



Citation for published version:

Hilson, G, Hilson, A & Maconachie, R 2018, 'Opportunity or Necessity? Conceptualizing Entrepreneurship at African Small-Scale Mines', *Technological Forecasting and Social Change*, vol. 131, pp. 286-302.
<https://doi.org/10.1016/j.techfore.2017.12.008>

DOI:

[10.1016/j.techfore.2017.12.008](https://doi.org/10.1016/j.techfore.2017.12.008)

Publication date:

2018

Document Version

Peer reviewed version

[Link to publication](#)

Publisher Rights

CC BY-NC-ND

University of Bath

Alternative formats

If you require this document in an alternative format, please contact:
openaccess@bath.ac.uk

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Opportunity or Necessity? Conceptualizing Entrepreneurship at African Small-Scale Mines

Gavin Hilson^{A*}, Abigail Hilson^B, Roy Maconachie^C

*^A Faculty of Business, Economics and Law, University of Surrey, Guildford
GU2 7XH, United Kingdom*

*^B School of Management, Royal Holloway, University of London, Egham, Surrey TW20 0EX,
United Kingdom*

^C Centre for Development Studies, University of Bath, Bath, BA2 7AY, United Kingdom

* Corresponding author g.m.hilson@surrey.ac.uk

Abstract

This article critically examines the policy environment in place for artisanal and small-scale mining (ASM) – low-tech, labour-intensive mineral extraction and processing – in sub-Saharan Africa, with a view to determining whether there is adequate ‘space’ for the sector’s operators to flourish as entrepreneurs. In recent years, there has been growing attention paid to ASM in the region, particularly as a vehicle for stimulating local economic development. The work being planned under the Africa Mining Vision (AMV), a comprehensive policy agenda adopted by African heads of state in February 2009, could have an enormous impact on this front. One of its core objectives is to pressure host governments into *Boosting Artisanal and Small-Scale Mining* by following a series of streamlined recommendations. It is concluded, however, that there is a disconnect between how entrepreneurship in ASM has been interpreted and projected by proponents of the AMV on the one hand, and the form it has mostly taken in practice on the other hand. This gulf must be rapidly bridged if ASM is to have a transformative impact, economically, in the region.

Keywords: Artisanal and small-scale mining (ASM); entrepreneurship; sub-Saharan Africa; Africa Mining Vision (AMV)

1. Introduction

Over the past two decades, artisanal and small-scale mining (ASM) – low-tech mineral extraction and processing – has experienced meteoric growth in sub-Saharan Africa. Aside from generating a significant share of mineral output, particularly precious metals and stones, ASM is today the region's most important rural nonfarm activity, providing a livelihood to millions of people directly, as well as supporting tens of millions more in the downstream and upstream industries it spawns (ILO, 1999; Hilson, 2016). A sizable percentage of these people have 'non-mining' backgrounds, a testament to the acute shortage of viable economic opportunities in the region at present and a phenomenon that has often earned ASM the label 'poverty-driven activity' (Barry, 1996; Hentschel et al., 2002).

Host governments have finally – though at times, reluctantly – recognized that ASM is, indeed, an indispensable economic activity in all corners of sub-Saharan Africa, particularly in localities where employment prospects are bleak. There is even growing optimism in policymaking and donor circles that if supported and promoted effectively, the sector could catalyze much-needed economic growth and development in the region. Putting ASM activities in sub-Saharan Africa, most of which are found in the informal economy, in a position to achieve this, however, promises to be an enormous challenge, although this has not stopped host governments from expressing a commitment to doing so. Most recently, they have pledged to intensify their efforts under the Africa Mining Vision (AMV), 'Africa's own response to tackling the paradox of great mineral wealth existing side by side with pervasive poverty', which 'was adopted by Heads of State at the February 2009 AU summit following the October 2008 meeting of African Ministers responsible for Mineral Resources Development'.¹ One of the AMV's primary goals is *Boosting Artisanal and Small-Scale Mining* or 'Harnessing the potential of ASM to improve rural livelihoods, to stimulate entrepreneurship in a socially responsible manner, to promote local and integrated national development as well as regional cooperation' (Africa Mining Vision, 2009, p. 1). But whilst the architects of the AMV acknowledge that ASM is poverty-driven and mostly proliferates in informal, unregulated 'spaces', and seem aware of the challenges faced by the sector's operators, the policy environment may not be conducive to making progress toward attaining this goal.

