



Baseline  
Assessment  
and Value  
Chain  
Analysis of  
Development  
Minerals in  
Uganda

**Summary Report**

March, 2018

Programme Partners:



ACP-EU Development Minerals Programme.  
Implemented in Partnership with UNDP  
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Credit Olivia Lyster, 2017.

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**About the ACP-EU Development Minerals  
Programme:** The ACP-EU Development Minerals  
Programme is an initiative of African, Caribbean  
Pacific (ACP) Group of States, coordinated by  
the ACP Secretariat, financed by the European  
Commission and United Nations Development  
Programme (UNDP) and implemented by UNDP.  
This €13.1 million capacity building program aims  
to build the profile and improve the management  
of Development Minerals in Africa, the Caribbean  
and the Pacific. The sector includes the mining  
of industrial minerals, construction materials,  
dimension stones and semi-precious stones.

## Introduction

The ACP-EU Development Minerals Programme, is a pioneering three-year, multi-country initiative of the African, Caribbean and Pacific Group of States, funded by the European Union and United Nations Development Programme (UNDP), and implemented by UNDP. The 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<sup>1</sup>. Through capacity building of diverse stakeholders in government, private sector and civil society, the Programme aims to: (i) Enhance employment and incomes, including those of women; (ii) Improve the policy and regulatory environment; (iii) Minimize environmental impacts on communities; (iv) Address individual and community rights and preventing conflict; (v) Ensure decent working conditions and (vi) Facilitate South-South cooperation and cross-country learning.

In order to support these aims and, in particular, country-level efforts of the ACP-EU Development Minerals Programme in Uganda, Levin Sources was contracted to undertake a comprehensive "*Baseline Assessment and Value Chain Analysis of Development Minerals in Uganda*". The assessment is divided into two volumes:

**Volume 1:** ***Baseline Assessment of Development Minerals in Uganda.*** The first volume is comprised of four main components: (i) baseline profile of the sector; (ii) policy, legal and institutional framework; (iii) institutional operating context; and (iv) analysis of environmental, occupational and social impacts.

**Volume 2:** ***Baseline Assessment of Development Minerals in Uganda: Market Study and Value Chain Analysis.*** The second volume represents the fifth component of the Baseline Assessment. The report is divided into two main sections: (i) a market study providing an overarching picture of the current market and key factors affecting demand, future market trends and the investment climate; and (ii) value chain analyses of 4 focus minerals – clay, sand, stone aggregate and dimension stones - chosen from the 8 minerals covered in Volume 1.

With a particular emphasis on artisanal and small-scale (ASM) operators and related micro- and small-enterprises (MSEs), both volumes provide a comprehensive picture of the economic significance, scope and potential of the sector while fostering an understanding of the sector's technical, legal, social, occupational and environmental constraints and opportunities. Ultimately, the study aims to support evidence-based decision-making and enhanced performance of Development Minerals value chains as a means to increase the sector's contributions to inclusive development, sustainable wealth creation and fulfilment of Uganda's development goals.

## Approach and Methodology

Study objectives were fulfilled through collection, analysis and interpretation of primary and secondary data collected from Development Minerals value chain stakeholders from mine to final

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<sup>1</sup> Franks, DM, Pakoun, L and Ngonze, C. 2016. Development Minerals: Transforming a neglected sector in Africa, the Caribbean and the Pacific. United Nations Development Programme.

market. Primary data collection consisted of 42 site assessments in 22 districts, focus group discussions and interviews with 434 participants from Artisanal and Small-scale Mining (ASM) sites, 73 Points of Sale and 10 district governments as well as consultative meetings with central public and private sector stakeholders, including construction companies and medium-to-large scale enterprises. The estimates generated from the primary data allow for a representative picture of the largely undocumented Development Minerals value chains and key opportunities and constraints therein.

Although Uganda hosts multiple types of Development Minerals, eight were prioritized for the baseline study and four – clay, sand, stone aggregate and dimension stones – were selected in consultation with the Country Working Group (CWG)<sup>2</sup> for more comprehensive market study and value chain analysis.

**Figure 1. Minerals selected for the Baseline Study and Value Chain Analysis**



## Development Minerals Context

The Republic of Uganda, a land-locked country located in East Africa, is at a critical juncture in its economic transformation. Following nearly a decade of exceptional GDP growth (7% per annum) that ended in 2010, the economy has since slowed to 3.9% in Fiscal Year (FY) 2016/17<sup>3,4</sup>. The population of 34.6 million, 53% of whom are between 0-14 years<sup>5</sup>, is one of the fastest growing in

<sup>2</sup> The CWG is a multi-stakeholder group that provides technical oversight of implementation of the ACP-EU Development Minerals Programme in Uganda. Members include 21 representatives from the Ministry of Energy and Minerals Development, Uganda Chamber of Mines and Petroleum, Civil Society representatives, Ministry of Works and Transport, Ministry of Lands, Housing and Urban Development, an apex association of miners and the Uganda Local Government Association

<sup>3</sup> World Bank. "Uganda Overview." Accessed November 1, 2016. <http://www.worldbank.org/en/country/uganda/overview>. "GDP per Capita (Current US\$) | Data." Accessed November 1, 2016. <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=UG>.

<sup>4</sup> PwC (2017) "Uganda Economic Outlook 2017: Q3: July-September 2017", Accessed Nov. 1, 2017, [www.pwc.com/ug](http://www.pwc.com/ug).

<sup>5</sup> UBOS (2014): National Population and Housing Census 2014. Provisional Results. Uganda Bureau of Statistics, Republic of Uganda. Kampala (UG) <http://www.ubos.org/onlinefiles/uploads/ubos/NPHC/NPHC%202014%20PROVISIONAL%20RESULTS%20REPORT.pdf>.

the world. Urbanisation rates in Uganda are soaring, with a predicted urban population of 20 million by 2040, over a three-fold increase from 2013<sup>6</sup>. Furthermore, an estimated 700,000 Ugandans annually enter a job market with limited capacity to absorb new entrants<sup>7</sup>.



**Figure 2: Location of Uganda, which is bordered by Kenya, Tanzania, Rwanda, Democratic Republic of Congo and South Sudan (Source: F. Kombo)**

Against this backdrop, the Government of Uganda (GoU) has prioritized job creation and massive infrastructure improvements among the critical development priorities outlined within its Uganda Vision 2040. In a drive to stimulate economic growth, reduce business costs and support progress towards industrialization, the GoU aims to rehabilitate and construct 30,000km<sup>2</sup> of roads, key bridges, and to build 1.6 million housing units by 2020. The GoU additionally recognizes that micro, small and medium enterprises (MSMEs) constitute 90% of Uganda's private sector and contribute 20% of the GDP and the GoU has elaborated an MSME Policy that seeks to address current challenges facing these important economic actors. These aims are operationalized through the 2015–2020 National Development Plan (NDP II), which prioritizes strengthening Uganda's competitiveness for sustainable wealth creation, employment and inclusive growth.

Development Minerals are poised to substantially contribute to these aims. Public investments in civil works coupled with escalating demands for housing and other key products present important opportunities for Uganda's Development Minerals sector. At 6% growth per annum, the construction sector continues to be strong and, with it, a market for a broad range of "building minerals" including sand, clay, limestone, marble, kaolin and stone aggregate<sup>8,9</sup>. Agriculture, which provides a source of livelihood for 65% of Uganda's labour force<sup>10</sup> and constitutes 26% of the GDP<sup>11</sup>, are expected to increase calls for a range of agromineral inputs, such as phosphates, vermiculite and lime, as needed to spur agricultural production, to counter depleting soil fertility and to maintain food security. Other sectors such as the plastics, pharmaceuticals and oil well drilling require salt, kaolin and bentonite, respectively, providing a glimpse into the range of industrial applications of Development Minerals. In addition, the sector is also a huge contributor to employment, with artisanal and small-scale mining (ASM) alone having an estimated 390,000 strong workforce country-wide<sup>12</sup>. ASM is, however, largely informal

<sup>6</sup> World Bank (2015). Managing Rapid Urbanization Can Help Uganda Achieve Sustainable and Inclusive Growth. <http://www.worldbank.org/en/news/press-release/2015/03/03/managing-rapid-urbanization-can-help-uganda-achieve-sustainable-and-inclusive-growth>

<sup>7</sup> World Bank (2016) and UN Data and cited in: Barreto et al. (2017).

<sup>8</sup> Cathy Nyakecho, Directorate of Geological Survey and Mines, presentation to UNDP.

<sup>9</sup> Hinton, J. (2009) National Strategy for the Advancement of Artisanal and Small Scale Mining in Uganda, Report to Ministry of Energy and Mineral Development (MEMD), 144p.

