

Mining Sector Environmental and Social Impact Assessment Guidelines

Mining Environmental Impact Assessment Guidelines

May 2018



Background

- Mining EIA Guidelines Working Group established by Minister of MONREC
- Workgroup members include ECD, and the five mining agencies (DOM, DGSE, ME 1, ME 2, Gem Enterprise), Pearl Enterprise, Forest Department, Department of Health, Department of Labor, and GAD.
- While not formally appointed, WWF, MCRB, and ADB also participate in Working Group
- ADB and WWF assistance to the Working Group



Guideline Development

- Preparation of Scoping Report – to identify
 - Nature of Mining in Myanmar
 - Environmental and social issues
 - Needed Guidance under the EIA Procedure
- Individual Consultations with MONREC Mining Agencies
- Three Field Visits/ Case Studies
 - Underground gold mining in Wintho and Kawlin in Sagaing Region
 - Coal Mining in Kalewa, Sagaing
 - Copper Mining – Letpadaung, Monywa

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Guideline Development

- Training Courses
 - Mining Sector Environmental and Social Impact Assessment and Management
 - Review of Standalone Environmental Management Plans
 - Mine Waste Water and Waste Rock Management

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Approach

- Maintain consistency with EIA Procedure (2015)
- Maintain consistency with General EIA Technical Guidelines
- Advocate a Community Engagement and Community Development Approach – includes public consultation, disclosure, grievance redress
- Step by Step approach assessment and reporting

Approach

- Highlight Mining Sector Specific Content
 - Detailed Project Description
 - Mining Specific Impacts
 - Mining Specific Mitigation Measures
 - Mine Closure Planning
 - Community Engagement and Community Development Approach

Approach

Technical Guidance:

- Preparing a Project Description
- Analysis of Alternatives
- Risk Assessment
- Cumulative Impact Assessment
- Air Quality, Noise, and Vibration
- Water Management, Waste Rock Management and Erosion Prevention and Control



Approach

Technical Guidance:

- Mine Site Good Practices
- Mine Closure Planning
- Biodiversity Assessment
- Community Development Planning
- Environmental Management Planning
- Environmental and Social Management Systems



The Guidelines

Guidelines – Primarily for Project Proponents and
EIA Consultants

- Mining: Guidelines for Environmental Impact Assessment
- Mining Exploration: Guidelines for Preparation of an Environmental Management Plan
- Technical Guidance for Environmental Impact Assessment of Mining



The Guidelines

Guidance – Primarily for Environmental Reviewers,
ECD, and Mining Agencies

- Guide for Review of Mining Environmental Assessment Documentation
- Guide for Preparing an Environmental Compliance Certificate for a Mining Project
- Guide for Environmental Compliance Monitoring and Inspection



Focus of These Consultations

- Mining: Guidelines for Environmental Impact Assessment
- Mining Exploration: Guidelines for Preparation of an Environmental Management Plan



Mining EIA Guidelines

- Screening and Categorization - new mines
- Scoping and Terms of Reference - EIA Type Projects
- Preparation of an Environmental Impact Assessment
- Preparation of Initial Environmental Examinations
- New Mines: Preparation of a Stand-alone Environmental Management Plan
- Existing Mines: Preparation of a Stand-alone Environmental Management Plan



Screening

- All new mines or expansions must undergo environmental screening
- Preparing and Submitting the Project Proposal
- Determining the Screening Category (EIA, IEE, EMP)
- Guidance on the Content of Project Proposal

Scoping and Terms of Reference

- Focuses on:
 - issues and concerns
 - information to be collected
 - Planning the analysis and consultation
 - identification of likely environmental and social risks.
- Key Element in Scoping
 - Preparing a detailed Project Description
 - Analysis of Alternatives
 - Identification of Environmental and Social Issues
 - Community Engagement and Community Development
- Scoping Report Contents
- Terms of Reference for Conducting EIA

Terms of Reference

- ToR are to include:
 - Scope of the environmental assessment
 - Environmental and Social Field Studies
 - Responsibilities EIA Team
 - Table of Contents for the EIA Report
- Example TOR are included in the Guideline

Preparing an Environmental Impact Assessment

- Conducting the Assessment
 - Steps in the EIA Investigation (based on EIA Procedure (2015)
- Annotated EIA Report Contents
- Detailed EIA Report Outline

