

ASM zones – Concepts and Strategies for their Designation and Management

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The ASM sector entails multiples environmental and social problems!

But also can reduce poverty and promises a fiscal income potential for Governments!



To turn ASM into a **sustainable socio-economic activity** and to **generate fiscal income**, efforts to **formalize and regulate** the sector are being undertaken in many countries for many years.

To date, however, the **achievements** towards this goal **are still modest**.

To **facilitate ASM formalization**, the recent

“Guidance for Governments on Managing Artisanal and Small-scale Mining”

recommends (amongst other measures) that:

- ✓ **Governments should identify areas with mineral potential or even resources and allocate them to the ASM sector. These areas are called “ASM zones”.**

Advantages of „ASM zones“

“**ASM zones**” with mineral potential or even established resources for ASM operations provide a **good basis** for:

- ✓ the **formalization** (licensing and permitting) of ASM and
- ✓ an **improved planning** for ASM (operation, environmental and closure issues).

Challenges of „ASM zones“

Governments have to allocate **enough human and financial resources!**

Close coordination with all stakeholders affected by the establishment of “ASM zones”:

- ✓ Local and regional government,
- ✓ Land owners,
- ✓ Local communities,
- ✓ Large scale mining (LSM),
- ✓ Other land users (agriculture, forestry, tourism).



ASM Miners have to be **organized and enabled** to participate actively in the process!

The idea of establishing “ASM zones” is not new!!

Several countries already have created or are creating such kind of zones.

In some countries, the “ASM zones” are even part of the mining law.

So far, however, the benefits of such zones are seen controversial, because

- ✓ they are often not chosen according to ASM needs and lack mineral potential for sustaining longer-term ASM activities.



BGR has picked up the idea of „ASM zones“ and elaborated the issue further.

Resulting from its work, some **concepts** and **strategies** have emerged, how the designation and management of „ASM zones“ might be improved and assist governments.

Prerequisites for the establishment and management of “ASM zones”

- ✓ **Appropriate legal system for ASM**, aiming at formalizing and regulating the ASM sector
- ✓ Mining authority with **regional/district ASM offices**
- ✓ Adopting an **industry approach towards the ASM sector**



The Designation and Management of “ASM zones” should be a phased process

Designation Phase ***short-term***

- ✓ Identification and delineation of “ASM zones”
- ✓ Estimation of resources and economics of “ASM zones”
- ✓ Conceptual environmental and health & safety planning

