Critical Metals from Small-Scale Mining for Development

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3rd International Critical Metals Meeting
1st May 2019
Outline

• ASM – development challenges and opportunities
• Overview of Pact
• Three case studies:
  • Global: Delve
  • National: Sustainable Development of Mining in Rwanda
  • Local: Trafigura, Mutoshi, DRC
Importance of ASM
What is Artisanal and Small-Scale Mining?

- 70+ countries globally
- At least 40 million people directly, over 150 million indirectly (multiplier effect)
- 30-40% women
- 10% of global mineral production, 90% of total global mining workforce
- Metals, construction inputs, coloured stones
- 50% of cobalt from DRC
- Cuts across all 17 Sustainable Development Goals
- 90% operators informal
- Crucial livelihood activity, offering significant socio-economic development potential
- Wide variety of operations
- Operating on a ‘spectrum of informality’ (McQuilken and Hilson, 2016)
- Low barriers to entry
- No universal definition
- ‘Low-tech labour intensive, mineral extraction and processing’ (Hilson and Pardie, 2006)

<table>
<thead>
<tr>
<th>Resource type</th>
<th>Artisanal Mining</th>
<th>Small-Scale Mining</th>
<th>Industrial “Large Scale” Mining (LSM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Appropriate for small, shallow resources that can be accessed manually. Where capital investment for industrial-scale mining could not be recouped.</td>
<td>Appropriate for resources where some degree of mechanization is cost-efficient.</td>
<td>Appropriate for large-deposits that are most effectively processed using industrial mining technology.</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Can be full-time, or seasonal, supplementary or occasional. Number of people may fluctuate dramatically with mineral prices.</td>
<td>Increased financing, professionalization. More likely to be legal with more formal contracts</td>
<td>Requires significant capital investment ($$$). Long start-up times. Employs fewer people. Usually legal and subject to standards.</td>
</tr>
</tbody>
</table>
How does Pact fit in?
‘An international development organization at work in nearly 40 countries, Pact is the promise of a better future for all those who are challenged by poverty and marginalization’

3 Technical Areas
- Health
- Livelihoods
- Natural Resources

Through 3 Approaches
- Capacity Development
- Governance
- Emerging Markets

With 3 Signature Programs
- WORTH – micro-finance
- Mines to Markets – formalizing ASM
- Energy for Prosperity – improving access to energy

https://www.pactworld.org/mines-markets
Washington DC Headquarters, present in over 40 countries, with 5,000 staff worldwide
Mines to Markets (M2M) Program

Currently: 20+ mining projects in 13 countries

Key focus areas
- Access to Markets
- Gender & Mining
- Governance
- Formalization
- Health and Safety
- Child Labor
- Environment

East Africa
- Ethiopia (gold, gems)
- Kenya (gold)
- Tanzania (gems)

Burundi (3T)
- DRC (3T, cobalt, copper)
- Rwanda (3T)
- Uganda (3T)

West Africa
- Nigeria (gold, gems)

Southern Africa:
- Madagascar (ilmenite)
- Zambia (development minerals)
- Zimbabwe (gold)

Latin America:
- Colombia (gold, coal)

Asia:
- Myanmar (gold)

Global:
- Delve Database

Currently: 20+ mining projects in 13 countries
M2M approach

- At its core, the M2M program works to make mining safer, formal, and more productive, and support miners in good business practices.

- Improve governance, strengthening local, regional and national institutions and their capacity for transparent and responsible management of their resources.

- Expertise
  - ASM specialty
  - Market access innovations
  - Bringing solutions to scale (beyond pilots)
  - Proactive gender-sensitive approaches

https://www.pactworld.org/mines-markets
Three Case Studies
Delve
A world in which artisanal and small-scale mining (ASM) is recognized as an important contributor to global development
World Bank and Pact partnership to develop:

A definitive online platform that includes shared indicators, data visualization, a gateway to all data sources, and a collective initiative to accurately monitor, evaluate, analyze and publish critical ASM information.
<table>
<thead>
<tr>
<th>Region</th>
<th>Number of People Working in ASM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>11,834,000</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>1,960,200</td>
</tr>
<tr>
<td>South Asia</td>
<td>12,868,000</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>4,773,000</td>
</tr>
<tr>
<td>Europe &amp; Central Asia</td>
<td>160,000</td>
</tr>
<tr>
<td>Middle East &amp; North Africa</td>
<td>1,124,000</td>
</tr>
</tbody>
</table>
Quantitative and qualitative data

Employment, production, revenue

Identify data gaps

Collaborative effort

Global Employment

Mongolia

Gold is the main commodity mined on an artisanal and small-scale, accounting for approximately 50% of annual national production and 75% of the sector’s workforce, followed by fluorspar and coal in almost equal shares. Smaller quantities of limestone, gemstones, and wolfram are also produced through ASM.

Read more in the State of the Sector 2019 Country Profile: Mongolia

Global Production Value of Gold

120,000

Number of People Working in ASM

Data extracted from 5 principle global studies spanning 1993 and 2017.