<sup>10</sup> UBOS (2017). Uganda National Household Survey. Accessed 8th December 2017. [http://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/UNHS\\_VI\\_2017\\_Version\\_I\\_%2027th\\_September\\_2017.pdf](http://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/UNHS_VI_2017_Version_I_%2027th_September_2017.pdf)

<sup>11</sup> Deloitte (2106). Uganda Economic Outlook 2016, The Story Behind the Numbers, 15p. <https://www.google.co.uk/url?sa=t&source=web&rct=j&url=https://www2.deloitte.com/content/dam/Deloitte/ug/Documents/tax/Economic%2520Outlook%25202016%2520UG.pdf&ved=0ahUKEwiRms3t5InYAhXEAcAKHVQzArsQFggvMAI&usq=AOvVaw2dalw3MBYFmJwP6QwM-rsa>

<sup>12</sup> Source: Present study.

throughout the country and its development contributions, risks and opportunities have been, to a great extent, invisible.

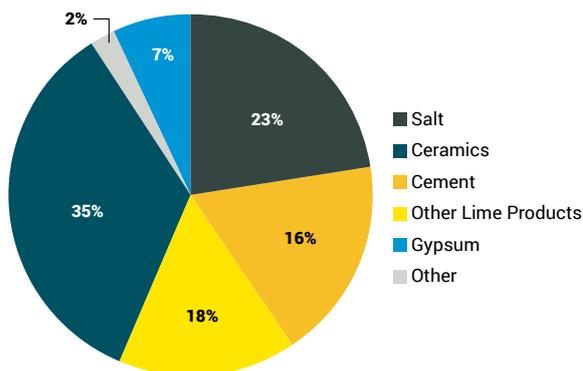
It is in this context, coupled with an acute lack of data on Development Minerals and the clear need to increase understanding of the sector's importance, and ASM in particular, that the Baseline Assessment and Value Chain Analysis was commissioned.

## Key Findings

Key findings are presented for each of the five component of the study.

### Component 1: Profile of the Development Minerals Sector

**Uganda boasts a diversity of Development Minerals.** These include occurrences of a broad range of: *construction minerals* such as sand, limestone, marble, kaolin, clay gypsum and multiple types of stone aggregate and dimension stone; *industrial minerals*, such as salt, bentonite, diatomite, zeolites, talc, mica and fluorspar; and *agro-minerals*, such as phosphates, vermiculite, lime and potassium-rich volcanic rocks. *Semi-precious gemstones*, such as garnets, fluorite, various types of quartz and beryl also occur in specific localities. Despite mapping of known occurrences, many commodities are not currently being exploited.



**Figure 4: Main Development Minerals contributing to the trade deficit (by % of total deficit attributed to Development Minerals) (Source: analysis of data from ITC Trademap, 2016)**

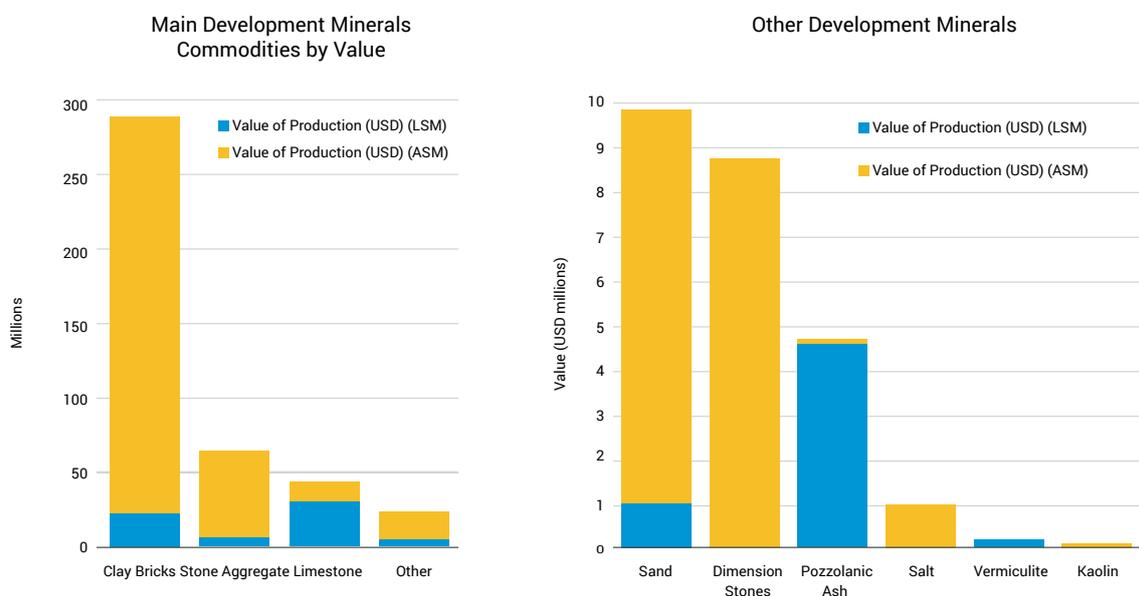


**Figure 3: A familiar scene in Fort Portal, one of Uganda's many rapidly growing towns. Locally sourced bricks are used for construction as workers use a small cement mixer in the distance. (Photo: J. Hinton, 2017)**

**Despite multiple potential downstream applications, most Development Minerals are transformed into a limited number of products and/or produced in insufficient quantities, with implications for the trade deficit.** Reliance on imports of many Development Minerals and their products constituted 3.2% of Uganda's trade deficit of -2.56 billion USD in 2016. The most significant contributors to this are ceramics (inclusive of sanitary ware, dishware and other products that can be derived from kaolin), salt (mainly in the form of iodized table salt), cement, other lime products and gypsum (Fig. 4).

**ASM is responsible for production of an estimated 83% of all Development Minerals (by value) in the country.** Estimated at 350 million USD in 2015, ASM production equates to 5.3 times the value of estimated medium and large-scale production for these minerals and 7.5 times that of their officially reported production. This is also 4.2 times the value of estimated (unofficial) artisanal gold production and over 7 times the value of *officially reported production of all mineral commodities*, including limestone, pozzolana, kaolin, vermiculite, aggregate, gold, tungsten, tantalum, tin and cobalt. Main ASM products by volume, value and employment are solid, burnt clay bricks followed by stone aggregate and limestone.

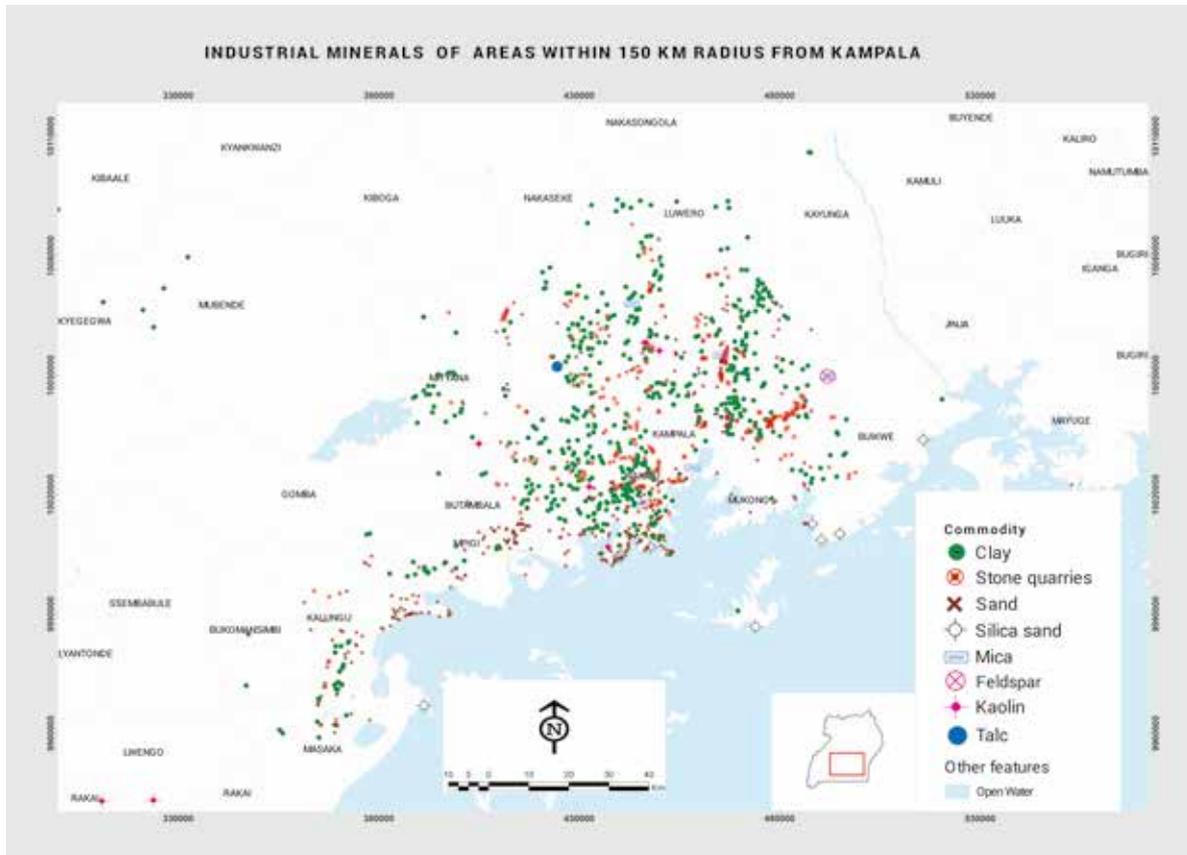
**Figure 5: Value of Development Minerals Commodities in 2015 (in millions of US dollars). Figure at left shows most valuable commodities and figure at right shows “other” lower value commodities.**  
Source: Present Study and DGSM Annual Reports (2015/16)