EIA Investigation Steps

- Defining Geographic Boundaries
- Defining the Time Frame
- Preparing the Project Description
- Analysis of Alternatives
- Environmental and Social Description
- Assessment of Impacts
- Designing Mitigation Measures

EIA Investigation Steps

- Designing Environmental Quality Monitoring Programs
- Risk Assessment and Emergency Response Planning
- Cumulative Impact Assessment
- Community Engagement and Community Development
- Mine Closure Planning
- Environmental and Social Management Planning
- Conclusion

Space and Time

- Study area on a geo-referenced map
- Study area includes mine site and other areas that will be directly affected off-site facilities
- Area may need to be expanded to properly assess impacts of environmental and social components
- Time Frame - all stages of mining life cycle
 - pre-construction; construction; operation closure; and post closure



Project Description

- Clear statement of the purpose and need with a justification of for the mine
- The description should cover all stages - preconstruction through construction to operation to closure.
- Technical Guidance is provided for preparation of project description



Basic Elements of a Project Description

- Project justification and need
- Project Location (including detailed map)
- Basic Components, Facilities, and Activities
- Site Layout Map or Schematic Diagram
- Construction
- Operations
- Ore Extraction
- Ore Processing
- Waste Rock: Stockpiles, Dumps, and Tailings
- Transportation Facilities
- Mining Support Facilities
- Offsite Ancillary Facilities
- Water Management
- Mine Closure
- Employment, Local Hiring, and Local Purchasing
- Amount and type of emissions to air, effluent discharges to water; amount of type solid waste disposal; and amount and type of hazardous waste
- Project Development and Implementation Schedule
- Construction Material and Equipment Use
- Water and Energy Use

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Analysis of Alternatives

- No Project Alternative
- Alternative Technologies
 - mining methods
 - processing methods
- Alternative Locations
 - sites of mine facilities
 - alignment of roads, railways, and pipelines

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Assessment of Impacts

Summary Tables of Potential Impacts (Annex 1)

- Environmental and Social Impacts
 - Exploration
 - Construction
 - Operation
 - Mine Closure



Assessment of Impacts

Summary Tables of Potential Impacts (Annex 1)

- Toxic Materials in Mining Operations
- Occupational Health and Safety
- Community Health and Safety
- Broader Social Impacts



Designing Mitigation Measures

- Mitigation Hierarchy
 - Avoid
 - Minimize
 - Restore and Rehabilitate
 - Offset
 - Enhance Positive Benefits
- Required Mitigation Measures
- Environmental Quality Standards

Required Mitigation Measures

1. Pollution Control and Prevention
 - Air Pollution Abatement and Control Systems
 - Noise and Vibration
 - Water Supply and Wastewater treatment systems
 - Waste Rock Management
 - Erosion Prevention and Control

Required Mitigation Measures

2. Mine Site Environmental Good Practices

- Conservation of top soils by proper removal, storage and replacement
- Proper handling, storage of fuels, chemicals, explosives
- Proper handling and disposal of solid and hazardous wastes
- Personal Protective Equipment provided and used by workers

3. Mine Closure Planning and Management

4. Biodiversity Conservation



Required Mitigation Measures

5. Traffic and Access Control
6. Conservation of water, energy, and borrow materials
7. Land Acquisition and Resettlement Planning
8. Community Health and Safety
9. Occupational Health and Safety
10. Protection of Physical Cultural Resources
11. Community Engagement and Community Development



Designing Mitigation Measures

Environmental Quality Standards for Mines

- Effluent Standards for Mining Sites
- Effluent Standards for Work Camps, Sanitary Facilities, Domestic Wastewater
- Ambient air quality standards
- Ambient Noise Standards
- Blasting Standards

Risk Assessment and Emergency Response

- Consider both natural hazards and industrial hazards
- Mining Industrial Hazards
 - Dam failures
 - Landslide and slope failures
 - Fire and Explosions
 - Chemical spills and leakages
 - Mechanical and structural failures and equipment malfunction
- Assess the risks associated with hazards
- Prepare Emergency Responses Plans

Community Engagement and Community Development

- For mining projects, traditional approaches to public consultation may not be enough
- Building relationships with Communities is essential to understanding and managing social and environmental risks
- Community Engagement Plan is required
- Community Development Plan is required