The purpose of this article is to critically examine the policy environment in place for ASM in sub-Saharan Africa with a view to determining whether there is sufficient 'space' for the sector's operators to flourish as entrepreneurs. After providing an overview of entrepreneurship in sub-Saharan Africa and a more nuanced analysis of the circumstances which have fuelled the rapid expansion of the region's ASM activities, the policy environment itself is examined. It is concluded that there is a marked disconnect between how entrepreneurship in ASM has been interpreted and projected by proponents of the AMV on the one hand, and the form it has mostly taken in practice on the other hand. This gulf must be bridged if ASM is to have a transformative impact in the region in the way that the architects of the AMV envision.

2. Entrepreneurship, Innovation and Growth in sub-Saharan Africa: Conceptual Underpinnings

It is instructive to first frame the case study of ASM in sub-Saharan Africa examined here by pulling together analysis of entrepreneurship in the region, most of which is scattered thinly across different bodies of literature. This paper contributes to the small body of analysis in the business and management literature (see e.g. Spring and McDade, 1998a; Beeka and Rimmington, 2011; Hayes and

¹ 'Africa Mining Vision', www.africaminingvision.org/about.html (Accessed 4 January 2017).

Robinson, 2014; Sheriff and Muffaffo, 2014; Amankwah-Amoah, 2016) that offers a critical perspective on the dynamics of entrepreneurship in sub-Saharan Africa: as correctly pointed out by Dana and Rattan (2017), the ‘field of international entrepreneurship—particularly in the African context—remains void of research about the processes around recognizing opportunities’ (p. 3). The paper focuses specifically on the ‘brand’ of entrepreneurship found in ASM, the region’s most important rural nonfarm income-earning activity. In doing so, it contributes to debates on innovation, entrepreneurship and informality in sub-Saharan Africa, elements of which have been examined in some depth in *Technological Forecasting and Social Change* in recent years (see e.g. Sahut, 2014; Turró et al., 2014; Mendi and Mudida, 2016; Jiao et al., 2016; Danquah and Amankwah-Amoah, 2017; Fu et al., 2017; Surie and Groen, 2017).

2.1 Entrepreneurship in sub-Saharan Africa: An Overview

Whilst the precise meaning of ‘entrepreneurship’ has been fiercely debated over the years, there is broad consensus in the business and management literature that it is a ‘process’ which ‘starts with the “discovery” of opportunities by alert individuals who consistently scan their environment’ (Kuada, 2015, p. 149). Most assessments (e.g. Juma, 2014; Sahut and Peris-Ortiz, 2014) lead back to Schumpeter (1934, 1942), whose pioneering work established, conceptually, ‘the “entrepreneur as innovator” as a key figure driving economic development’ (Wong et al., 2005, p. 336). Additional analysis has also surfaced, fueling debate over, *inter alia*, the origins of entrepreneurship, its impact on economic development and its various manifestations. But scholars seem to be in general agreement that entrepreneurs are individuals who ‘are bold enough to challenge deeply held assumptions and combine different, often seemingly unrelated, kinds of expertise, and knowledge’ (Kuada, 2015, p. 149) and are innovators, whose actions influence economic development.

These concepts and ideas have proved difficult to apply, wholesale, to sub-Saharan Africa, which could explain why, over the years, so few business and management journals have attempted to advance debates on entrepreneurship in the region. This, however, is unsurprising, as broader issues on business in sub-Saharan Africa have failed to attract much attention in this body of literature, a gap which Amankwah-Amoah’s (2016) comprehensive synthesis of ‘the historical trajectory of African management research and managerial thinking’ (p. 23) for the period 1960-2012 draws attention to. The author’s efforts to group ‘African management research and managerial thinking’ into phases reveal how disparate analysis of business and industry-related developments on the continent has been. This could be a reflection of researchable topics being more germane to, and having more appeal in, other disciplines, such as development studies and anthropology. It may also be due to many of the debates which are now at the heart of the business and management literature – around, *inter alia*, the regulation of large corporations, Corporate Social Responsibility (CSR), and acquisitions and mergers – having only recently taken on an African ‘flavour’, chiefly in response to the marked shift in patterns of industrial development that have occurred in an era of globalization.