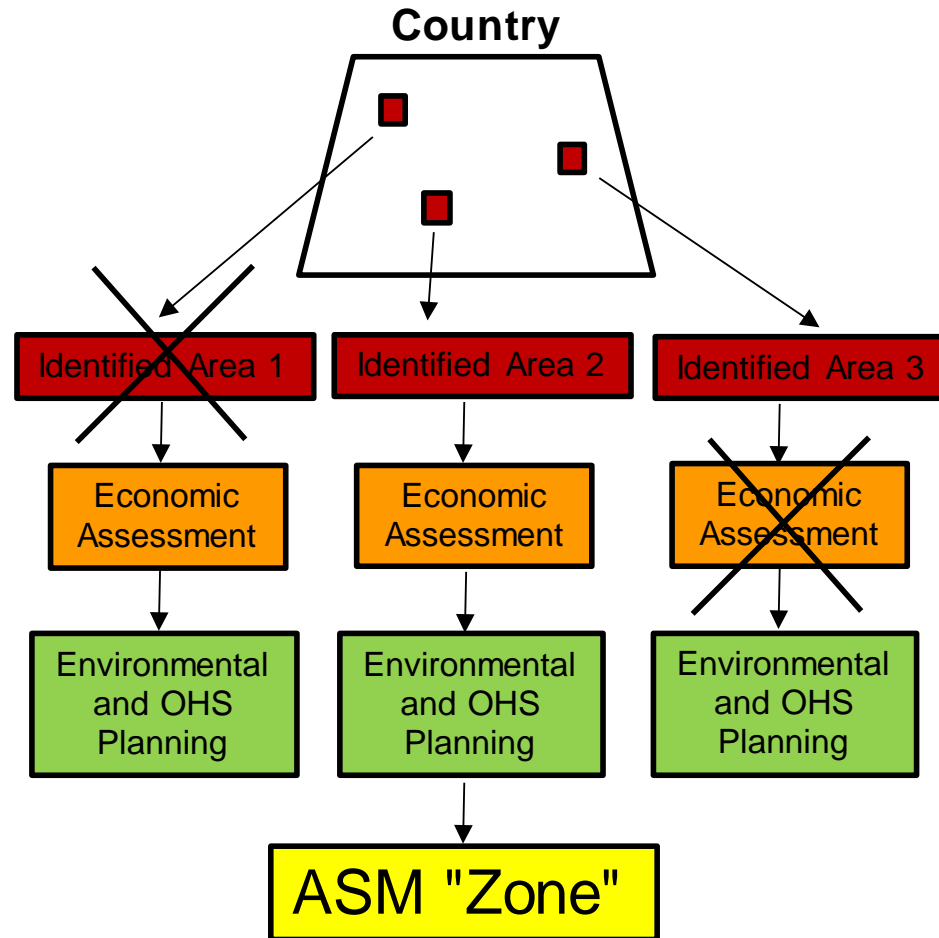
Implementation Phase ***short-term***

- ✓ Licensing and permitting
- ✓ Elaboration of the mine, environmental/OHS and closure plans

