



Mongolia:  
Enhancing Resource  
Management through  
Institutional Transformation

# Lifecycle of a Mine

## Stage 4: Mine Closure

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Technical Advisor: Michael MacPherson

## Section 4: Mine Closure

### Mine Closure and Reclamation

Mine closure is the last phase of the mining cycle.

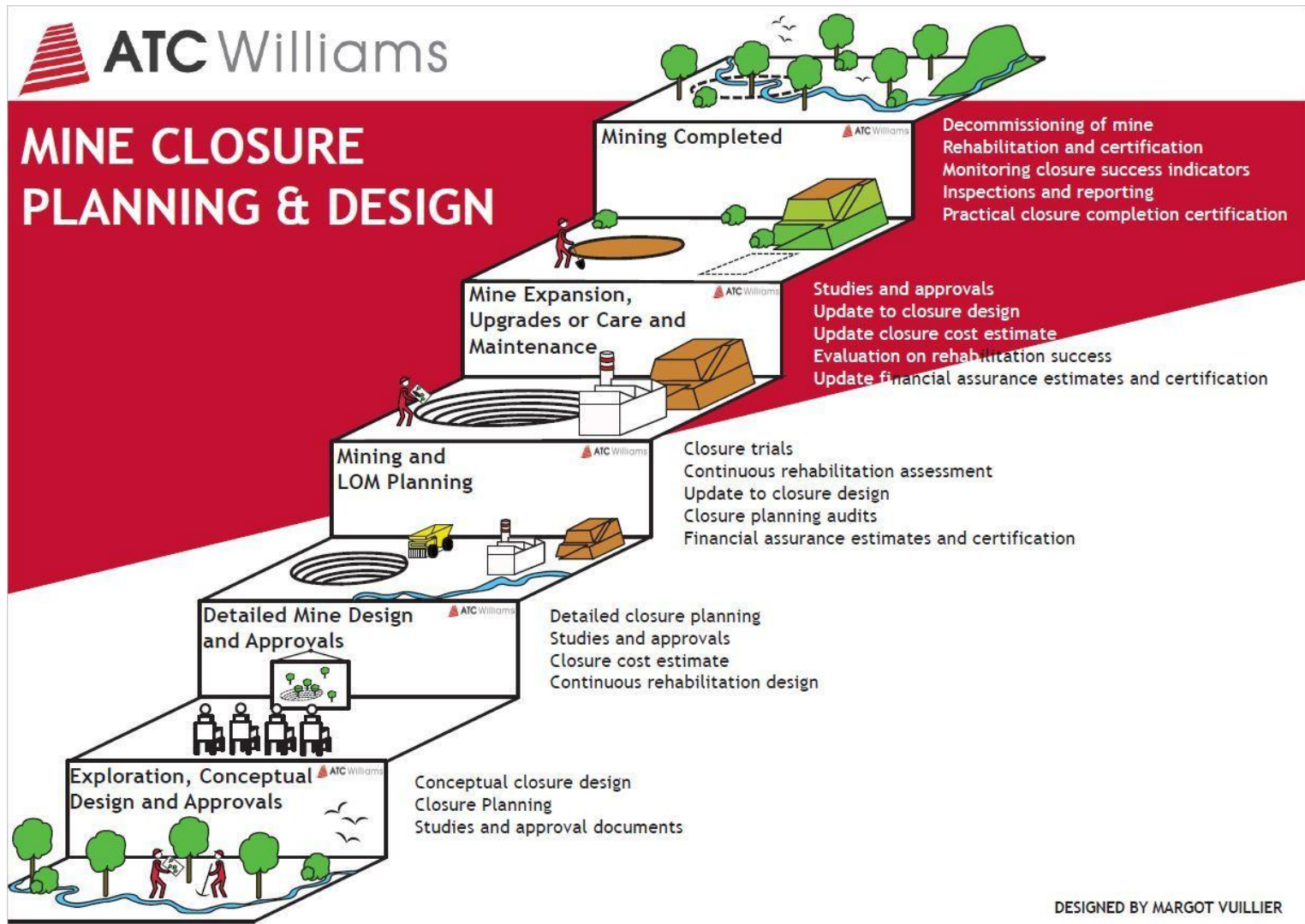
Due to the nature of mineral deposits, they all have a limited lifespan.