Spring and McDade’s (1998a) pioneering and frequently-referenced text was one of the first works to highlight the unique attributes of entrepreneurship in sub-Saharan Africa. A small group of scholars have since elaborated on many of the points raised by the authors, weighing in on subjects such as the developmental challenges presented by the burgeoning contingent of unemployed but educated youth in sub-Saharan Africa who wish to start their own businesses (De Gobbi, 2014; Brixova et al., 2015), and the challenges faced by the region’s women with securing finance and other support for their entrepreneurial ventures (Amine and Staub, 2009; Langevang and Gough, 2012). Spring and McDade (1998b) also raised several important and unanswered questions about entrepreneurship in

sub-Saharan Africa, each providing valuable guidance in what *hitherto* appeared to be a directionless area of investigation and which surprisingly had very little appeal to scholars in the field of business and management. Recognizing how 'much of the earlier literature on entrepreneurship has its roots in Europe', the authors asked, presumably in an attempt to provide some direction to and inspire fellow scholars, whether 'these concepts and theories [are] universally applicable?'

More critical to the study of ASM in sub-Saharan Africa examined in this paper, the authors also asked: 'Does African entrepreneurship follow the same or different paths from those of entrepreneurial activities in other parts of the world?' Whilst there is no straightforward answer to this question, what is very clear is that in sub-Saharan Africa, context has shaped the character and influenced the trajectory of entrepreneurial activity perhaps more so than anywhere else in the world. It is a location which, as Spring and McDade (1998b) explain, in the process helping to answer their own question, has 'little capitalist penetration, a legacy of the colonial institutions that used Africa as a source of raw materials and new markets but not as a place to invest' (p. 8). Further, as George et al. (2016) more recently pointed out, reinforcing points that have been made for more than two decades, despite 'gradually transitioning toward more stable institutional frameworks', across the continent, there continues to be a 'persistence of institutional voids, understood as the absence of market-supporting institutions, specialized intermediaries, contract-enforcing mechanisms, and efficient transportation and communication networks' (p. 377).

Referring once again to the pertinent question posed by Spring and McDade (1998b), in sub-Saharan Africa, entrepreneurship *does not* follow the same paths as those of entrepreneurs in other parts of the world, which is why using Western perceptions and ideologies to judge the 'brand' of activity that has surfaced in the region is inappropriate. Sub-Saharan Africa is a location where, in the words of Sachs and Warner (1997), there is widespread institutional 'sloth', which has magnified the problems identified by George et al. (2016). This behaviour is a manifestation of an endemic resource curse (Gilberthorpe and Papyrakis, 2015), brought about by an overdependency on rents from mining and petroleum extraction (Table 1). Preoccupied with extracting taxes from companies engaged in these activities, the region's governments have generally overlooked the measures and funding needed to catalyze and ensure the continued viability of formal sector entrepreneurial activity and to facilitate the growth of local businesses.

Nowhere has this been more evident than with manufacturing, the contribution of which to the region's total added value declined from an average of 14 percent during the period 1990-1999 to 11 percent for the period 2000-2011 (African Economic Outlook, 2016). In most cases, this has been due to the expansion of the services sector: during the periods 2001-2004 and 2009-2012, of the 45 countries where this was the case, 30 experienced a contraction in manufacturing (UNCTAD, 2015). This growth is tied to the abovementioned dependence on the mining, and oil and gas sectors, which now account for 75.9 per cent of exports in sub-Saharan Africa. Altenburg and Melia (2014) elaborate on these points:

Growth has mainly been driven by the exploitation and export of natural resources. Between 2000 and 2011 petroleum and mineral resources accounted for more than two-thirds of exports...The revenues from commodity exports stimulated domestic consumption, creating spillover effects into wholesale and retail activities as well as real estate markets, but little progress has been made in terms of manufacturing and production-oriented services. Manufacturing is decreasing as a percentage of GDP and of exports. The region is basically earning revenues from commodity exports and spending them on manufactures, with the trade deficit increasing. This dependence on commodities also has made the region's economies more volatile. [p. 356]

This approach in part explains why, despite having ‘over 40 percent of the global natural resource, the continent ranks the poorest on virtually all economic and social indicators’ (Edoho, 2015, p. 4). It also explains why, across sub-Saharan Africa, people generally struggle to grow their own businesses found outside of the ‘space’ occupied by the industries servicing companies engaged in large-scale mining and oil and gas extraction. Scholars (Elkan, 1988; Kiggundu, 2002; Lindell, 2010) have hinted over the years that the ‘success’ of an entrepreneur in the region’s formal economy is not necessarily a function of the individual’s business acumen and ambition but is rather determined by his/her political connections, links to multinationals and foreign investors, and/or support from extended family. For most, however, the ability to innovate has been constrained by work environments characterized by weak structural transformation, gender inequality and an inordinate amount of red tape (African Economic Outlook, 2016) – the products of deeply-engrained institutional ‘sloth’.