Resources

Search Resources

24 resources found

Baseline Assessment of Development Minerals in Uganda: Volume 2 Market Study and Value Chain Analysis
Publisher: ACP-EU Development Minerals Programme
Published Year: 2018

The ACP-EU Development Minerals Programme seeks to build the profile and improve the management of Development Minerals. Development Minerals are minerals and materials that are mined, processed, manufactured and used domestically in industries such as construction, manufacturing, infrastructure and agriculture. Through ca...

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Type
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Academia (7)
Researcher (7)
Contributor (6)
CSO (4)
Government (1)
Int'l Organization (1)

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Professor Kuntala Lahiri-Dutt
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Surrey Business School, University of Surrey

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Professor
Sustainable Minerals Institute, The University of Queensland

Dr. Jennifer Hinton
Mining Consultant
M2 Cobalt Corp.

Aline Nkundibiza
Founder and Chairperson
Rwanda Women In/And Mining Organization (WIAMO)
• Origins of 40-year data gap
• Data recycling
• ASM links to Sustainable Development Goals
• Country profiles
• Methodological challenges and lessons learned
• Best practices for data reporting
• Data gaps
• Contributions for 2020 report

https://beta.delvedatabase.org/
Sustainable Development of Mining in Rwanda

• DFID-funded technical assistance programme
• GBP 4.2 million
• 3-years April 2017 to March 2020
• Market systems development programme (M4P approach)
• Formalisation and professionalization of Rwanda’s mining sector
• Intended results to be delivered include:
  • A more professional, open and transparent mining sector;
  • A more efficient and economically viable mining sector, in line with environmental best-practice
  • Increased level of private investment in the sector;
  • Improved incomes of artisanal miners.

https://sdmr.co.rw/
@RwandaSDMR
Market Systems ‘Donut’

**CORE FUNCTION**
- Informing and communicating
- Setting and enforcing rules

**SUPPORTING FUNCTIONS**
- Informing and communicating
- Informal rules and norms
- Co-ordination
- Skills
- Mining related services
- Informal rules and norms
- Laws

**RULES**
- Informal rules and norms
- Laws

**MARKET PLAYERS**
- Demarcation
- Information
- Co-ordination
- Skills
- Mining related services
- Informal rules and norms
- Laws

**MARKET PLAYERS**
- Government of Rwanda
- its agencies and local government and district councils.
- Government regulators
- International Standards
- Infrastructure
- Informal rules and norms
- Formal and informal ASM activities
- Consumers and end users, exporters, traders

**Private sector**
- Mining companies, mineral traders, exporters, artisanal and small-scale miners
- Private sector
- Mining companies, processors, cooperatives, subcontractors
- Business Membership Organisations

**Minerals**
- Government
- International Standards
- Infrastructure
Five guiding principles of M4P

1. **Pro-poor** – A bottom-up approach designed from the outset to benefit the poor such as artisanal and small-scale miners.

2. **Facilitative** – The programme works to catalyse change and support existing market players such as mine equipment suppliers, financiers, and businesses to catalyse the resolution of market failures without becoming a market player itself.

3. **Sustainable** – Supporting change that allows market actors to continue beyond the life of the intervention, for example identifying the incentives for miners to pay for training and finding service providers and business models that can provide it at an accessible and low cost.

4. **Systemic** – Market-wide change that allows for network development with roles for both private and public-sector actors as opposed to just a few miners and other discrete players benefiting.

5. **Scalable** – Through replication, the ‘crowding in’ of other market actors that compete to provide services to miners, and support the wider network development.
SDMR interventions

- Mining Regime Review
- Mineral Value Chain Analysis
- Access to Finance
- Geological Information and Mining Cadastre System (GIMCS) – GTK
- Mining Service Aggregation Centres 1 & 2
- Gender and Social Inclusion
- Capacity Building

Development Phase of GIMCS Officially Launched

18th February 2019
Sustainable Development of Mining in Rwanda (SDMR)

Honorable Francis Gatare, CEO of the Rwanda Mining Board (RMB), officially launched a project with the Geological Survey of Finland (GTK) on Wednesday last week that will see Rwanda’s geo-data and mineral licensing process become more accessible, transparent and efficient.

GTK are revamping RMB’s existing systems to develop a new and combined Geological Information Management and Cadastre System (GIMCS). GTK will also conduct hands-on training with RMB to ensure the capacity exists within the agency to update and tailor their GIMC system well into the future.

The project was facilitated through Sustainable Development of Mining in Rwanda (SDMR) – a DFID-funded and Cardno implemented market systems programme to professionalise Rwanda’s mining sector – which led a competitive tender and negotiation process to contract GTK and bring their expertise onboard.