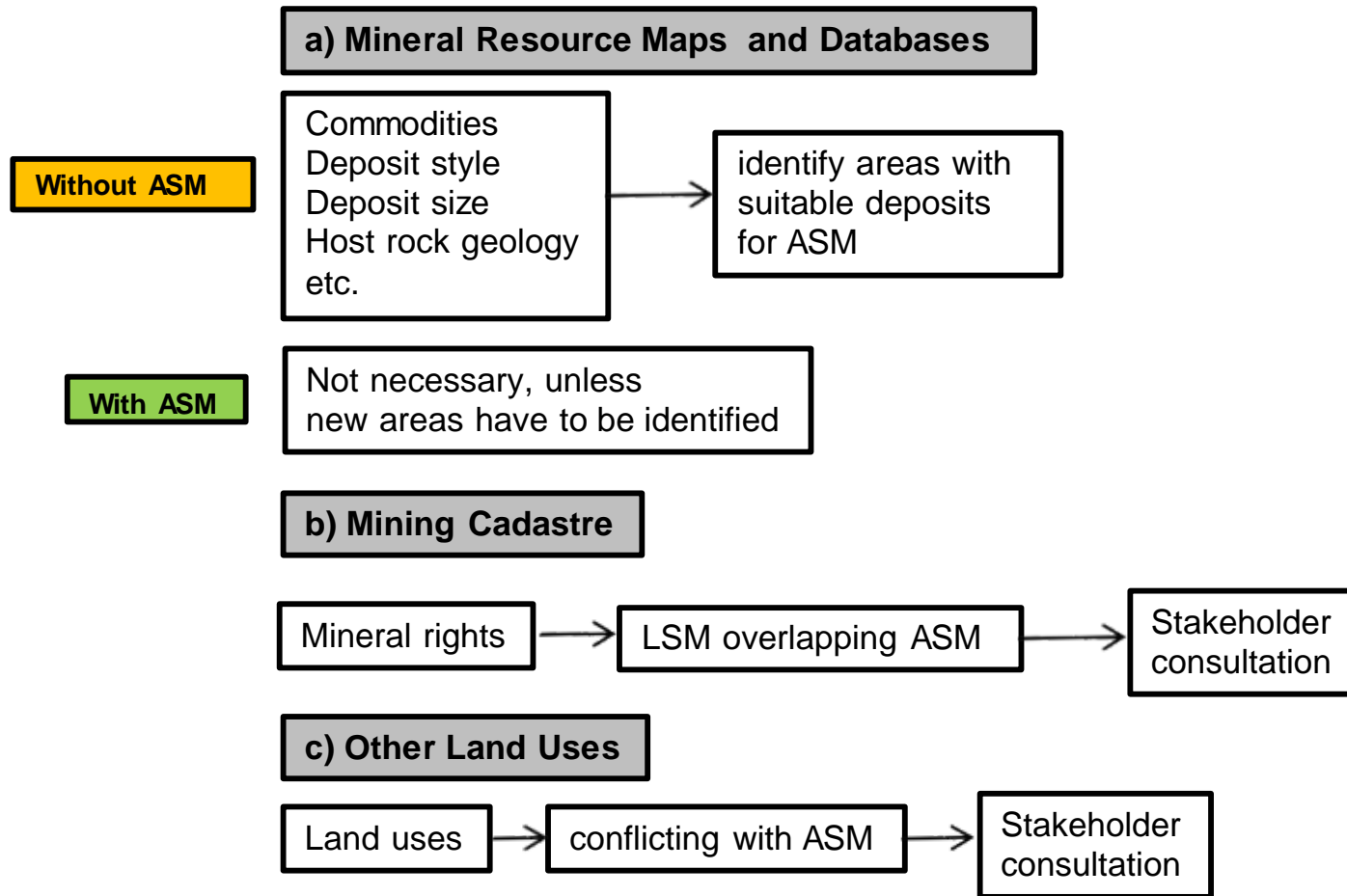
Management Phase ***long-term***

- ✓ Supervision of ASM
- ✓ Support to ASM

Designation Phase



1. Identification and delineation of “ASM zones”

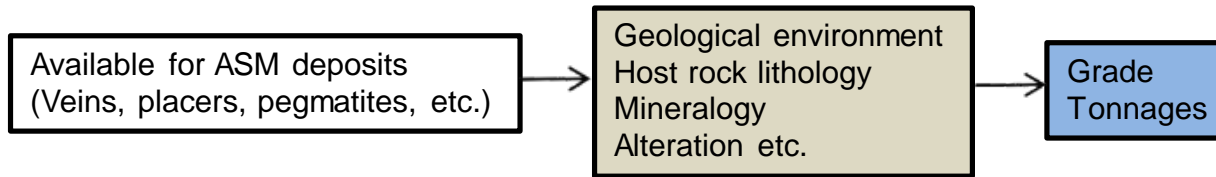


National Geological Survey and Mining Cadastre, assisted by institutions involved in spatial planning, should do this work

The integration and handling of such data is facilitated by **Geographical Information Systems (GIS)** and computerized databases.

2. Estimation of resources and economics of “ASM zones”

a) "Descriptive Mineral Deposit Models"



b) Preliminary Economic Estimations



National Geological Survey and **regional/district ASM office** (possibly assisted by local consultants) should do work. Involvement of the **local community and/or ASM miners** in the exploration work

c) Additional Field Exploration

Mapping and measuring of mineralisation (outcrops, workings)
Sampling of outcrops and workings (including trenching and limited drilling)
Chemical assays for grade determination
Mineral resource estimation (basic methods)
Mineral processing tests

3. Conceptual environmental and health & safety planning

a) "Geoenvironmental Models for Mineral Deposits" and other sources

Environmental signatures/OHS characteristics of ASM deposits



Predict environmental impacts and OHS hazards

b) Conceptual Environmental/OHS Management Plan

Environmental impacts and OHS hazards



Mitigation measures for environmental impacts and OHS hazards

c) Field-based Baseline Study

Understand social and biophysical environment:

- Community issues (attitude towards ASM)
- Land ownership
- Land use
- Geomorphology (adequate sites for mine infrastructure)
- Soil and vegetation
- Rock types (ARD issues)
- Surface and ground water
- Power and accessibility

Regional/district ASM office (possibly assisted by **National Geological Survey / relevant environmental agency**) should do the work. Involvement of **local community/ASM miners**.

