• Overview of Artisanal and Small-Scale Mining in Ghana
• Sustainability Conception in the ASM sector
• Environmental Impacts
• Health Impacts
• Solutions to these challenges in Ghana
• Conclusion
• Way Forward

SCOPE OF PRESENTATION
OVERVIEW OF ASM SECTOR IN GHANA

• Artisanal and small-scale mining dates back from 15th century and it is globally regarded as an ancient human economic activity (Crawford et al., 2015)

• Artisanal and small-scale mining (ASM), is a collective term referring to low-tech, labor-intensive mineral processing and extraction (Hilson et al., 2006)
CHARACTERISTICS OF ASM SECTOR IN GHANA

LIVELIHOOD CHARACTERISTICS

• ASM is estimated to employ at least one million people directly and supports four to five million more in associated service industries and markets (UNECA, 2011).

• In Ghana, an estimates ranging between 60% and 80% of artisanal and small-scale miners operate informally, without the security of a license (Mcquilken & Hilson, 2016).

• It is a predominately rural livelihood activity that often interlocks with and invigorates agricultural activities in virtuous seasonal cycles.

ECONOMIC CHARACTERISTICS

• In 2014, small-scale mining accounted for 34.4% of the total gold produced in Ghana, compared with 2.2 per cent in 1989 (MinCom, 2015b; ICMM, 2015).

• Gold production from the ASM sector has increased nearly tenfold since 1989, from 17,234 ounces to almost 1,500,000 ounces in 2014 (Hilson, 2001; MinCom, 2015b).
ECONOMIC IMPACT OF ASM CLEAN-UP

Anti-galamsey taskforce action on ASM decreased gold production

Contribution of ASM to Ghana gold production is about 40%
TYPES OF ASM ACTIVITIES

Hard Rock Operations
Alluvial Operations
Artisanal and Small-Scale Mining Process
Flow chart: Gold Extraction Using Mercury-Amalgamation Process
With regards to the Africa SDG Index and Dashboard Report, Ghana is faring poorly in most of the SDGs with only an appreciable movement in SDG 13 **Climate Action** (UNSDSN, 2016).
SUSTAINABILITY CONCEPTION IN ASM SECTOR

**ASM**
- Dialogue
- Partnership
- Inclusivity
- Policy commitment
- Leadership
- Education
- Local base

**People-centred Model**

**Economic Prosperity**
- Inclusive and cost-effective business model
- Productivity
- Technical capacity
- Affordable inputs (technology, energy etc.)
- Employment multiplier
- Diversification

**Environment, Health and Safety**
- Clean air and water
- Well-preserved landscape
- Healthy and safe practice
- Sustainable consumption and production

**Social Wellbeing**
- Strong institutions for ASM
- Conflict-free and peaceful co-existence
- Synergic coexistence with agriculture
- Gender equality
- Secured basic needs
- Household wellbeing
ENVIRONMENTAL AND HEALTH IMPACTS OF ASM ACTIVITIES IN GHANA
ENVIRONMENTAL IMPACTS

Artisanal and small-scale gold mining

Groundwater
- Decreased reserves
- Water shortages
- Water contamination

Surface water
- Decreased reserves
- Water contamination
- Siltation

Land
- Erosion
- Flooding
- Deforestation

Forests
- Stressors to aquatic life, people, agriculture

Degraded Lands

Polluted Rivers
Occupational and Community Health Impacts Associated with ASM Activities
**SUMMARY OF IMPACTS DUE TO ASM ACTIVITIES**

<table>
<thead>
<tr>
<th>Category</th>
<th>Key subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental impact</strong></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>• Acidity and toxicity (acid mine drainage)</td>
</tr>
<tr>
<td></td>
<td>• Shortages and limited access</td>
</tr>
<tr>
<td></td>
<td>• Sedimentation</td>
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<tr>
<td>Land</td>
<td>• Biodiversity</td>
</tr>
<tr>
<td></td>
<td>• Waste</td>
</tr>
<tr>
<td></td>
<td>• Heavy metal levels spillage</td>
</tr>
<tr>
<td>Air</td>
<td>• Energy and CO₂ use and emissions of nitrogen oxide and sulfur oxide</td>
</tr>
<tr>
<td></td>
<td>• Mining or blasting dust</td>
</tr>
<tr>
<td></td>
<td>• Road dust</td>
</tr>
<tr>
<td><strong>Socio-economic</strong></td>
<td></td>
</tr>
<tr>
<td>Job creation¹</td>
<td>• Education and skills development</td>
</tr>
<tr>
<td></td>
<td>• Infrastructure and housing</td>
</tr>
<tr>
<td>Health and safety</td>
<td>• Number of deaths (at mine; on road)</td>
</tr>
<tr>
<td></td>
<td>• Number of injuries (at mine; on road)</td>
</tr>
<tr>
<td></td>
<td>• Illness (for example, respiratory, cancer, and HIV)</td>
</tr>
<tr>
<td>Quality of life</td>
<td>• Visual impact on landscape</td>
</tr>
<tr>
<td></td>
<td>• Vibration</td>
</tr>
<tr>
<td></td>
<td>• Noise</td>
</tr>
</tbody>
</table>

*Source: A.T. Kearney Analysis*
HIGHLY IMPACTING SDGS UNDER ENVIRONMENT AND HEALTH IN ASM SECTOR

Source: UNSDSN, 2016
In alignment to Sustainable Development goals, measures put in place so far in the country include:

**On Environment**

- Ban on ASM activities throughout the country for first six months and until now in a way of minimizing water and land pollution (Operation Vanguard, 2017)
- Ban on harvesting of rosewood timber by Ghana Government in a way of curbing pollution on the country’s coast and marine ecosystem by 2025 respectively
- Authorization and tasking of all local assemblies to merge solutions on climate issues in their medium-term development plans at the local level.
On Health

- Reinforcement of National Health Insurance Scheme,
- Strengthening healthcare system through construction of health infrastructures,
- Training of more doctors, employment of more nurses and midwives.
- Capacity building of health workers and training for community on sensitization of ASM
CONCLUSION

• ASM is a major contributor to the formal and informal economic sectors.

• Continuous growth of ASM implies that its associated environmental hazards and adverse health impacts will continue to be major problems

• This paper shows that ASM sector highly impact SDG 3(Good Health), SDG 6 (Clean water and Sanitation), SDG 12 (Responsible consumption and production), SDG 13 (Climate Action), SDG 14 (Life below water)  SDG 16 (Peace and Strong Justice) which create the enabling environment

• However, without maximum collaboration among all stakeholders in ASM sector and strict enforcement of laws and by-laws by the regulatory bodies, achieving the set goals as outlined in the context of SDGs 2030 agenda will be a challenge for Sustainable development at the local, national and global level.
ARTICULATED STEPS TO SUPPORTING SUSTAINABLE DEVELOPMENT IN THE MINING SECTOR

Step 1: Understanding sustainable development

Step 2: Creating organisational policies and management systems

Step 3: Achieving cooperation among those with similar interests

Step 4: Building capacity for effective actions at all levels

Source: MMSD Report, (Buxton, 2012)

Hilson, G. (2001). Putting theory into practice: How has the gold mining industry interpreted the concept of sustainable development? Mineral Resources Engineering, 10(04), 397-413. https://doi.org/10.1142/S0950609801000725


• Mincom (Minerals Commission) (2015b) Justification for Ghana’s participation in the IIED ASM Dialogue project. unpublished.


THANK YOU