A key intervention of SDMR, to get to this point the past 12 months have seen programme experts and Projekt-Consult work alongside RMB and the Belgian Royal Museum of Central Africa to diligently collate and digitise Rwanda’s historical geological maps and geo-data spread across thousands of documents. Supported through a grant from Enabel (the Belgian Development Agency) the SDMR team also undertook in-depth fieldwork to collect new geo-data and fill some key gaps.
Trafigura, Mutoshi

- Jan 2018-ongoing
- Mutoshi Mine, Kolwezi, Lualaba Province, South East, DRC
- Trafigura, independent commodity trading house
- Trafigura offtake agreement with mine operator Chemaf for cobalt hydroxide
- Responsible sourcing
- Development of large, mechanized mine
- 10,000 ASM workers on concession
- Livelihoods, child labor, OECD DDG, OHS, human rights, vocational training
- Pact is coordinator & capacity development partner
- Supporting viable livelihoods
Progressive improvement in DRC

https://vimeo.com/293559693  (Location: Chemaf Mutoshi Concession, ex-Katanga, DRC)
Summary & Reflections

- ASM is an often overlooked but critical livelihood, and critical metals demand represent significant development opportunity.
- Data is needed to fill gaps in understanding and advocate for change in policies and make sourcing from ASM the norm.
- Social sciences and ‘hard’ sciences need to work together, and across multi-stakeholder groups.
- Increasing resource nationalism.
- Increasing due-diligence, traceability, and reporting requirements.
- Value-addition in host countries.
- Represent future markets (e.g. VW plant in Rwanda, June 2018).
Thank you

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M2M Instagram:
pact.rocks

Twitter:
James McQuilken @J_McQuilken
Delve @DelveASM
SDMR @RwandaSDMR
Global Battery Alliance
Global Battery Alliance

https://www.weforum.org/projects/global-battery-alliance

Pact leads the cobalt workstream within the Global Battery Alliance's work on responsible raw materials sourcing for battery making.

The focus areas are:

- Addressing the root causes of child labour in the cobalt supply chain in the DRC copperbelt
- Formalising ASM and improving working conditions in the sector while addressing the most pressing socio-economic challenges linked with the artisanal mining sector.
- Also work on the issues related with large-scale mining, most notably, transparency, environmental concerns and interaction with ASM.

Contact: Andres Zaragoza: Andres.Zaragoza@weforum.org
Key facts about ITSCI

- ITSCI is a not-for-profit industry program that operates at-cost
- Miners receive about 50% of the final, processed value of the metal (when comparing current LME tin prices with average prices paid to artisanal miners at the mine site).
- ITSCI is the only programme with 100% alignment to the OECD DDG
- No one is required to use ITSCI. Every site owner using it has made an active choice because it works for them. There are alternative systems emerging. We request that the same standards are used and implemented across all areas, and in line with the OECD DDG.

**Common questions:**
Why is Great Lakes Region subject to conflict mineral regimes?
- DFA 1502 requirements
- There are still allegations of mineral smuggling, potentially from conflict areas
- The number of incidents recorded that indicates that due diligence is still required

https://www.itsci.org/
Pact’s M2M team is connected to all major mining leadership initiatives & best practice bodies

Ethical Standards
- Initiative for Responsible Mining Assurance (IRMA)
- Fairtrade Gold Technical Advisory Group
- Field partnership with FairMined
- Diamond Development Initiative
- CRAFT Advisory Committee
  - Developing CRAFT for Cobalt, Gemstones, Gold

Global industry coordination bodies
- WEF Global Battery Alliance
- Public-Private Alliance (PPA) for conflict minerals governance committee
- Voluntary Principles for Security & Human Rights (Founding Member)
- Gemstone Knowledge Hub
- OECD’s Working Group to Reduce Children in Mines

Information Sharing
- Revamped website for ITSCI: www.itsci.org
- Delve ASM Data Sharing Initiative (with World Bank)
- Participation at almost every major mining and industry conference
- Regular meetings with US Dept of State, USDOL, World Bank, RMI/EICC
- Social media presence (Twitter, Instagram, Pact website)
- US Speakers Program (US Department of State)
- ASM DC Practitioners Network
- Academic coordination (Columbia, Georgetown, American, Exeter)
Artisanal miners extract over $190 Billion USD annually of valuable stone, metal ore, and precious gems.

<table>
<thead>
<tr>
<th>Category</th>
<th>Value (USD $ Millions)</th>
<th>ASM % Share of Global Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Minerals</td>
<td>$153,000</td>
<td>45% (10% - 75%)</td>
</tr>
<tr>
<td>Gold</td>
<td>$21,100</td>
<td>20% (12% - 25%)</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>$7,800</td>
<td>4%</td>
</tr>
<tr>
<td>Coal</td>
<td>$3,000</td>
<td>10%</td>
</tr>
<tr>
<td>Tin</td>
<td>$1,700</td>
<td>60%</td>
</tr>
<tr>
<td>Diamonds</td>
<td>$410</td>
<td>15%</td>
</tr>
<tr>
<td>Jade</td>
<td>$1,700</td>
<td>35%</td>
</tr>
<tr>
<td>Tantalum</td>
<td>$60</td>
<td>50%</td>
</tr>
<tr>
<td>Tungsten</td>
<td>$2,200</td>
<td>6%</td>
</tr>
</tbody>
</table>

BASE METALS
- Iron Ore $7,800
- Lead $200
- Zinc $190
- Copper $410
- Cobalt $1,200

PRECIOUS STONES
- Coloured Gems $1,500
- Jade $1,700

3TS
- Tungsten $40
- Tin $2,200