**ASM Development Minerals are a major source of rural and peri-urban employment.** Production of clay bricks, sand, stone aggregate, dimension stone, kaolin, salt and pozzolana is estimated to directly employ approximately 390,000 Ugandans, with women constituting 44% of the workforce. This marks a 116% increase since 2008 estimates. Clay, sand and stone aggregate, in particular, are mainly located in close proximity to urban centers and, in light of soaring urbanization rates, are expected to constitute a growing source of much needed employment. Within 150km of Kampala alone, 1238 active and abandoned sites for clay (576), sand (346) and stone aggregate (316) production have been identified (Fig. 6).

**Despite the high value of ASM production, the majority of the ASM workforce do not earn significant income from ASM.** Individual incomes average ca. \$300 per annum or less than half of the gross national income (GNI) per person. This is largely attributed to three factors: (i) sharp declines in production and employment in the rainy season (incomes are averaged across high-producing dry seasons and low-producing rainy seasons); (ii) production inefficiencies resulting in low quality, low priced products; and (iii) the way in which most ASM is organized and financed, resulting in almost half of production value (estimated at 48% on average) accruing to site owners, pit owners, supervisors and land owners. Among mineworkers, women earn on average approximately 33% less than men, mainly due to the gender division of labour at ASM sites. Two main factors provide deeper insight into these outcomes. First, research indicates that the GNI is skewed given growth in the middle and upper class and incomes of the majority of the working population are actually much lower than the GNI per capita. Second, given that an estimated 77% of Development Minerals miners receive supplementary income from alternative livelihood options, actual income per capita may be as high as \$418p/a and 385p/a for women and men miners who also rely on agriculture, respectively. Of those who solely rely on ASM (about 19% of miners), incomes are on average 3.2 times that of those derived from those who engage in smallholder farming alone. For miners who undertake mining and farming throughout the year alongside mining, incomes are estimated to be 4.1 and 3.1 times higher for women and men miners, respectively, than for smallholder farmers.

**Figure 6: Distribution of Development Minerals Sites in the Kampala Region (within 150km radius).**  
(Source: F. Kombo and G. Naulo, 2017)



**Strengthening human capital and ensuring inclusive development are key to unlocking the employment and wealth creation potential of the sector.** In order to effectively design and implement workable strategies for sector development, a fundamental understanding is needed of the private sector actors responsible for the bulk of Development Minerals production, the ASM workforce. In this respect:

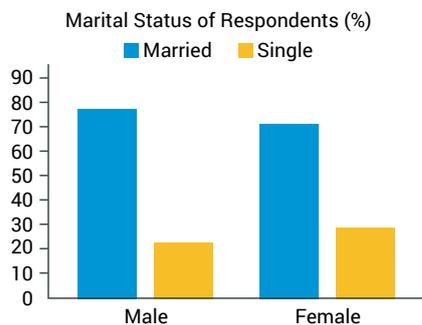
Although young, single and largely disenfranchised men constitute a major proportion of the ASM workforce, particularly in clay and sand mines, the majority of the workforce is, on average, married, between the ages of 18-30 years and originate within the area or districts where activities take place. Women mineworkers are slightly more likely to be un-married (single, separated, divorced, widows) than men.

- If clay brick production is excluded, women's employment share skyrockets to 69%, mainly due to their high participation rates in stone quarries, particularly in northern Uganda. Ensuring that women are not left behind through strategies to transform the sector will be crucial to advancing inclusive development and broad-based wealth creation from Development Minerals.

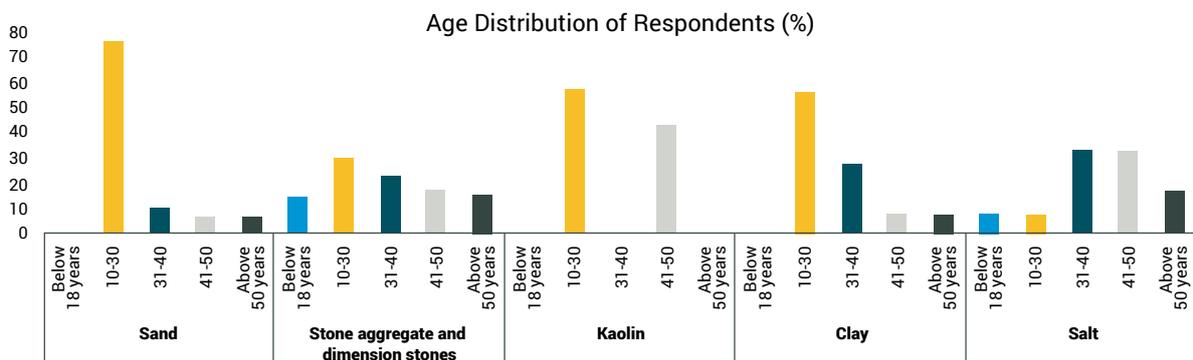


**Figure 7: A woman entrepreneur at her point-of-sale** (Photo: Levin Sources)

- Young children can be found around mines, mainly due to lack of childcare, as most miners seem to invest earnings sending their kids to school. Nevertheless, across Uganda, 2014 statistics indicate that whilst primary school enrolment stood at 8.7 million, secondary school enrolment stood at only 16% of that (1.4 million) in the same year. High rates of school dropout are a systemic crises in the country. Not surprisingly, child labour rates in mines, particularly for those over the age of 14 years, is a major concern from both a human rights perspective and in terms of the nation's development.
- Roughly 70% of ASM miners also rely on other livelihoods, including in agriculture and trade. This diversification enables investment of ASM revenues in, and therefore buttresses, other sectors while providing a means to supplement low incomes from ASM.
- With relatively low barriers to entry into ASM (requiring limited skills and financing), the sector continues to mainly operate at an artisanal level, employing basic and often environmentally damaging and occupationally risky technologies and methods. This both perpetuates low incomes in the sector and impedes miners from investing in improvements.



**Figure 8: ASM Development Minerals provides a major source of employment for 18-30 year old Ugandans, most of whom are married. (Source: Present study)**



**It is estimated that 98% of ASM production and 56% of MSM production of Development Minerals takes place outside of the current mining sector legal framework.** For Uganda to fully capitalize on the tremendous economic potential of Development Minerals, policy, legal and institutional actions must be taken in order to bring this neglected sector from obscurity into the mainstream economy. This transformation hinges on formalization of ASM. Although tax collection appears to be foremost in the minds of many regulators, the sector's greatest development potential lies in the substantial direct and spin-off benefits of the sector vis-a-vis stimulation of local economic

development and related employment benefits. Formalization provides the vehicle through which ASM can be organized and services and support can be extended as needed to improve performance, increase productivity and incomes and tackle critical issues therein. Findings from analysis of the policy, legal and institutional framework lend insight.

### Component 2: Policy, legal and institutional framework

**The current Mining Policy (2001), Act (2003) and Regulations (2004) explicitly recognizes ASM** for its contribution to the economy, livelihood significance and the unique environmental, occupational and social challenges posed by the sub-sector. In accordance with this, the Government of Uganda (GoU) explicitly commits to: *“Regularize and improve artisanal and small scale mining through light-handed application of regulations, provision of information on production and marketing, provision of extension services through miners associations and implementation of awareness campaigns targeting artisanal and small scale miners”* (Minerals Policy, 2001). Since promulgation of this legislation, minerals sector stakeholders have had an opportunity to evaluate the strengths and weaknesses of the prevailing framework, including as new challenges and opportunities have emerged with the sector’s evolution.