A greater appreciation of institutional and political context, therefore, becomes critical when attempting to answer the question, ‘Does African entrepreneurship follow the same or different paths from those of entrepreneurial activities in other parts of the world?’, posed by Spring and McDale (1998b). As will be explained, the ASM sector examined here has taken root in an environment which, as George et al. (2016) summarize succinctly, contains ‘heterogeneous and volatile sociopolitical contexts characterized by fragile governance’, and where there are ‘Increasing investments from multinational firms and growing entrepreneurial activity within the informal economy’ (p. 377).

Table 1: Natural Resource dependency in sub-Saharan Africa

Country	Real GDP per capita	Commodity	Commodity Export Dependence (percent)
Angola	3210	Oil	99
Botswana	6865	Diamonds	97
Burkina Faso	503	Ores, metals, non-monetary gold and precious stones	44
Cameroon	988	Oil	58
Central African Republic	347	Ores, metals, non-monetary gold and precious stones	50
Chad	633	Oil	94
Congo Brazzaville	2115	Oil	92
DR Congo	172	Ores, metals, non-monetary gold and precious stones	83
Equatorial Guinea	17,070	Oil	99
Gabon	7521	Oil	82
Ghana	1201	Oil and ores, metals, non-monetary gold and precious stones	54
Guinea	308	Oil and ores, metals, non-monetary gold and precious stones	
Lesotho	964	Ores, metals, non-monetary gold and precious stones	85
Liberia	282	Fuels, and ores, metals, non-monetary gold and precious stones	52

Mali	480	Ores, metals, non-monetary gold and precious stones	51
Mauritania	830	Ores, metals, non-monetary gold and precious stones	64
Namibia	4445	Ores, metals, non-monetary gold and precious stones	66
Niger	293	Oil, and ores, metals, non-monetary gold and precious stones	81
Nigeria	1085	Oil and gas	95
Sierra Leone	553	Ores, metals, non-monetary gold and precious stones	94

Sources: UNCTAD, 2015; UNDP, 2015

2.2 Entrepreneurship in Informal ‘Spaces’

A distinguishing attribute of entrepreneurial activity in sub-Saharan Africa is that it is heavily concentrated in the informal economy. Although an expanded discussion on the impacts of the region’s dependency on rents from mining and/or oil and gas extraction is beyond the scope of this paper, it is important to stress that pursuit of this economic blueprint has failed to deliver lasting development. Officials at the IMF and World Bank, the architects of this blueprint, have conceded as much, confirming that large portions of sub-Saharan Africa continue to be mired in abject poverty. The former concluded, based on data drawn from 35 countries in sub-Saharan Africa, that whilst growth, in some instances, has been impressive, the implementation of a Poverty Reduction Strategy Paper (PRSP)² has neither reduced the poverty headcount nor raised the income share of the region’s poorest quintile (Sembene, 2015). Similarly, the latter reports that whilst the percentage of Africans who are poor dropped from 56 percent in 1990 to 43 percent in 2012, the number of poor people has increased, the most optimistic scenario being a rise from 280 million to 330 million individuals over the same period (Beegle et al., 2016). Gainful employment in the formal sector has proved elusive in sub-Saharan Africa: it is home to nearly 37 percent of the world’s extreme working poor, and over 70 percent of those who do work engage in what the ILO refers to as ‘vulnerable employment’, compared to the global average of 46.3 percent (ILO, 2016). Pervasive poverty and a lack of formal sector jobs has had significant implications for ASM (Banchirigah, 2006; ILO, 1999; Gamu et al., 2015).