Designation Phase



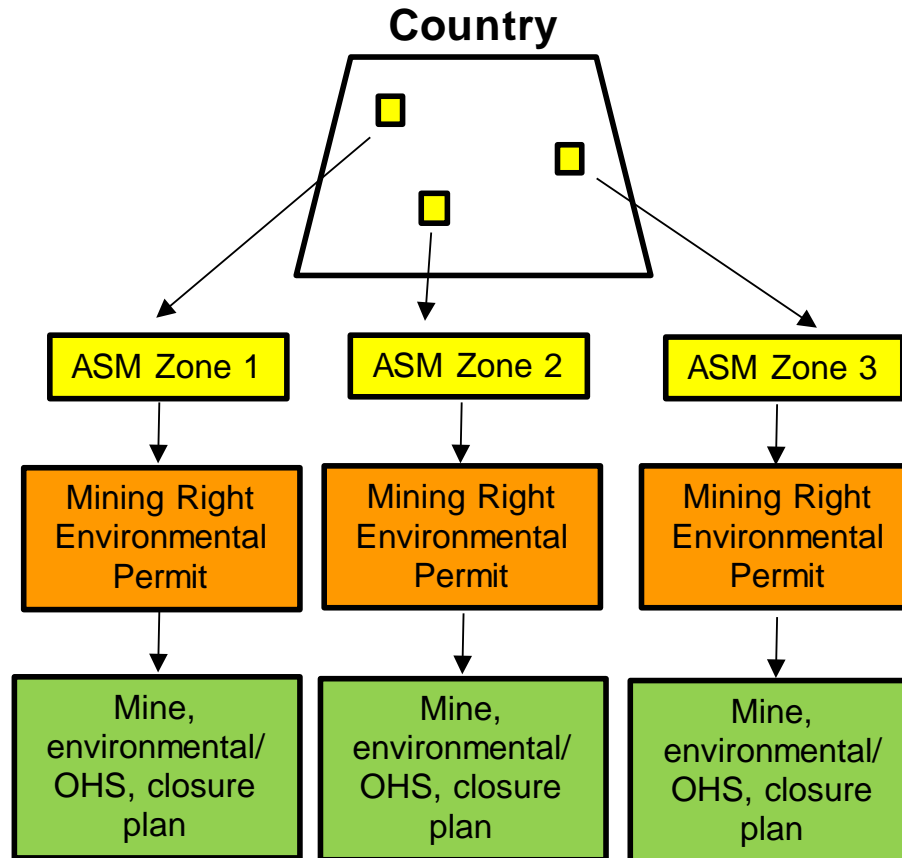
Implementation Phase

- ✓ Licensing and permitting
- ✓ Elaboration of the mine, environmental/OHS and closure plans

Management Phase

- ✓ Supervision of ASM
- ✓ Support to ASM

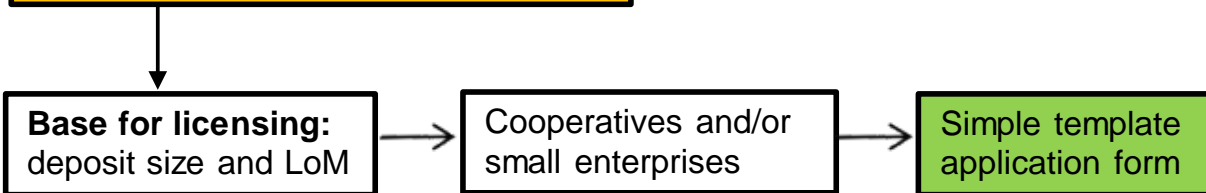
Implementation Phase



1. Licensing and Permitting

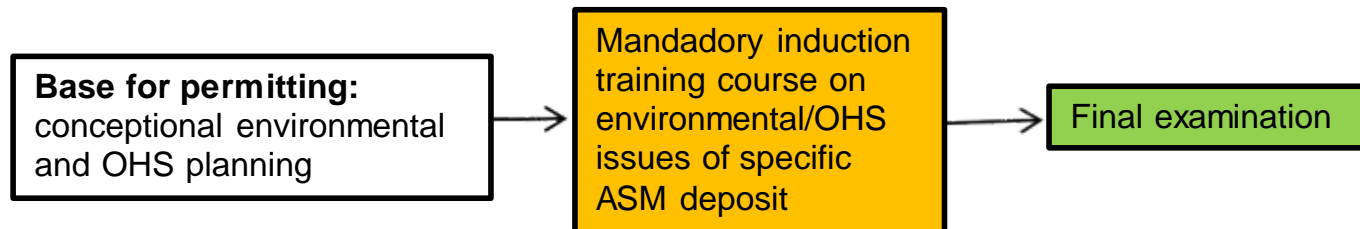
a) Mineral Right

Issued by regional/district ASM office



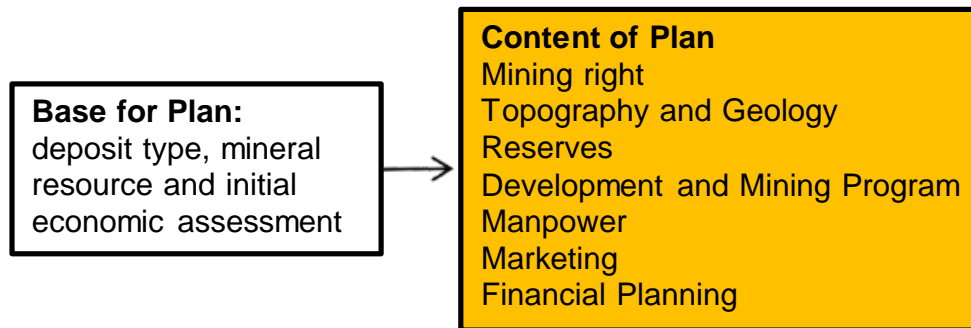
Regional/district ASM office (possibly assisted by local consultants) should do work.

