rights by Tender) Regulations, 2017.

Community land Regulations, 2017

Physical and Land Use Planning (Development permission and control) (general) Regulations, 2021

Wildlife Conservation and Management (Protection of Endangered and threatened ecosystems, habitat and species) Regulations, 2017

Wildlife Conservation and Management (Joint Management of Protected Water Towers) Regulations, 2017

National Land Commission (Review of Grants and Dispositions of Public Land) Regulations, 2017

Case study/ Best practice

https://basetitanium.com/our-programs/rehabilitation/

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Frequently Asked Questions

1. **What is mine site decommissioning?**
   A process that begins near, or at, the cessation of mineral production and ends with removal of all unwanted infrastructure and services.

2. **What is restoration?**
   the reestablishment of ecological structure and function to prior state or replication to a prior state

3. **What is rehabilitation?**
   Reinstatement of degrees of ecological structure and function but not restored ecosystem.

4. **What is the difference between mine waste and tailings?**
   Mine waste is the residue of mining operations that includes top soil overburden, waste rock, and tailings that are discarded in the course of mining operations; while tailings is residue that result after the extraction of valuable material through processing.

5. **Why is it necessary to undertake mine site decommissioning and rehabilitation?**
   To minimize and mitigate the impacts of mining operations and restore the landscape to the natural pre-mining land cover.

6. **When should decommissioning be initiated?**
   Decommissioning should be initiated near, or at the cessation of mineral production and ends with removal of all unwanted infrastructure and services.

7. **Why does the law require that rehabilitated mine sites be handed over to the government?**
   When mining rights are granted, it is required that landowners be compensated and resettled by the miner. Where landowners are resttled, the rehabilitated land reverts back to the government. In addition the mining process may have render the land unfit for habitation.

8. **Who is responsible for mine site decommissioning and rehabilitation?**
   The mineral rights holder (miner)

9. **When should a rehabilitation plan be prepared?**
   The plan should be prepared at the time of mineral rights application and updated prior to the start of decommissioning.

10. **Who ensures that rehabilitation is done?**
    The mineral rights holder (miner) is responsible for ensuring that the decommissioning plan is comprehensively impletemted and NEMA in liaison with relevant lead agencies confirms its adequacy.

11. **How do you ensure that rehabilitation is satisfactory?**
    NEMA in liaison with relevant lead agencies undertake compliance monitoring and the end of the decommissioning process to ensure satisfactory rehabilitation.

12. **What should community do in cases where they are dissatisfied with mine site decommissioning?**
    Community should report to NEMA and relevant lead agencies in case they are dissatisfied with the mine site decommissioning.

13. **Is there any fund that should be dedicated for environmental restoration/rehabilitation?**
    Yes.

14. **If so, who pays for it and when should it be paid?**
    The proponet who is the miner/mineralright holder pays a deposit bond as security against any environmental damages that may occur during mining activities. In cases where the miner fails to undertake adequate restoration the fund will be used for rehabilitation. The fund is payable at the project initiation phase and may be reviewed during the project life cycle.

15. **Is the fund refundable?**
    Yes, upon satisfactory environmental restoration and environmental due deligence having been conducted and found to be satisfactory.

16. **What happens if rehabilitation is not satisfactory to NEMA and lead agencies?**

    An improvement order/notice will be issue to the miner to undertake adequate environmental restoration and in cases where that is not undertaken the Authority will used the funds for that purpose.


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