While some deposits are very large and may generate a mine life of 50 years or more, other deposits may only produce a mine life of a few years.

All mines have one thing in common – no matter how long they last, they all will close. Mining is a **temporary land use**. Mines come and go but the people will stay living on the land.



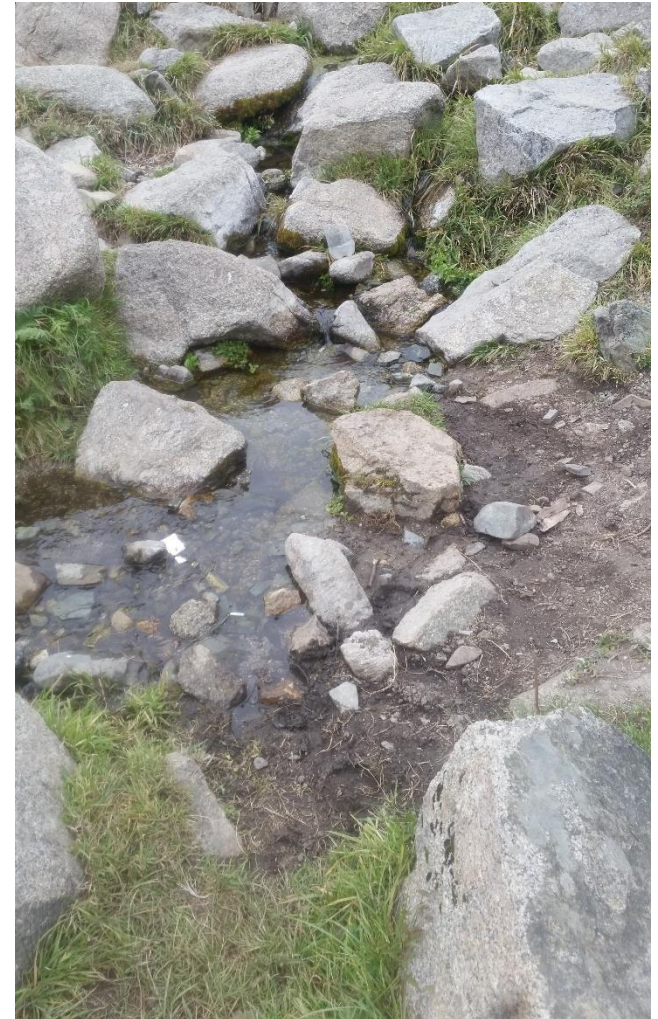
# Section 4: Mine Closure



## Section 4: Mine Closure

Today, mine closure is defined as the *orderly, safe and environmentally sound conversion of an operating mine to a closed state.*

Areas affected by mining activity should become viable and self-sustaining ecosystems that are compatible with a healthy environment and with human activities.



## Section 4: Mine Closure

Mines close for different reasons, but the two most common are:

- Running out of the ore resource; and
- Low prices, which make the mine uneconomic to operate.

While closure is the last phase of the mining cycle, today planning for closure starts before the mine development phase.

Governments have rules, legislation and regulations covering the closure process.

## Section 4: Mine Closure

If a license holder is wholly or partially closing the mineral deposit, a license holder shall inform state central administrative body **no less than one year** prior to the closure and do a proper preparation work.

(Ministry of Mining and Heavy Industry)

## Section 4: Mine Closure

### Minerals Law of Mongolia

**45.1.1.** take all necessary measures to ensure safe use of the mine area for public purposes and reclamation of the environment;

**45.1.2.** take preventive measures if the mine claim is dangerous for public use;

**45.1.3.** remove all machinery, equipment and other property from the mining area except as permitted by local administrative bodies or the professional inspection agency.

**45.2.** Mining license holders shall prepare a detailed map of an appropriate scale showing dangerous or potentially dangerous areas created by mining operations by **placing necessary warnings and markings in the vicinity of the mining claim** and shall submit the map to the professional inspection agency and the local Governor.

## Section 4: Mine Closure

Mine closure is usually one of the most discussed issues with governments, companies and the public.

Communities are concerned about what will be “left behind.”

All stakeholders want to make sure that there are no contaminated sites now commonly referred to as “legacy issues.”