b) Environmental Permit



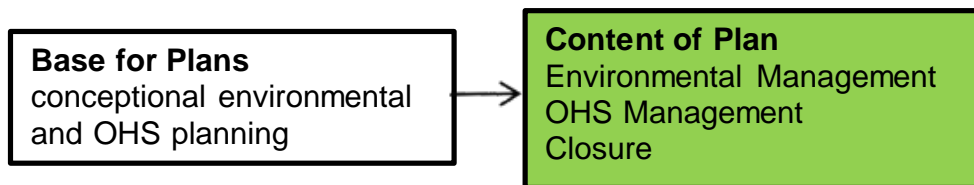
2. Elaboration of the mine, environmental/OHS and closure plans

a) Mine Plan



Regional/district ASM office has to assist ASM sector with the elaboration of plans

b) Environmental/OHS and Closure Plan



Designation Phase



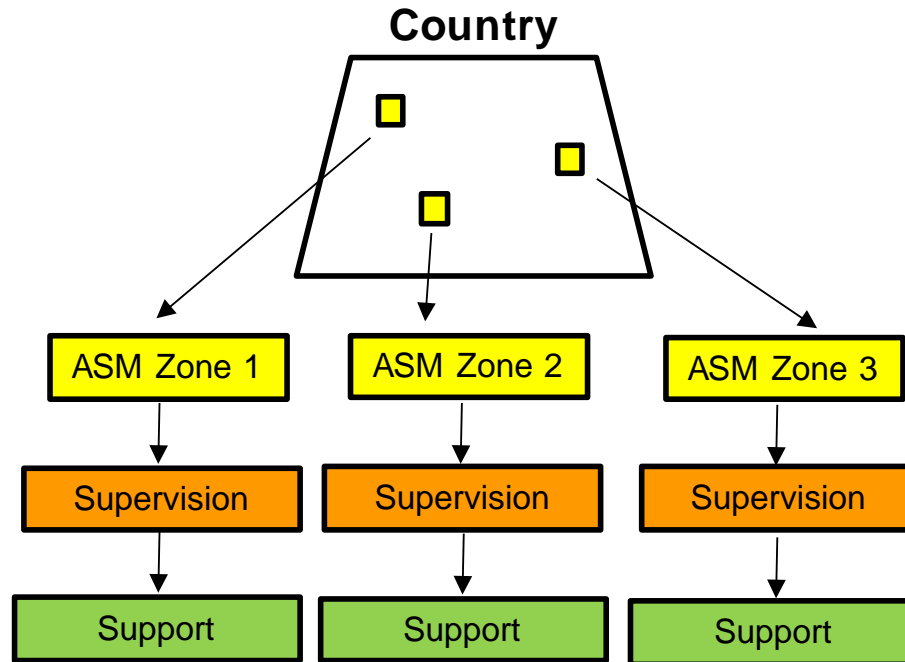
Implementation Phase



Management Phase

- ✓ Supervision of ASM
- ✓ Support to ASM

Management Phase



1. Supervision

Should consist in regular inspection and/or audits

Extent of inspections/audits

OHS Issues
Environmental Issues
Water and Energy Efficiency
Sanitary and Health Issues
Social Issues
Conflict Risks

Adopt an "incentive" attitude not a punishment system

Regional/district ASM office
(possibly assisted by local consultants) should do work

2. Support

Could consist in the following
(depending on the situation):

Delivery of training measures

Business Administration
Mine-based exploration
Mining and mineral processing techniques
Environmental and OHS issues
Closure

**Assistance in mine based and
regional Exploration**

**Assistance with Mine Closure
(and Relocation)**

**Provision of Communal Mineral Processing
and/or Tailings Facilities**

**Provision of Communal Sanitary,
Health and Education Facilities**

Regional/district ASM office
(possibly assisted by local
consultants) should do work

Requires tight coordination and
cooperation between beneficiaries,
governmental agencies and donors

Time and Costs Frame for the Designation, Implementation and Management Phase

Since available information on time and costs is extremely scarce, the figures presented here are only a very rough guide.

Phase	Time	Cost	Financing Source
Designation (some "ASM zones")	2 years	± 2 Million US\$	Government, LSM, Donors
Implementation (one "ASM zone")	3 months	20.000 US\$	Government, ASM sector, Donors
Management (one "ASM zone")	> 10 years	± 300.000 US\$/a + OpEx and CapEx for Infrastructure	ASM Fund, Donors

Thank You Very Much!