**The GoU has taken steps to address fundamental gaps with respect to Development Minerals.** Under the 1995 Constitution of Uganda, building minerals such as *“clay, murrum, sand and any stone commonly used for building or similar purposes”* were not defined as minerals and therefore constitutionally excluded from the jurisdiction of mining authorities. The GoU has recognized these shortcomings and taken steps to rectify this situation, including through constitutional amendments in 2006 that sought to distinguish extraction to meet personal needs from commercial extraction and beneficiation of these Development Minerals.

**Analysis of the prevailing policy and legislation lends insight into additional opportunities and constraints for the Development Minerals sector.** Specific issues relate to the following<sup>13</sup>:

- *Ugandan legislation does not distinguish between ‘artisanal’ and ‘small-scale’ mining.* Different classifications by scale would: (i) provide a basis for entry for artisanal producers into the formal sector; (ii) recognize the diversity of work and organizational arrangements that already exist (e.g. small enterprises, community-based organizations, small companies); and (iii) and provide an opportunity for operators to “step up” to the next category as their operations improve and financial and technical capacity is built.
- *Investment Constraints:* Licences designated for ASM (Location Licences) are constrained to operations that do not expend over roughly \$3000 on activities. This criteria is easily exceeded by purchase of a decent sized water pump, stone cutting machine or small jaw crusher. This provision can constrain those operations that seek to improve productivity and efficiency and invest in value addition or more environmentally and occupationally responsible practices.

<sup>13</sup> Similar conclusions have been drawn by MEMD, 2009; Hinton, 2012, and Barreto et al, 2017.

- *Applicable minerals.* Regulation 28(1) of the Mining Regulations (2004) provides for granting of a location licence<sup>14</sup> for *only* precious metals, gemstones, limestone, chalk, salt and brine. Despite this, DGSM has in some cases granted licences for other Development Minerals (e.g. pozzolanic ash, kaolin, dimension stones). This definition nevertheless excludes the significant commodities in terms of employment, economic contributions and associated environmental and occupational risks.
- *Permissible licence area and duration of licence.* The maximum permissible location licence area varies depending on commodity within seven (7) categories under the licence. Based on average areas impacted for different commodities and duration of ASM activities (often in excess of 20 years), current criteria are inappropriate, in particular for ASM production of salt, clay, sand, kaolin and limestone. This is a barrier to longer-term planning and investment by current operators.
- *Bureacracy and cost.* Current requirements are too complex and costly given the socio-economic status and technical capacities of most of the ASM workforce. Furthermore, the process is centralized in Entebbe, providing an additional impediment to many licence seekers. Given gender disparities in language, literacy and socio-economic status, women may experience greater challenges than men in this process, a situation likely to be compounded by their heavy domestic work burdens and, in some cases, lack of autonomy. This is exacerbated by the impractical requirement for ASM miners to obtain a prospecting licence prior to applying for a Location Licence.

#### **Additional concerns relate to the current institutional set-up governing the sector.**

- *Governing authorities have a clear policy mandate but a weak legal mandate with respect to ASM.* The Mining Policy (2001) commits the GoU to providing extension services and other forms of support to ASM stakeholders, including through organization, training and enabling market access, among other much-needed actions. However, the Mining Act (2003) and Regulations (2004) detail only licencing and enforcement functions, providing little direction as to how and by whom extension service commitments shall be fulfilled.
- *This has increased the likelihood that related workplans and budgets dedicated to ASM Development Minerals (and other actors in ASM) will largely go under-funded and unfulfilled.* This risk is heightened by the lack of a unit, office or department dedicated to ASM (as found in other ASM jurisdictions).
- *Roles and responsibilities for the governance of the Development Minerals ASM sector beyond the Directorate of the Geological Survey and Mines (DGSM) are even more unclear.* Although they sometimes play a key in taxation and “policing”, the management of Development Minerals is not embedded into local government budgets or District Development Plans (DDPs). Local governments have expressed confusion as to their specific roles in the sector, despite local officers from many line ministries being

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<sup>14</sup> Under the Mining Act and Regulations, a “location licence” is granted for small-scale prospecting and mining operations which do not involve expenditure in excess of five hundred currency points (UGX 10,000,000/=) or the use of specialized technology. Because of the low investment, most small-scale mining operations are best suited for location licenses.

reasonably well positioned (although lacking sectoral capacity) to play supporting roles related to organization, commercialization, health and safety and many others.

- *Risks of an imbalanced emphasis on taxation and policing are high and likely to increase as awareness of ASM Development Minerals is built.* Sustained progress towards realization of Development Minerals' full potential is unlikely to be achieved unless government genuinely commits to playing *both* supportive and enforcement roles in the sector. As demonstrated in a multitude of ASM jurisdictions around the World, "carrot-and-stick" approaches to policy and legislation are unlikely to work if only "sticks" are on offer. If no clear benefits are yielded from legality, i.e. in terms of sustained access to information, training, equipment or financing, then widespread formalization of ASM Development Minerals – and the development potential hosted therein - are likely to remain elusive.



**Figure 9: A growing body of evidence suggests that over-taxation of ASM often trickles down to mineworkers, reducing their incomes even further. This can put workers, such as these youth, at risk of greater poverty (J. Hinton)**

**Recognizing the changing context and need for updating of the current policy and legal framework, the Government of Uganda has embarked on the sector reforms.** This has, thus far, culminated in a draft National Mining and Minerals Policy of Uganda (NMMPU), now in its final phases of review. Following requisite approvals of the NMMPU, a new body of minerals sector law and regulations will be promulgated.

**This provides an unparalleled opportunity to support inclusive development and wealth creation from the Development Minerals sector.** The draft NMMPU marks a discernible shift through its recognition of both Development Minerals *and* ASM and is poised to address current gaps and adopt progressive measures as needed for sector development.

The draft NMMPU (and legislation which follows) could be strengthened by: formalizing institutional mandates and coordination arrangements; by emphasizing value chains in addition to supply chains; by recognizing risks associated with potentially marginalizing terms, such as "bona fide"; by ensuring that designation of ASM areas is applied only under appropriate circumstances and, importantly, by increasing accountability to deliver ASM extension services in workplans, budgets and monitoring and evaluation frameworks.

### **Component 3: Institutional and technical operating context**

**Critical opportunities and barriers in the institutional and technical operating context must be addressed to support improved performance in the Development Minerals sector.** These largely pertain to geodata, sector promotion, financing and other support services. While a multitude of initiatives, programs and other opportunities exist that could aid in the advancement of ASM Development Minerals, access *and* accessibility pose major challenges, particularly for women and the most vulnerable members of the ASM workforce.

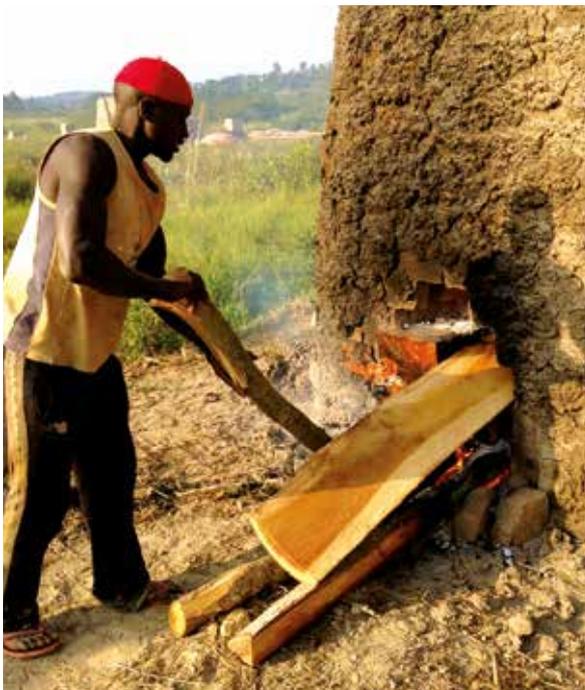
**An abundance of geodata exists but it is out of reach of most engaged in the sector.** The Directorate of the Geological Survey and Mines (DGSM) in particular houses a phenomenal data set. Potential uses include, but are not limited to, identification of mineral occurrences and deposits, characterization of (certain) deposits according to potential volume and value, identification of different hazards and risks and assessing suitability of different mineral deposits for different products, among others. These knowledge products are largely out of reach for most Development Minerals sector stakeholders in terms of distance (most data is centralized in Entebbe) and financial and technical capacity to utilize them.