Community Engagement Plan

- Stakeholder and potential affected people analysis
- Results of Consultations during EIA Preparation
- Community engagement strategy
- Proposed consultation and participation activities
- Information Disclosure
- Grievance Redress Mechanism
- Joint Environmental and Social Monitoring

Community Development Plan

- Key elements may include
 - Support for education
 - Support to improve basic infrastructure
 - Support to improve basic health
 - Support to economic development – e.g., SME development
 - Local employment programs

Mine Closure Planning

- Objectives
 - Protect public health and safety
 - Mitigate environment damage and social disruption
 - Return the site to a productive land use
- Plan is include activities for progressive rehabilitation of the site over the life of the mine
- Plan should be updated within two years of the start of operations - then updated every five years
- Five years before Mine Closure - a Post Closure Plan is to be prepared

Environmental and Social Management Planning

- Three Essential Requirements:
 - Well designed mitigation measures and monitoring programs
 - Human Resources – capable people to implement and supervise
 - Financial Resources - sufficient budget(\$\$\$)

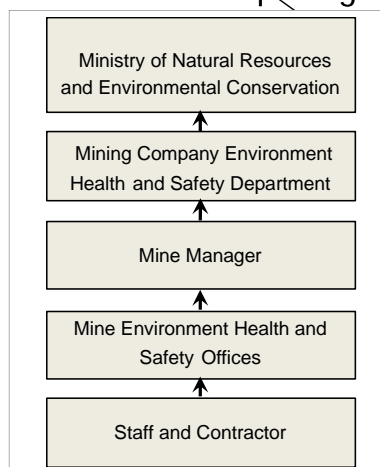


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Environmental and Social Management Planning

Institutional Responsibilities and Reporting Relationships



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Environmental and Social Management System



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Environmental and Social Management Planning

Compliance Monitoring by Mine Operators

- Responsible to engage in self-monitoring monitoring of implementation of all commitments of the ESMP
- Are to employ qualified and social environmental staff; and provide a budget for supervision and monitoring ESMP implementation and compliance
- Mine Operators have to submit monitoring reports to the Department of Mines and Environmental Conservation Department

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Environmental and Social Management Plan

- ✓ Institutional arrangements for implementation of the ESMP
 - ✓ Responsibilities
 - ✓ Compliance Monitoring and Reporting
- ✓ A summary potential environmental and social impacts
- ✓ Mitigation measures
- ✓ Emergency response plans
- ✓ Environmental quality monitoring requirements
- ✓ Community Engagement and Community Development
- ✓ Grievance Redress Mechanism
- ✓ Capacity development and training programs
- ✓ Implementation schedule; and
- ✓ Cost estimate

EIA Report Contents

- Executive Summary
- Introduction (Project Context; Endorsement of Report)
- Policy, Legal and Institutional Framework
- Project Description
- Analysis of Alternatives
- Description of Natural and Social and Environment
- Impacts and Mitigation Measures
- Risk Assessment
- Cumulative Impact Assessment
- Community Engagement and Community Development
- Mine Closure Plan
- Environmental and Social Management Plan
- Conclusion

Stand-Alone EMP for Existing Mines

- EIA Procedure (2015) Section 8 provides for addressing existing facilities including mines
 - existing mines are to undertake - environmental compliance audit
 - Prepare EIA, IEE, or EMP
 - Take Corrective Action to address adverse impacts
- Previous Guidance for Preparing EMPs
 - Late 2016, ECD requested all mines to prepare a Standalone EMP using a standard format
- This Guideline prescribes a new format

Stand-Alone EMP - Existing Mines Special Considerations

- Many impacts may have already occurred – the requirement is to assess past and present impacts
- Previous Environmental Assessment Activities
 - IEE, EIAs, or EMP
 - Environmental Compliance Certificate
 - Existing Environmental and Social Management System
 - Environmental and Social Monitoring Reports

Stand-Alone EMP - Existing Mines Special Considerations

- Environmental and Social Audit
 - Many impacts have already occurred
 - Some can be directly observed; other detected by environmental quality monitoring
 - Necessary document past and present impacts
- Recommended that an environment and social audit be undertaken
 - Check for compliance with EIA Procedures and ECC (if it has been issued)
 - Prepare a Corrective Action Plan

