

CAPACITY BUILDING IN ASM IN AFRICA

SEAMIC-Tanzania

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INTRODUCTION

- Background
- Training of Trainers
- Training of Trainees
- Fields of specializations relevant to ASM
- Institutions in Africa relevant to ASM
- Sustainability of ASM
- Environmental protection issues in ASM
- Concluding remarks

BACKGROUND

- ASM practitioners in the southern and eastern Africa sub region have developed from liberalization of mineral trade
- Low level of educational status of ASM
- Mining by ASM based on trial and error
- Non-sustainable business venture
- Most ASM have a very poor knowledge in minerals business fields before commencing their activities

BACKGROUND

- A number of ASM entrepreneurs have attempted to purchase equipment and even to improvise some of the processing machines in order to improve mineral production
- However, the performance of the improvised machines is relatively poor due to
 - design factors and
 - poor operational knowledge

BACKGROUND

Poor performance mostly due to:

- poor financial returns,
- business uncertainty,
- lack of credibility from some of stake holders especially financial lending institutions
- Loss of business opportunities
- Environmental degradation

Capacity building is therefore important to reverse the situation

TRAINING OF TRAINERS

- Number of persons involved in ASM is relatively very large in each country compared to the number of experts in the field and therefore:
- There is a need to introduce the training of trainers in basic mineral exploration, extraction and beneficiation areas
- This will later facilitate delivery of outreach capacity building activities to ASM practitioners in respective countries

TRAINING OF TRAINEES

- A large proportion of ASM stakeholders do not have the necessary and sufficient knowledge on mineral exploration, extraction and beneficiation
- This results in poor and inefficient mineral production and often loss of business opportunities
- Environmental damage is also a result of lack of proper knowledge in the impact of mineral production activities to the environment

TRAINING OF TRAINEES

- Therefore a need for introduction of human resources capacity building activities in the technical and financial management fields in order to arrest the problem and improve mineral production.
- A properly informed human resources is a potentially powerful and productive development resource.

FIELDS OF SPECIALIZATIONS RELEVANT TO ASM

- Mining business development and management skills
- Mineral production techniques and beneficiation skills
- Operational requirements of mineral recovery systems
- Mineral development and environmental protection and remediation
- Provide consultancy on the role and importance of mineral service providers and stakeholders to ASM.

INSTITUTIONS IN AFRICA RELEVANT TO ASM

- Geological Surveys and Commissions of Mines in respective countries.
 - Issue of ownership licenses for mineral claims
- Mineral service providers
 - Laboratory scale testing and analysis of geological materials for resource evaluation
 - Mineral beneficiation studies and advisory services
- Mineral consultancy institutions
 - Consultancy and advisory services
- Financial lending institutions
 - Project financing

INSTITUTIONS IN AFRICA RELEVANT TO ASM

- Legal advisory institutions
 - Legal rights
- Equipment manufacturers and suppliers
 - Supply of appropriate mining and processing equipment
 - Equipment servicing and maintenance contracts
- Environmental regulatory institutions
 - Monitoring of projects' environmental compliance

SUSTAINABILITY OF ASM

- Given the huge mineral endowment in our countries, ASM has the potential of becoming
 - very important national income contributor and
 - the future medium and large scale mining industries in the sub region.
- Increased commitment by respective countries
 - provision of conducive and favorable policies pertaining to the ASM sub sector

SUSTAINABILITY OF ASM

- Provision of technical assistance in basic mineral development techniques as **national investment** for the positive future of ASM sector
- Institution of regulations and milestones for ASM development practices
- Institution of regulations for continued education for ASM practitioners during the lifetime of their projects
- Institution of incentives for improved technology practices
- Institution of incentives for environmental compliance practices

ENVIRONMENTAL PROTECTION IN ASM

- Mineral production activities are environmentally unfriendly
- This is markedly noticeable in ASM activities and caused by
 - lack of knowledge in environmental hazards resulting from mining activities and
 - neglect of environmental hazards caused by mineral extraction in favor of profits arising from sales of mineral products.

ENVIRONMENTAL PROTECTION IN ASM

- Dissemination of knowledge on environmental aspects of mining is needed in order to arrest the situation
- Regulations must be instituted for ASM practitioners for protection of the environment during the lifetime of their projects

Mine shafts along a quartz reef





Note the exposed quartz reef

Timbering of a mine shaft



Manual winding shaft for haulage of ore from pits



Ore upgrading area with ponds to recover process water



Applied ore processing procedure

Crushing and grinding to liberate locked gold particles

Crushing

Ore grinding.mpg

Pre-concentration of milled ore by sluicing

Sluicing

Sluicing 2.mpg

Extraction of gold through amalgamation

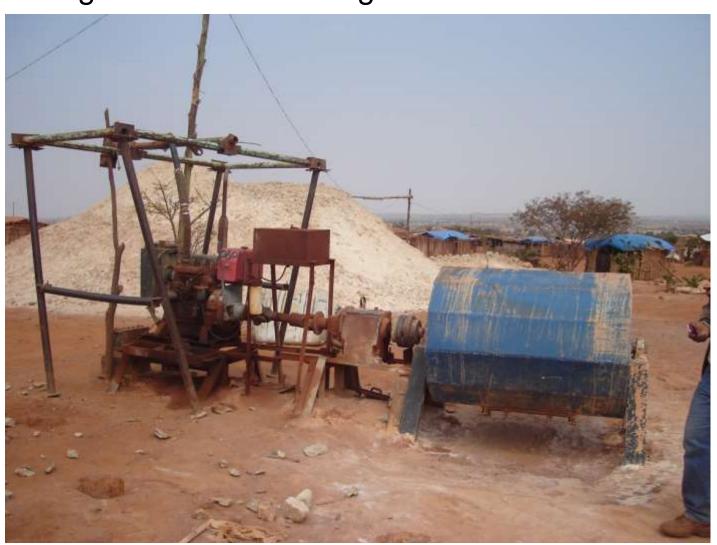
Amalgamation

 Recovery of amalgamated gold by squeezing amalgam squeezing.mpg

Burning the gold amalgam to obtain raw gold

amalgam burning.mpg

Grinding of ore in diesel engine driven intermittent mills



Pre-concentration of ore through sluicing



burning of the amalgam



Raw gold obtained after burning of the amalgam – ready for sale



CONCLUDING REMARKS

"KNOWLEDGE IS THE DRIVER OF DEVELOPMENT"

A knowledgeable human resources is a potentially powerful and productive development resource

Therefore strengthen and implement capacity building programs aggressively