**Countless sector promotion opportunities exist but most are unaware of or do not prioritize Development Minerals.** These include a

range of trade fairs, networking opportunities, business opportunities, training and related SME support services. Classification of Development Minerals as “low value” and lack of awareness by both economic actors in Development Minerals value chains and those leading those programs and initiatives are key factors. These can be overcome by concerted efforts to increase awareness of the sector’s significance and bridge gaps between such initiatives and ASM operators.



**Figure 10: A main cause of low incomes of clay brick producers is lack of capacity to finance wood used for kiln firing in the production of burnt bricks.**  
(Photos: J. Hinton, 2017)



**Uganda has a thriving microfinance industry and larger banks show interest in the sector but most ASM miners do not have the qualifications to be eligible for formal financial services.** Main issues relate to lack of ownership of land or other collateral, lack for formal production records and, in many cases, few hold bank accounts. This is compounded by exceptionally high interest rates and ASM miners' suspicion of formal banking systems. Importantly, an overemphasis on quantifying reserves rather than utilizing production and sales records and/or banking history creates an unrealistic impediment for ASM operators, particularly given the nature of most Development Minerals deposits and duration of mining.

**A range of support services, from private sector associations to workers rights advocacy groups and NGOs are positioned to support economic actors involved in ASM Development Minerals.** Despite this, most active associations exist to support larger private sector actors (e.g. the Uganda Chamber of Miners and Petroleum) or are focused on higher profile commodities (e.g. ASM gold). Labour organizations work largely outside of the minerals sector and, particularly in the case of ASM, very few workers are on contract or formally working, thus application of labour legislation and related workers rights frameworks has been extremely limited.

**Research and Development activities provide an important opportunity to deepen understanding and identify technical solutions to many challenges.** A number of sector-wide reviews provide insight into the distribution and nature of known deposits and considerable research has been conducted on specific regions (e.g. Karamoja), topics or commodities (e.g. wood consumption in clay brick production, clay mineralogy). Major research gaps exist, particularly on technical measures (i.e. ASM appropriate technologies) to improve production efficiency and add value to ASM products.

#### **Component 4: Analysis of environmental, occupational & social impacts**

**Among a number of environmental impacts, main concerns relate to land degradation, consumption of forest resources from clay brick and lime production and degradation of wetlands from sand and clay mining.** ASM Development Minerals extracted in Uganda are estimated to directly impact approximately 515 km<sup>2</sup>, or approximately 0.3% of the country's total land area, far below that affected by agriculture (41%). Wetland degradation from clay and sand mining is extensive, covering an estimated 221 km<sup>2</sup>. Clay brick production alone is estimated to consume 2.9 million tonnes of wood per annum, impacting an estimated 457 km<sup>2</sup> of forests annually. Although positive examples of management strategies exist in specific ASM sites (e.g. backfilling of abandoned pits, tree planting), these are few and far between.

**Occupational health and safety risks are severe.** Rocks falls and pit wall collapses are the main sources of serious injury and fatality with 34% of stone aggregate quarry sites assessed reporting at least one fatality. Based on the number of mineworkers at quarries assessed, this suggests that fatalities could be as high as 1.1 deaths per 1,000 stone quarry workers per annum.

Other serious risks are posed by dust exposure, flying rock fragments, heat stress, overexertion, exhaustion, alcohol abuse at some sites and poor sanitation and hygiene, among others. This situation compounded by average workdays amounting to 9-10 hours per day and lack of on-site first aid, personal protective equipment (PPE) and other much-needed management measures.

**Social impacts can be both positive and negative.** Main issues include conflicts between miners, between miners and traders often related to non- or under-payment and between miners and other land users. Child labour and the presence of children at mines are serious concerns although many miners cite work in ASM as providing them with the means to send their kids to school. The inequitable distribution of revenues, crude methods and inadequate knowledge and technical capacity to improve performance have resulted in very low individual incomes of mineworkers, less than half of the GNI per capita, when averaged across dry and rainy seasons. Gender inequalities are particularly pronounced, particularly with respect to the distribution of benefits (e.g. jobs, revenues) and impacts (e.g. impact of siltation on downstream water users).

Other human rights issues concern potentially increased risks of exploitation and other abuses by some authorities against unlicensed miners. The latter may become a bigger issue as public awareness of ASM Development Minerals grows and risk mitigation strategies should be instituted by the Government and ACP-EU Development Minerals Programme in Uganda.

**Socio-economic contributions are nevertheless significant.** ASM production of Development Minerals provides a crucial source of livelihoods for over 390,000 Ugandans, particularly for disenfranchised, low-skilled workers with limited alternatives. The majority of miners are also engaged and invest in other economic activities, thus if further supports economic diversification. Main economic contributions include the following:

- **GDP.** If ASM Development Minerals, which amount to an estimated \$350 million USD per annum, were integrated within official statistics, the GDP would increase by 1.4%.
- **VAT.** Based on average household consumption patterns in Uganda, miners contribute and estimated \$9.9 million USD per annum to VAT (equating to almost 2% of VAT collected in 2016).
- **Local Economic Development.** Miners incomes are estimated to annually contribute almost \$124 million USD spent into local economies, towards education, health care and other family needs and as investment in diversifying economic activities, for instance in agricultural and trade. This is a vital catalyst for local economic development.



**Figure 11: The dust exposure risks associated with loading product on to trucks is an often overlooked occupational risk. (Photos: Levin Sources, 2017)**

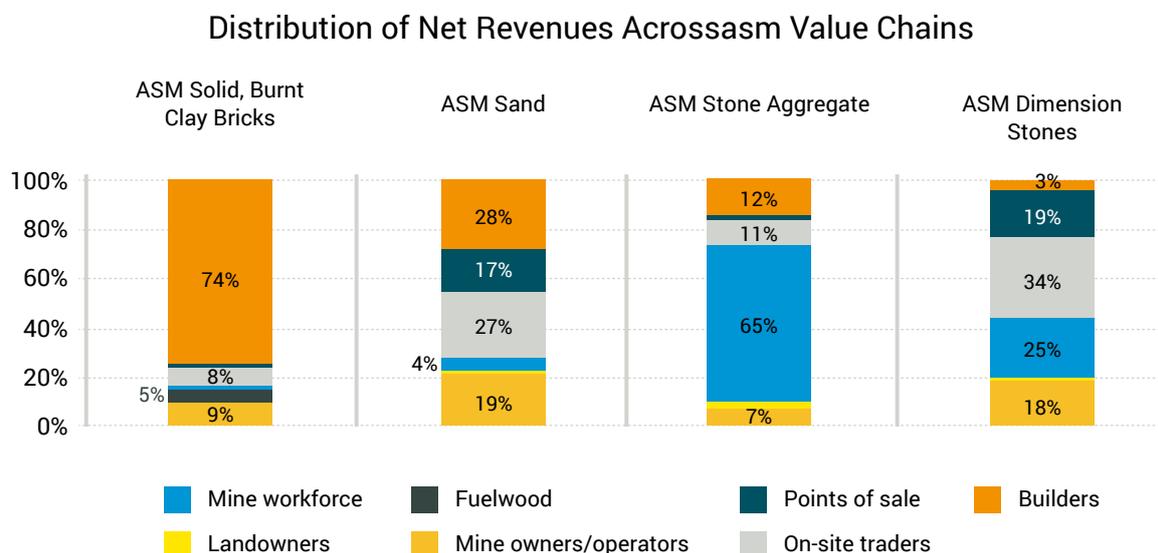
- **Multiplier Effects.** The average ASM miner is estimated to create 0.4 jobs in the downstream sector, and considering an average household size of 4.7, ASM Development Minerals directly and indirectly benefits almost 2.5 million Ugandans or about 7% of the population.

### Component 5: Market Study & Value Chain Analysis

**Development Minerals are, by no means, “Low Value Minerals”, they are in fact “High Value” with respect to development outcomes.** When both the value of primary production *and* downstream macro-economic contributions are considered, the significance of Development Minerals value chains is remarkable. Results of the value chain analysis of 4 focus ASM commodities – clay bricks, sand, stone aggregate and rough, uncut dimension stones – indicate the following:

- *When the full value chains are considered – from production of ASM clay bricks, sand, stone aggregate and rough dimension stones to their trade and use in construction – the total value equates to almost 6.5% of the GDP.* For these 4 focus minerals alone, gross margins earned across the value chains – from miners and traders to local SMEs and small construction enterprises (e.g. bricklayers, concrete finishers) – amount to an estimated 1.6 billion USD per annum. Economic multiplier effects of ASM production are substantial, ranging for the different commodities from \$3.2 to \$20.6 generated in the downstream for each \$1 generated in upstream production. Discounting downstream revenues from construction, ASM production and trade of these commodities would represent a 1.9% increase to the nation’s GDP.
- *Almost 6.8% of the population is estimated to rely on these ASM Development Minerals value chains.* Employment multipliers range between 0.1 to 5.7 jobs in the downstream created from 1 job in primary production, depending on the commodity. Total employment across the 4 value chains is estimated at just over 530,000 jobs. When considering an average household size (4.7), this amounts to almost 2.5 million Ugandans.
- *ASM Development Minerals are undoubtedly an important catalyst for economic growth and development.* Employment and economic multipliers associated with lateral inputs (e.g. wood, tools) and expenditures of incomes on other local businesses augment economic contributions even further. Incomes of the workforce alone (mineworkers, SME employees, bricklayer, stone masons and concrete finishers) from the 4 value chains alone are estimated to inject almost \$170 million USD annually into local economies and towards improved household wellbeing via education, health care and investment in other sectors.