## Section 4: Mine Closure

### Time Frames

The time frame needed for mine closure depends on many factors, including the size and complexity of the operation, the effects the mine has had on the environment, and the extent of regulatory review.

Public input may also be a factor as some of the issues involved may raise public concerns that can take time to address.

Typically, it may take 2 to 10 years to shut down a mine.

If long-term monitoring or treatment is required, it may take decades before closure is considered complete.

## Section 4: Mine Closure



## Section 4: Mine Closure

A **mine closure and reclamation plan** for any mine is site-specific.

It details how the mining company will close the mine site and return the surrounding land, as closely as possible, to its pre-mining state.

Mine closure and reclamation activities include decisions on what to do with every component of the mine that was planned and put in place at the development stage, including, but not limited to:

- Buildings and other structures
- Roads and airstrips
- Tailings disposal facilities
- Waste rock management and open pits

## Section 4: Mine Closure

Mine closure and reclamation activities include, but are not limited to:

- Petroleum and chemical storage areas and facilities
- Pipelines and electrical transmission lines
- Sewage and waste disposal areas and facilities
- Mine and site drainage systems
- Mine shaft, passage ways and decline openings
- Site water quality, including water flows leaving the site
- Recycling of materials; and
- Revegetation of the site.

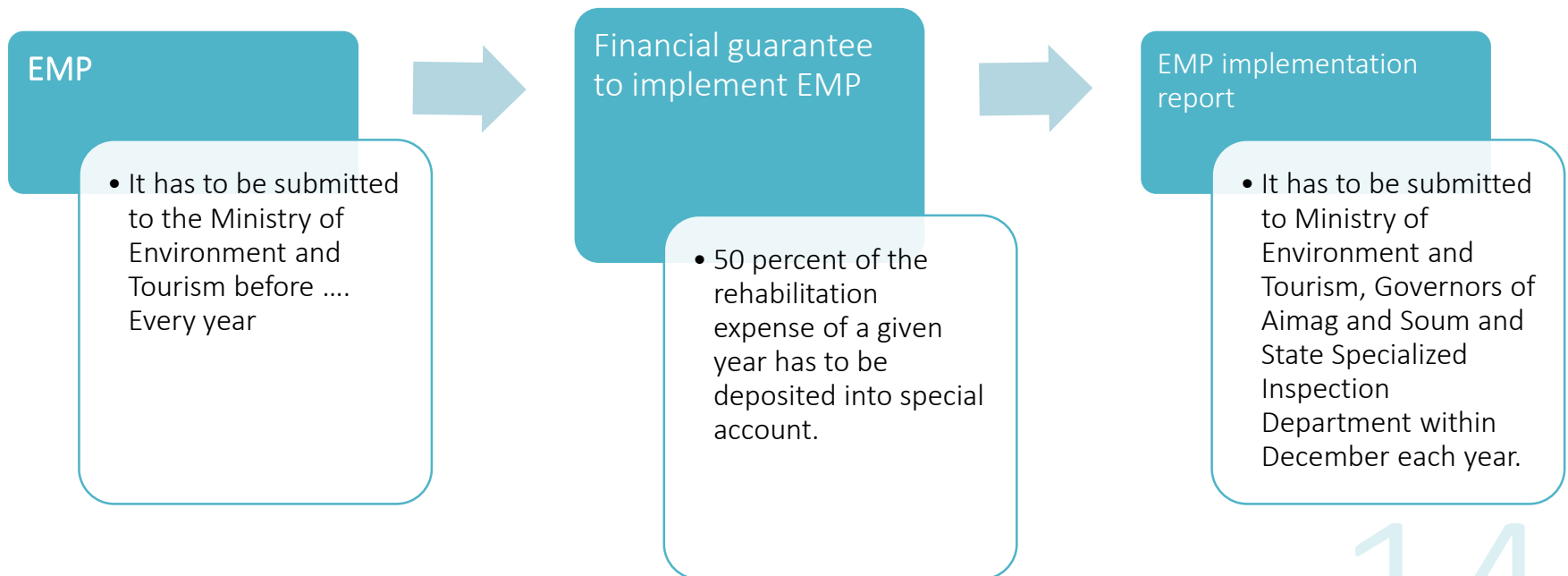
## Section 4: Mine Closure

A mine closure and reclamation plan should also:

- Indicate how progressive reclamation of the site will occur during the life of the operation
- Provide cost estimates to close and reclaim the mine
- Prepare a plan for temporary closure of the mine
- Develop a plan for post-closure monitoring of the site; and
- Make sure that the site is left in a condition that will require little or no long-term care and maintenance.

