

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT FOR ASM & LSM

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PRESENTATION OUTLINE

- Environmental Assessment and Management in ASM & LSM
- The Challenge in ASM
- An integrated approach – Strategic Environmental Impact Assessment (SEIA) by Governments and Environmental Management (EM) by Miners.
- Case Studies
- Ghana - Current Framework and SEIA and EM Approaches for the Future
- Guyana - Current Framework and approaches to managing ASM

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

Environmental Impact Assessment

- Assessment of the impacts of a proposed mining development on the physical and socioeconomic environment.
- Supports planning, regulatory decision making, and development of environmental management plans.

Environmental Management

- Managing the impacts of mining activity on the environment.
- An outcome of EIA.

EIA COMPARISON BETWEEN ASM & LSM

| Issue | ASM | LSM |
|-------------------------------------|--|--|
| Ore deposit location | Placer or near surface | Depth and complexity limited only by technical and economic feasibility |
| Ore extraction | Gravity separation or low level chemical processing | Able to exploit complex ores |
| EIA regulations | Typically exempt | Typically trigger EIA requirement |
| Who is responsible and pays for EIA | Miner or government agencies | Mining proponent, private sector |
| Complexity of decision making | Simple, in general a few well known and easily managed effects. | Complex, effects determined by type and scale of operation |
| How are effects managed | Not managed in informal ASM, variably managed through mining licenses in formal ASM zones. | Project specific management plan enforced through Environmental Certificate and licensing. |

THE CHALLENGE IN ASM

EIA Requirements

- Same as LSM – unrealistic
- Fall below production threshold
- No requirement

Resources and Capacity

- Often limited and insufficient to complete EIA (both by government and miners)

Formalization

- Lack of, and resistance to formalization limits ability for environmental management



A SOLUTION

Governments' Role

- Strategic Environmental Impact Assessment (SEIA) of Designated ASM Zones

Miners' Role

- Environmental management (EM) of the effects of individual ASM operations

STRATEGIC ENVIRONMENTAL IMPACT ASSESSMENT – GOVERNMENTS' ROLE

Strategic Environmental Impact Assessment of Designated ASM Zone

- Proactive, regional and supports sustainable development of ASM
- Connected with regional planning and definition of go and no-go zones
- Combined and cumulative assessment of mines and process plant
- Landscape and ecosystem approach – linked to geological zones
- Scalable to reflect availability of capacity and resources
- Can be a 'desk-top' assessment based on relatively well-know environmental impacts of ASM where capacity is limited

ENVIRONMENTAL MANAGEMENT – MINERS' ROLE

Environmental Management of ASM Impacts by Miners

- Miners responsible for environmental management not EIA
- Linked to formalization. Cooperatives should be encouraged.
- Supported by user-friendly forms to help with the preparation of environmental management plans by miners
- Management requirements can be scaled to reflect local circumstances and capacity – can range from as little as setting aside soil for future reclamation to the full design of tailings storage facilities

REGULATING TAILINGS DISPOSAL IN SOUTHERN ECUADOR

Central Tailings Storage Facility

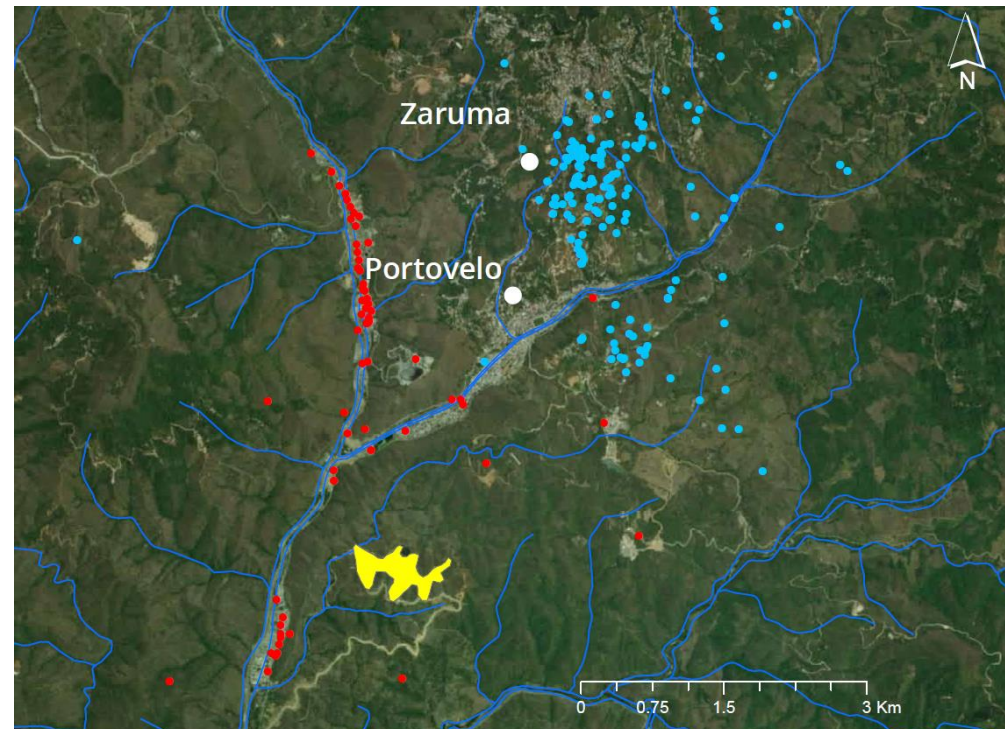
- 90 gold processing plants
- Hundreds of mines
- Significant disposal of mercury and cyanide-bearing tailings in trans-border river

SEIA of processing plants by national and provincial governments

- Recommendation for central tailings storage facility – El Tablón – built by government

Environmental Management

- As of 2015 all process plant operators without an approved storage facility must use El Tablón



Legend:

- Processing Plants
- Mines
- El Tablón Storage Facility
- ~ Rivers

YUKON'S PLACE MINING REGIME – ASM IN CANADA

Watershed Approach to SEIA

- Supports sustainable mining industry and healthy fish habitat
- Water quality objectives and sediment discharge standards for 19 watersheds based on biological health and fish habitat
- Management of cumulative effects
- Integrates science and local and indigenous knowledge

Clear Environmental Management Rules

- 'Single window' approach to licensing including forms and guidebooks for miners to follow
- Clear up-front rules for placer mining activity



Partially reclaimed placer mine, Yukon. Tailing piles have been flattened, recontoured and top-coated with organic-rich sediments for reclamation

BENEFITS OF A COMBINED APPROACH TO SEIA AND EM

- Achievable and scalable to reflect availability of resources and capacity
- Integrated assessment and management of the cumulative effect of many ASM mines in the same region
- Linked to regional planning and defines areas where mining is a 'no-go'
- Allows for combined assessment of mines and process plants
- Implements lifecycle planning and designing for closure from the start

LAST WORD

Training is a key to the success



THANK YOU

FOR MORE INFORMATION: VISIT CIRDI.CA

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