**Figure 12: Distribution of revenues between economic actors for the 4 focus value chains. A significant proportion of the overall GDP contributions is attributed to the high percentage accruing to construction SMEs (“builders”) particularly in the case of ASM clay bricks (Source: Present Study)**



**The sector’s potential to redress the country’s substantial trade deficit provides additional insight into priorities for support.** Development Minerals constituted 3.2% of Uganda’s trade deficit in 2016. A number of opportunities for ASM producers and SMEs have been identified in order to improve product quality and diversity, thereby supporting import substitution and, to a lesser extent at least in the short-term, export market development. These include, but are not limited to, the potential for ASM production of higher quality ceramics and lime, artisanal glass and diversified salt products, through small scale sequential extraction.

**Future demand for Development Minerals commodities is strongly tied to the strength of the national economy and growth – and the purchasing power – of the population.** Although GDP growth continues to be strong and macro-economic stability is regarded as positive, recent declines in GDP per capita seem to have translated to reduced purchasing power of the population. The poorer segments of the economy, those most reliant on low-cost ASM Development Minerals for construction, appear to be hardest hit. Although this seems to be somewhat counterbalanced by high population growth rates overall and continued demand for low cost ASM products, should downward trends in GDP per capita continue, a slowdown in residential and non-residential construction is considered highly probable. Larger companies are also vulnerable to this risk but to a lesser degree than their ASM counterparts in the sector, in large part given their access to markets provided by the emerging middle class and government civil works contracts.

**Additional risks to ASM Development Minerals value chains are posed by rapid growth of the ASM workforce and climate change.** In real terms, a growing number of Ugandans are in need of employment that requires limited formal skills and low barriers to entry. Although demand is on the rise, if the ASM workforce increases excessively, the potential for over-production, reduced commodity prices and therefore incomes is high. This may be suggested by increases in the ASM workforce (+115%) and ASM production (+33%) of Development Minerals between 2008 and 2017, well in excess of the 17.5% increase in the national housing stock in the same period.

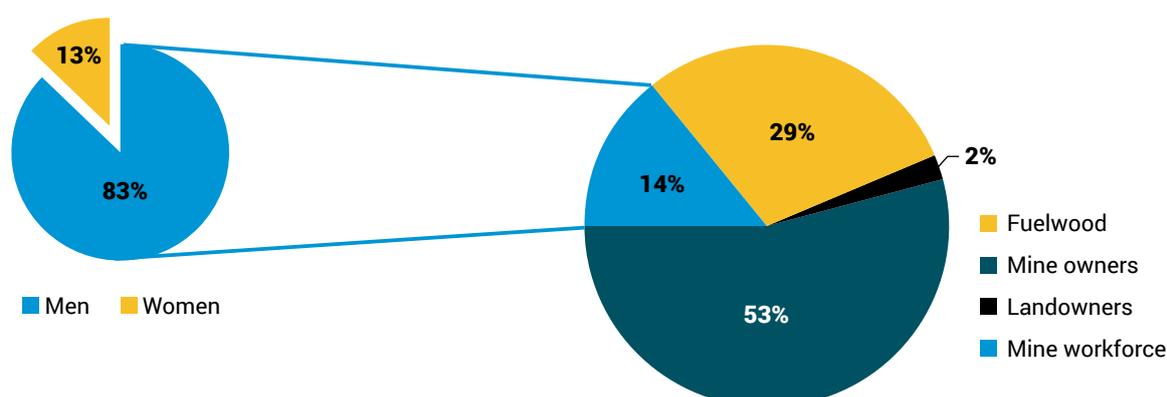
Climate change may increase such risks further, particularly if a growing number of farmers seek livelihood alternatives outside of agriculture and if annual productivity of Development Minerals miners reduces as a consequence of more intense rainy seasons and increased frequency and intensity of storm events.

**Many of the constraints and opportunities associated with ASM Development Minerals relate to current organizational structures on sites and across value chains.** ASM is often viewed to be best suited to operate in the form of a “cooperative” In the case of ASM production of clay bricks, sand, stone aggregate and dimension stones, the current organization of labour and distribution of revenues therein can be better likened to: (i) an SME or small company, or (ii) an umbrella organization that oversees and exerts some controls over a large number of individually or group owned micro- and small enterprises and individuals (in the case of large sites).

This is clearly evidenced by the distribution of revenues at mine sites and low incomes of the majority workforce found in analysis of the four target value chains (Fig. 12 and 13).

**Risks associated with formalization must be pre-emptively averted.** As found for other commodities where similar ASM labour arrangements have been observed (e.g. gold or tin, tantalum and tungsten), requirements to form cooperatives often entrench pre-existing power inequalities further by legitimizing the current structure. Specifically, cooperatives are often at risk of “elite capture” wherein those holding positions of influence (e.g. landowners, pit owners, site supervisors or financiers), through efforts to formalize, become cooperative leaders and members. The broader workforce, although they may be *de facto* members, do not necessarily exert any greater influence or yield any greater benefits than prior to formalization of ASM organizations. In the case of women’s participation, such scenarios may actually entrench gender inequalities further, particularly if cooperative leadership is primarily comprised of men who operationalize their own biases about acceptable roles for and acceptable benefits to women in the ASM workforce and organization. In the case of clay, for example, women’s participation in highest paid tasks, such as loading trucks, is often stigmatized. Consequently, in the case of ASM clay bricks, women constitute 20% of the ASM workforce but only earn 13% of the revenue share (Fig. 13).

**Figure 13: Average distribution of net revenues at ASM mine sites for solid, burnt clay bricks. The low incomes of miners are largely due to their reliance on financers or site owners who pay for wood used to fire kilns and, in some cases, advance day to day subsistence costs throughout the long production cycle. (Source: Present Study)**



**The approach to ASM organization formation and strengthening is therefore critical.** Where an operation is more suited to an association-type of structure, intensive efforts must be made to ensure institution of democratic processes, including for election of leaders, transparent decision-making and fair models for the distribution of benefits. Targeted efforts are typically needed to ensure voice, representation and *meaningful* participation of women and other vulnerable mineworkers. Where an ASM operation is better suited to an SME or small company model (which is the case in some scenarios), increased benefits of beneficial owners should be accompanied by increased obligations of those owners, including for environmental, occupational and labour conditions.

**Entry into new markets, such as that provided by government civil works investments or products demanded by the growing middle-to upper class, will depend on whether ASM operators and other SMEs understand and have adequate capacity to meet the needs of these markets and compete within them.** Access to financing and equipment alongside targeted training and mechanisms for sustained support will be critical. Key considerations include:

- *Access to Intermediate, Appropriate ASM Equipment.* Substantive devaluation of the Ugandan shilling relative to the US dollar (over 60% since 2010) means that imported equipment is likely to be prohibitively expensive for most artisanal producers. An emphasis is warranted on locally fabricated, low-cost intermediate and appropriate ASM technologies tailored to both production level and value added needs, including as a basis to increase product quality, quantity and diversity. Support to local fabricators would further increase spin-off benefits from the sector.
- *Access to Low-Cost and ASM-Appropriate Financing.* Bank interest rates are extremely high and few ASM operators and SMEs are aware of formal financing. Needs vary from small machines expected to cost between \$3000 to \$8000 USD to operating capital needed to finance certain aspects of production, among others, and a growing number of initiatives, programs and funding mechanisms are well suited to the needs of ASM and SME entities.
- For example, with respect to large capital inputs, the African Guarantee Fund For Small And Medium-Sized Enterprises can play a critical role in negotiating reduced lending rates by sharing financial risks with existing institutions. Savings and loans schemes implemented by telecom companies using mobile phone networks provide amounts and time frames that may, for instance, help brick producers finance wood purchases and sustain production until sales or provide a basis for stone quarry operators to hire their own lorries and thereby obtain the large margins on sales currently earned by on-site traders.