Stand-Alone EMP - Existing Mines Special Considerations

- Need to update the Project Description to current conditions and future planned expansion
- Need to determine a new Environmental and Social Baseline
- Assessment of Impacts must
 - Document changes in environmental and social baseline
 - Assess past and present impacts
 - Determine mitigation measure effectiveness
 - Assess the potential future impacts

Stand-Alone EMP - Existing Mines Special Considerations

- Designing Mitigation Measures
 - Corrective Actions to address past and present impacts
 - Mitigate measures to avoid, minimize, restore and rehabilitate, or offset future impacts
- Risk Assessment
 - Need to document natural hazard events and industrial accidents
 - Need to document the mine's response to emergencies

Stand-Alone EMP - Existing Mines Special Considerations

- Community Development and Community Engagement
 - Need to document the history of engagement and development
- Mine Closure Plan
 - Need to describe rehabilitation and restoration to date
- Environmental and Social Management Plan (ESMP)
 - Need to include a Corrective Action Plan with human resources and financial commitments.

Mining EIA Guidelines Summary

- Screening and Categorization - new mines
- Scoping and Terms of Reference - EIA Type Projects
- Preparation of an Environmental Impact Assessment
- Preparation of an Initial Environmental Examination
- Preparation of a Stand-alone Environmental Management Plans for New Mines
- Preparation of a Standalone Environmental Management Plan for Existing Mines

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Mining EIA Guidelines Summary

- Annotated Table of Contents for All Reports
- Detailed Table of Contents for EIA Reports
- Common Environmental Assessment Approach for EIA, IEE, and EMPs for new mines – with more limited scope and fewer requirements for IEEs and EMPs
- Special Considerations for EMPs of Existing Mines
 - Need to document past history of environmental assessment, community engagement and development, and emergencies
 - Need to assess the past and present impacts
 - Need to prepare a Corrective Action Plan

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Exploration

- Most exploration projects do not require an IEE or EIA reports under the EIA Procedure -
- Exploration is not included in EIA Procedure (2015) Annex A Categorization of Economic Activities for Assessment Purposes
- An Environmental Management Plan is to be prepared

Background

- Exploration activities have been standardized
- Most environmental impacts are well understood
- With proper mitigation measures - the resulting impacts will be minor
- In Canada and Australia – environment codes of practice have been developed
- Site specific EMPs can be developed from these codes of practice

Approach

- Standardized exploration activities
- Standardized template for Environment Description
- Prescribed Mitigation Measures
- Recommended Environmental and Social Management System
- Prescribed Environmental Quality Standards
- Financial Commitments
- Standardized Template for EMP Budget



EMP Contents

- Part A: Executive Summary
- Part B: Project Proponent
- Part C: Prospecting and Exploration Activities
- Part D: Environment Description
- Part E: Environmental Impacts and Mitigation Measures
- Part F: Environmental Management System
- Part G: Estimated Cost of Implementation of the Environmental Management Plan
- Part H: Conclusion



C. Project Description

Basic Data

- Project Title
- New or Existing Development
- Stage (prospecting or exploration)
- Minerals targeted
- Project Location
- Size and scale of project components
- Maps and photographs

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C. Project Description

Activities to be Included

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C. Project Description

Activities to be Included

- Drilling (auger, open hole percussion, reverse circulation and rotary air blast drilling, diamond drilling; rotary mud, or wide diameter drilling)
- Costeaining, pitting, and trenching
- Surface bulk sampling
- Underground exploration

C. Project Description

Information Needed on Proposed Exploration Activities

- Equipment and Personnel
- Seismic or other exploration activities
- Drilling Activities
- Drill Site Preparation
- Drill hole construction and decommissioning
- Costean and bulk sampling disposal pits
- Sample Management

C. Project Description

Information Needed on Proposed Exploration Activities

- Access Routes
- Campsites, storage and equipment storage areas
- Water Supply and Management
- Groundwater and drilling investigations
- Activities affecting water resources
- Management of radioactive or hazardous materials



E. Impact Assessment of Mitigation Measures

- Generic Approach
- Two Parts
 - Matrix of Impacts and Mitigation Measures that apply to all projects
 - Matrix of Impacts and Mitigation associated with specific exploration techniques
- Prepare combined matrix of impacts and mitigations – this serves as the impact assessment and identification of mitigation measures