## Section 4: Mine Closure

Environmental Management Plan (EMP): Every active entities are required to develop and apply environmental management plan. This plan includes the environmental protection plan and monitoring plan.



## Section 4: Mine Closure

- If an security amount for financial guarantee of the implementation of EMP is not transferred before the start of the mining activities of the year, Governors of Soum and District are entitled to stop the mining work of the given year.
- If the rehabilitation and reclamation work for the year is not completed, Governors of Soum and District, together with State Specialized Inspection Department, have the right to prohibit the start of any mining operations in the succeeding year.
- Citizens may choose a representative who is responsible for public monitoring of operations of the license holders and their environmental rehabilitation activities.

## Section 4: Mine Closure

Mine closure plans should be flexible and adaptable to new techniques and methods for protecting the environment and reducing environmental risks while ensuring liabilities are met.

**Good communications** and **consultation** between governments, companies, and communities of interest will lead to the best solutions.



## Section 4: Mine Closure

### Mine Closure Activities:

- Notification
- Shut-Down
- Decommissioning
- Reclamation
- Post-Closure

## Section 4: Mine Closure

### Notification

Before shut-down, the mine owner must notify various stakeholders, including employees, and employee representatives if any, various levels of government (municipal, provincial and federal), media, mining associations, and any other interested party.

The mine owner will carry out a final review of the mine closure plan and submit any changes needed to the government regulators for approval.

*By Mongolian law, the mine operator must notify the government a year before mine closure.*

*As specified in the paragraph 45.1 of the Minerals Law of Mongolia :*

*If a license holder is wholly or partially closing the mineral deposit, mine, mining plant and concentration plant, the license holder shall inform state central administrative body no less than one year prior to the closure.*

## Section 4: Mine Closure

### **Shut-Down**

When all production has stopped, employees are progressively laid off leading up to the shut-down.

A small labour force is kept on to permanently shut down equipment.

The mine closure plan will indicate what types of skills are needed to shut down and demobilize equipment.

## Section 4: Mine Closure

Some mines go on care and maintenance when they quite operation but they think they may reopen it in the future when commodity prices make it economical to operate again.



## Section 4: Mine Closure

### Decommissioning

Decommissioning follows mine shut-down.

Workers decommission (take apart) mining and processing facilities and equipment.

Often mining company contract this work to companies that specialize in decommissioning.

## Section 4: Mine Closure



Decommissioning includes:

- Draining hydraulic fluids and oils from mobile equipment
- Draining pipelines
- Removal and recovery of saleable equipment and parts
- Clean-up and salvage of buildings
- Recovery of warehouse materials, tools and consumables (i.e., oils, grease, etc.), and
- Disposing properly of all waste.

## Section 4: Mine Closure

### Reclamation

Reclamation is the process of restoring disturbed land as closely as possible to the original condition when mining is finished.

The process of reclamation can occur either during the life of the mine (progressive reclamation) or after the mine has closed (reclamation).

All mine sites must be reclaimed according to applicable governmental regulations.



## Section 4: Mine Closure



MNO Company in Zaamar have one of the best practice examples in Mongolia for mine reclamation in their Bayangol project site.



## Section 4: Mine Closure

Reclamation typically involves a number of activities including: re-shaping the land, restoring topsoil, and planting native grasses, trees or ground cover.

Reclamation is done according to the approved closure and reclamation plan, which must be continuously updated by the mining government agency.

Technical rehabilitation:

Biological rehabilitation:

# Mongolian National Operator LLC news



## Section 4: Mine Closure

### Post-Closure

Environmental activities continue long after a company has finished mining an area.

The owner is obligated under permit or licence conditions to reclaim the affected land and to monitor the success of the reclamation activities.

The period of post-closure activity and monitoring varies and depends on the results.

## Section 4: Mine Closure

Some mines may require long-term care and maintenance after closure.

Examples include sites where:

- Mine discharge waters need to be treated
- Tailings containment structures require periodic monitoring and maintenance, and
- Remediation technologies need to be monitored

## Section 4: Mine Closure