**Figure 14: Women crushing aggregate at a stone quarry in southwestern Uganda. (Photo: Levin Sources. 2017)**

- *Access to Civil Works Contracts.* Contracts to supply civil works projects, in particular, is extremely competitive and bureaucratically demanding and therefore typically the domain of large foreign and domestic entities. ASM operators may, however, gain a foothold particularly in local government tenders and via local content strategies such as that outlined for the Standard Gauge Railway. This will require mechanisms to help facilitate this process and fill capacity gaps, particularly with respect to fulfillment of national standards and specifications for quality and quantity. Bridging existing gaps calls for intensive strengthening of technical and business/management capacity of ASM operators as well as linkages with key government actor, including the National Bureau of Standards for verification purposes.
- *Access to existing support organizations, programs and projects.* A number of SME support initiatives, private sector organizations and market development programs and projects exist, as highlighted in Volume 1: Baseline Assessment. As capacity to fulfill demands of new and emerging markets is built, linkages between ASM operators and downstream SMEs must be progressively strengthened in order to support future growth and competitiveness.

*Continuation and expansion of successful capacity building models.* The ACP-EU Development Minerals Programme in Uganda provides an excellent model involving capacity building of ASM stakeholders and downstream SMEs throughout the country. Topics have ranged from enterprise skills and market analysis to investment promotion and value addition to environment and occupational health and safety, among others. As found throughout the value chain analysis of the 4 focus commodities, the advancement of the sector will hinge on specific, targeted training on critical technical topics from production level to value added opportunities and the needs of the sector shall likely extend beyond project timelines, calling for greater emphasis on institutionalization of support to the sector by government and other key actors.

**Fulfilment of the Sector's Potential will be determined by accessibility of these opportunities to women, youth and vulnerable groups.** Women comprise an estimated 44% of the ASM Development Minerals workforce yet earn incomes averaging 33% less than men. This disparity is exacerbated along the value chain, mainly due to low levels of participation in trading and construction. In the clay brick value chain, for example, women constitute roughly 17% of the value chain workforce (from jobs at the mine site through to jobs as bricklayers) but earn only an 8% share of the wage bill. Similarly low revenue shares accrue to sand mineworkers, the majority of which are disenfranchised young men, but who are estimated to earn only ca. 17% of on-site sand sales, with the balance of revenues accruing to pit, mine and land owners. In light of these disparities and given that those most vulnerable in ASM can be at further risk of losing jobs and incomes as the sector is formalized and professionalized, additional effort shall be needed in order to ensure that support for improvements to Development Minerals value chains and resulting benefits also reach out to and rectify existing inequalities experienced by many women and vulnerable groups.

**Frameworks and institutions governing ASM Development Minerals are positioned to fill critical gaps and substantially contribute to progress.** Models provided by the national Competition Policy and Local Content Policy for the Standard Gauge Railway hold promise but more targeted, ASM appropriate strategies can be integrated within the currently reviews of the minerals sector framework. Entry points exist in a range of areas, from licencing and mineral promotion to planned ASM-specific regulations on environmental and occupational safety and health to downstream value addition. Integration of local content and competition measures within ASM formalization strategies will be critical.

**Given impressive statistics touted on the value of ASM Development Minerals, a risk exists of imbalanced emphasis by central and local government on tax collection.** This can pose risks of increasing vulnerability of mainly poor mineworkers further, particularly if any taxes imposed (even further downstream the chain) are pushed upstream to mineworkers and if mechanisms for long-term support to the sector are not institutionalized. Some additional gaps identified in the current draft Policy also relate to the massive refugee population in Northern Uganda, many are whom are likely to enter into ASM Development Minerals production but may be characterized as “illegal” within planned reforms. These may marginalize this highly vulnerable population even further, impede opportunities for their development and create new human rights risks (e.g. of exploitation), which would contradict GoU’s heralded human rights based approach to refugee management.

## Conclusions

This study affirms that the Development Minerals sector is an important contributor to Uganda’s economy and is poised to become an even greater engine for job creation, robust economic growth, inclusive wealth creation and industrialization. The foundation for much of this is attributed to ASM, which accounts for an estimated 83% of all Development Minerals production in the country. From the 4 focus value chains assessed alone, GDP contributions could reach 6.5% and, in the absence of the downstream inputs from construction, the ASM value chains for clay bricks, sand, stone aggregate and rough dimension stones equates to a roughly 1.9% increase in GDP. Almost 7% of the population is estimated to be comprised of those working directly in these 4 value chains and their families, representing a critical opportunity to improve their educational, health and socio-economic status and catalyze development of local micro and small enterprises.

Given that Uganda boasts a wide range of construction, industrial and agrominerals, there is significant potential to augment the remarkable benefits of ASM Development Minerals even further. Although much of the sector’s trajectory depends on macroeconomic growth and stability, numerous value chain opportunities nevertheless lie in a number of key areas. Opportunities relate mainly to expanding and developing new domestic markets and support for import substitution, particularly in the short-term, as capacity to overcome complex requirements of export markets is progressively developed.

Among key entry points, ASM operators and downstream SMEs require support to improve the quality and diversity of clay brick products and venture into higher quality ceramics, examine the feasibility of artisanal glass production and transition from rough to cut (moving towards cut and polished) dimension stones. Similar benefits also reside in kaolin, which is currently under-produced yet poised to diversify its customer base, and salt, where appropriate, intermediate ASM technologies can be introduced to generate a range of products needed by industrial sectors. Improving access to new markets, such as the emerging middle class and that provided by local

government civil works projects, can feasibly be achieved if ASM operators and SMEs can be supported to fulfil demands for product diversity and specifications for quality and quantity.

However, the sector is not without its challenges. It poses significant environmental, social and occupational risks that require serious emphasis on improving mitigation and management. Although the high participation of women in the workforce (particularly for commodities such as stone aggregate and salt) highlights the importance of increasing women's access to paid employment, there is a clear need for targeted measures to rectify inequalities in the sector. The sector is also severely under-documented and largely informal, presenting major challenges for regulators and those positioned to deliver more appropriately-tailored services by training providers, financial institutions and other relevant service providers.

Transformation of ASM Development Minerals into a sector that fully realizes its development potential ultimately hinges on whether ASM operators and downstream SMEs can access the support they need through the availability, access and accessibility of financing, appropriate technologies, capacity building and market linkages. The ongoing policy and legal reform process provides a major opportunity for filling key gaps in the existing policy and regulatory framework and delivering the substantial opportunities that the sector holds. Indeed, the outcomes of these processes shall ultimately determine whether Development Minerals achieve their full potential as an engine for inclusive and gender-responsive development, wealth creation and Uganda's aim to become an upper middle-income country by 2032.

## Recommendations

Detailed recommendations are provided in Volume 1 and 2 of the *Baseline Assessment* reports. In summary:

**The ongoing policy, legal and institutional reform process has a critical role to play in transforming the sector to realise its full potential for economic and social development in Uganda.**

- *The establishment of a dedicated ASM unit or department in DGSM is a critical need. Given the size and economic importance of ASM (particular with respect to Development Minerals) and the prominent role the mining sector is expected to play in delivering Uganda's Vision 2040, it is essential that the necessary structures and resources are put in place within DGSM, to ensure that Uganda's ASM sector receives the guidance and support it needs and deserves.*
- *Development Minerals stakeholders from the private sector, central and local government and civil society should be better supported and encouraged to play a role in the current policy and legal reform process. Women and vulnerable ASM mineworkers in particular will need targeted assistance in order to sufficiently understand the opportunities and risks associated with proposed reforms and contribute to the debate in a meaningful way*
- *The reform process should provide a basis to develop critical mechanisms and strategies. These should include a formal coordination mechanism within central government (e.g. DGSM, MOLG, MGLSD, NEMA, National Bureau of Standards, etc) and between central and local government actors (e.g. formal communication mechanisms, clarification of mandates, roles and responsibilities). Such a forum should work to*

strike the right balance between taxation and policing of the sector on the one hand and providing relevant and demand-led extension services on the other.

- *The ACP-EU Development Minerals Programme and MEMD should consider piloting different devolved governance arrangements for the ASM Development Minerals sector.* This could be done initially in 1-2 districts in close coordination with DGSM and inputs from key actors in MGLSD, NEMA, URA and other relevant agencies. Critical issues to consider during such a pilot will include information sharing with respect to licencing and permitting activities, revenue collection and how revenues are used by GoU, and strengthening the capacity of officers representing key line ministries in order to support regulation and provide support services. Extension services to be prioritized should include setting up gender-responsive organizations, guidance on environmental reclamation techniques and safety mitigation measures, and market development opportunities for miners.
- *A multi-stakeholder, inter-agency forum in order to develop critical market linkages and increase sector competitiveness.* This should aim to create a more coherent approach to sector promotion and facilitate greater engagement by ASM Development Minerals sector stakeholders and other key actors involved in networking, trade fairs, business training organizations and MSME support activities, including key government agencies involved in mining, trade, investment and finance.