Required Environmental Management and Rehabilitation Requirements

- Site Photography and Inspection
- Stakeholder Communication
- Community Health and Safety
- Occupational Health and Safety
- Dust and Noise Control
- Waste Management
- Environmental Protection and Conservation

Required Environmental Management and Rehabilitation Requirements

- Community Development (if necessary)
- Culture Heritage Management
- Emergency Response Plan
- Rehabilitation Plan

F. Environmental and Social Management System

Minimum requirements

- Environmental and social staff
- Procedures for supervision and monitoring
- Training needs
- Reporting

F. Environmental and Social Management System

Recommended Roles

- Environmental Coordinator
- Exploration Manager
- Senior Personnel and Contractors

F. Environmental and Social Management System

Compliance Monitoring and Reporting

- Monthly report on the compliance with the EMP
- Quarterly inspection by Company Senior Environmental Coordinator
- Semi-annual environmental monitoring reports to ECD, DOM

F. Environmental and Social Management System

Compliance with Environmental Quality Standards

- Effluent Standards for Mining Sites (NEQG)
- Effluent Standards for Work Camps, Sanitary Facilities, and Domestic Waste Water (NEQG)
- Ambient Air Quality (NEQG)
- Ambient Noise Standards (NEQG)
- Blasting (Australia and New Zealand Guidelines)

G. Budget and Schedule

Budget

- Cost of all mitigation measures
- Cost of all rehabilitation measures
- Cost of all monitoring programs
- Costs of all environmental staff

Schedule

- Environmental staff need to be in place prior to start of exploration
- Mitigation measures to precede or coincide with activities



Environmental Assessment Requirement for Permit Stages

- Mining Rules - Initial Stages of Mining Life Cycle:
 - prospecting – up to one years with possibility of a one-year extension
 - exploration - up to 3 years with possibility of a two one-year extensions
 - feasibility study – up to 1 year with a possibility of a one-year extension
- EMP is required - assess impacts of all planned activities
- However, Mining Rules do not clearly define which activities are allowed at each stage.



Requirements for Permit Stages

- Low Impact Activities – some activities are considered to have low potential for environmental social impacts
 - Reconnaissance
 - Cultural clearance surveys
 - Soil sampling
 - Geological mapping
 - Geochemical surveys—surface sampling
 - Rock-chip sampling and sampling using hand held augers
 - Small, short term camp sites
 - Use of 4WD vehicles, ATVs and/or Quad bikes.
- Guidelines provided standard sets of mitigation measures for these low impact activities

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Requirements for Permit Stages

- Environmental Description
 - Prospecting occurs over large area – not practical to prepare a detailed environment description
 - General description is sufficient – but needs to include environmentally sensitive areas, culture heritage sites and communities
 - Detailed environmental description is needed for the exploration area at the exploration stage
 - Detailed environmental description is needed for the mining area at the feasibility stage

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Requirements for Permit Stages

Report Section	Prospecting	Exploration	Feasibility Study
A. Executive Summary	Yes	Yes	Yes
B. Project Proponent	Yes	Yes	Yes
C. Project Description	Low Impact Activities Only	Yes	Yes
D. Environment Description	General Description for Prospecting Area	Detailed Description for Proposed Exploration Area	Detailed Description for Proposed Mining Area
E. Environmental Impacts and Mitigation Measures	Annex A1.1 – only	Annex A1.1 and Annex A1.2 (for relevant activities)	Annex A1.1 and Annex A1.2 (for relevant activities)
F. Environmental and Social Management System	Yes	Yes	Yes
G. Environmental Management Plan, Budget, and Schedule	Yes	Yes	Yes
H. Conclusion	Yes	Yes	Yes

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Review and Comments

1. What additional information or analysis is needed for EIA, IEE, and EMP Reports for new mines? For EMP Reports for Existing Mines? For the Exploration Guidelines?
2. Which current requirements for information or analysis are unnecessary or too detailed?
3. Do you agree with the Guidelines emphasis on community engagement and community development?
4. Do you agree with Guidelines approach to the Environmental and Social Management Plan

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Review and Comments

Please Provide Written Comments by 15 June 2018

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