**Emphasize human capacity development and empowerment of gender-responsive ASM organizations as the foundation for transforming the sector.** Current training models and approaches by the ACP-EU Development Minerals Programme provide an excellent model for approaches that could be implemented by government and other actors (e.g. civil society organizations, donors, etc) and should be promoted more widely. These efforts could be strengthened by:

- *Ensuring partnership with and engagement of relevant government officials in design and delivery of training* in order to (a) build their capacity to implement future training programs without external assistance and (b) strengthen links with and understanding of the realities facing miners on the ground. This should include key central government personnel (e.g. DGSM Mining Engineers) and local government officers (e.g. CDOs, DEOs, DCOs).
- *Classroom-based training should be heavily supplemented with hands-on training and application of skills at site level.* Ideally, officials who are mandated to support ASM Development Minerals should be empowered to co-deliver hands-on coaching and training to address a range of technical, organizational, occupational and environmental issues. Experienced “senior” small scale miners or retrenched or retired personnel from medium- or large-scale operations can transfer knowledge more effectively and economically than consultants. Additional time and resources should be allocated to provide targeted training of women mineworkers.
- *A select group of miners should be sponsored to participate in short-term technical training in specific topics.* This could have a focus on greater value addition, e.g. hands-on dimension stone cutting training in Mwanza or paving stone road construction in Zambia, in order to elevate skills and create a cohort of master trainers to supplement training being provided by the Programme and DGSM.

- *All training curricula and materials should be as relevant and specific to the reality of the sector and its stakeholders as is possible.* For instance, business training should assess and build upon the current models of organization, financing and operations used in specific ASM sites and commodities. Training in environmental and occupational and safety and health risks should target the specific challenges identified in this baseline report as well as in consultation with miners. Additional guidance can be drawn from Uganda's Small Scale Mining Handbook.
- *Organizational formation and strengthening should include training in institution building and how to make organizations sufficiently responsive to gender and human-rights concerns.* Such programs should have a strong focus on building leadership and advocacy skills, in particular for women mineworkers. If, over time, new structures such as a national federation emerge then these will likely warrant additional support in order to ensure their sustainability and genuine representation of the interests of ASM stakeholders.

### **Implement strategic actions to increase resilience, competitiveness and growth of ASM Development Minerals value chains**

- *Focus technical interventions on critical, commodity-specific topics that will increase the quality and quantity of products and therefore profitability of ASM operations.* Targeted interventions in specific areas is warranted. In the case of clay bricks, an emphasis on optimizing brick production methods and reduced reliance on firewood is needed. Stone aggregate requires greater scrutiny to sizing while dimension stones training should emphasis source material selection and, as an easy "step up", introduction of cutting machines. Pilot technologies, such as artisanal glass production and diversification of ceramics (including in order to help redress the trade deficit) should be explored through collaborations with DGSM and technical institutes in academia. In all cases, closer coordination with NBS and bridging gaps between labs conducting standards verification is needed.
- *Develop mechanisms to increase sourcing from ASM suppliers.* This would include formalizing commitments to support local content and provide required institutional support (e.g. by local government) in order to prioritize and enable procurement from ASM operators in particular. The Local Content Strategy for the Standard Gauge Railway provides a good model but bridging gaps between the requirements of consumers (including in government) and producers will require firmer commitments (e.g. minimum percentages supplied by ASM producers, women-led or women-owned SMEs) in order to catalyze the sectors transformation and ensure that resulting development is truly inclusive. The mining framework local content law and strategies provide a key entry point.
- *Review fiscal mechanisms to increase competitiveness.* This may range from deductions for those sourcing from ASM suppliers (e.g. labelled as "ASM Uganda") to zero-rated tax on imports of ASM machines to lower royalty rates for those producing under ASM licences.
- *Pilot and evaluate a basket of strategies for low-cost financing.* In addition to the AGF, described above, a number of approaches could be piloted and introduced to ASM and SME operators. For example, savings and loans schemes using mobile phone

networks can be tested with brick producers struggling to sustain production or stone quarry operators wishing to hire lorries and seek a higher revenue share. Establishment and building capacity of “Mining Desks” at willing local banks and MFIs could be set-up in areas of highly concentrated activities.

- *Ensure training emphasizes formation and strengthening of more inclusive and gender-responsive organizations and the empowerment of women in particular.* The aims of the GoU and the ACP-EU Development Minerals Programme are first and foremost about empowerment. Ensuring that wealth creation and development is inclusive will ultimately depend on how and to whom different opportunities are extended. The Programme has already thoughtfully worked with this in mind and such a model should be integrated within approaches by Government through its sustained, long term support for advancement of ASM Development Minerals in the country.

**Establish a range of pilot project, such as “model mines” and “model value chains”, to provide a platform for inclusive, practical experimentation and sustained progress.** Well planned and executed pilot activities have the potential to generate the concrete evidence needed to demonstrate the sector’s full potential while enriching awareness raising efforts and building requisite capacity (including of government) for sustained sector support in the mid- to long-term. Options to consider include:

- *Piloting procurement models in 1-2 districts for using ASM suppliers for civil works projects.* Engagement of local government and direct support to selected mines would be needed to ensure the ASM suppliers can meet criteria for quality and quantity. Technical support might include measures to increase production, improve understanding of standards, introduce mechanisms for certification of materials, training in business skills, occupational safety and health, environmental management and reclamation techniques, and women’s economic empowerment. This should also include pilot activities to tackle child labour with a strong emphasis on women’s economic empowerment and be underpinned by multi-stakeholder (mineworkers, teachers, parents, authorities) commitments to action. A local mining committee, such as the one in Karamoja Region, could be established to support these pilot projects and potentially provide a model for expansion of such committees to other ASM areas.
- *Piloting a Vocational Training Certificate in ASM Development Minerals* which will require the development and testing of a curriculum tailored to sector- and commodity-specific characteristics. Affirmative action commitments (including an allocation of at least 30% of slots to women students) should be included.
- *Piloting collaborations between large- and small-scale operators.* This would require scoping to determine whether there is sufficient willingness to work together and where the capacity to coordinate such an initiative might exist. Entry points for collaboration may be found within companies’ CSR strategies. This could include, for example, the sharing of technological innovations (such as the use of coffee husks in clay brick production), LSM-ASM purchase agreements, or allowing smaller operators to benefit from technical expertise and/or equipment of larger firms (e.g. cement manufacturers providing sample analysis for ASM lime producers).

- *Co-develop and pilot alternative financing models.* This could include tapping into initiatives to offer loans via mobile money, campaigns to extend SACCOs to ASM Development Minerals sites, the establishment of dedicated “mining desks” within locally situated and interested banks, ideally in conjunction with a pilot of the AGF fund. An initial dialogue or forum with potentially interested commercial banks, the UIA SME Unit, microfinance institutions and key CSOs and NGOs delivering financial services to the poorest Ugandans could represent an important starting point.
- *Piloting intermediate, appropriate technologies, ideally in conjunction with financing efforts.* Uganda’s Small Scale Mining Handbook provides specific technical guidance and direction on this topic while more recent research on clay bricks, in particular, detail optimized approaches to brick production. This could involve closer collaboration between units within DGSM and relevant academic institutions to co-develop, build and field test new approaches to SME development. It could also help raise awareness among universities of the importance of the ASM Development Minerals sector to Uganda and how they might be able to promote the sector through their research and teaching.
- *Support the launch of a National Development Minerals Conference and/or “sharefair”,* potentially at UMA’s Lugogo Showground. This would provide a forum for showcasing best practice and achievements from the ACP-EU Development Minerals Programme, highlighting the importance of ASM and the Development Minerals in particular for Uganda, and strengthening networks and linkages between key stakeholders as a foundation for sustained advancement of the sector.

Finally, a **National ASM Development Minerals Strategy would provide a basis for cohesive strategic guidance for the transformation of the sector.** This would ideally provide a framework to operationalize the the multiple strategies outlined herein and should outline commodity specific strategies for Development Minerals value addition by ASM operators and downstream SMEs. Ideally, the strategy would reinforce the Buy Uganda Build Uganda competition policy while introducing measures within minerals sector reforms to support sector formalization and increase its overall competitiveness and growth.

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