The rhetoric suggests that donors are aware of the challenges aspiring entrepreneurs face in sub-Saharan Africa. Heading the list is the UN, where officials, reflecting on the situation in sub-Saharan Africa and the developing world more broadly, have argued that ‘Entrepreneurship and innovation are increasingly recognized as important drivers of economic growth, productivity and employment, and as a key aspect of economic dynamism’. This, they maintain, can be achieved through establishing ‘entrepreneurial ecosystems’ or a series of ‘mutually beneficial and self-sustaining relationships involving institutions, people and processes that work together with the goal of creating entrepreneurial ventures’ (UNCTAD, 2011, p. 3). But the ‘entrepreneurial ecosystems’ which develop around what UN officials refer to as ‘gazelles’ – the taxable, registered entities ‘which outperform other firms both in productivity and in creating employment’ (UN, 2014, p. 3) – are in short supply in sub-Saharan Africa.

² Poverty Reduction Strategy Papers (PRSPs) are documents required by the International Monetary Fund (IMF) and World Bank before a country can be considered for debt relief under the Heavily Indebted Poor Countries (HIPC) initiative. Recipient countries are required to draft these themselves.

This has had a significant impact on the region's working population, particularly the youth, whose struggles to secure gainful employment have, in the most extreme of cases, had irreversible social and economic consequences. Officials at the UN recognize this, conceding that 'most sub-Saharan African countries remain relatively slow to adopt innovations', and are therefore not particularly enticing platforms for prospective youth-led 'gazelles' because 'the small size of most local markets, the lack of resources allocated to research and development activities, and the high rates of out-migration of educated Africans are also important constraints to technological innovation and diffusion' (UN, 2008, p. 6). Because of these barriers, a large percentage of entrepreneurial activities in sub-Saharan Africa are concentrated in the informal economy (Gough and Langevang, 2017) or 'lie beyond or circumvent state regulation' (Lindell, 2010, p. 5). The region's ASM operations are no exception.

A shortage of jobs and hardship have increasingly driven inhabitants of sub-Saharan Africa to the informal economy, out of desperation, for income: today, it employs 70 percent of the region's population (UNECA, 2015). The activity found here is largely poverty-driven, exhibiting elements of what is often referred to as 'necessity entrepreneurship'. The business and management literature has articulated this quite clearly at a general level. It distinguishes 'necessity', a label given to those whose fates are dictated by poverty and unemployment from individuals who fall into the 'opportunistic' category, or the people who are consciously looking to take advantage of business opportunities (see Stoner and Fry, 1982; Bhave, 1994). In its purest form, necessity entrepreneurship is undertaken by people who are driven to work for survival. According to recent surveys undertaken by the IMF (IMF, 2017), one third of new entrepreneurs in sub-Saharan Africa fall into the 'necessity' category, using the informal sector as a 'safety net', more than any other region in the world. Driven by hardship, these individuals, who find themselves in 'resource-starved environments are forced to redefine the concept of resources', and are therefore forced to use their 'imagination, persistence, vision and discipline' in the informal economy 'to acquire the resources necessary to build a business' (Diomande, 1990, p. 191). The dynamics of informality in sub-Saharan Africa, however, are much more nuanced than the 'necessity versus opportunistic' dichotomy of entrepreneurship, a point which Williams (2014) raises. The author highlights how, in addition to the burgeoning group of necessity-driven operators found in the region's informal sector, there is a sizable group of people who *choose* to pursue entrepreneurial ventures in this 'space' that must be acknowledged. The abovementioned barriers to, and challenges with, registering a business or, as Khavul et al. (2009) succinctly puts it, 'the administrative hurdles to properly register and license a business', could explain why so many 'African entrepreneurs elect to operate in the informal economy' (p. 1222). As will be explained, this applies to the ASM activities found throughout sub-Saharan Africa.

As a point of departure, it is worthwhile revisiting, once again, Spring and McDade (1998b), who ask two additional questions which are very relevant to the case study of ASM examined in the sections that follow:

- 1) [In sub-Saharan Africa,] How have they [past economic patterns and entrepreneurial patterns] been replaced or modified, and what new ones have been added?
- 2) How far is it necessary to go beyond the standard Western models to construct paradigms more relevant to African conditions?

This leads back to the objective of this paper, which is to examine whether there is sufficient 'space' for ASM operations to flourish as entrepreneurial activities in the way AMV officials believe they can: as formal, law-abiding business enterprises. They are seeking to *boost artisanal and small-scale mining* in a region of the world where most countries have what Auriol (2013) refers to as a 'dual economy', specifically, 'a small modern industrialized sector [that] co-exists with a large informal sector with little capital and low marginal productivity of labor' (p. 2). The 'small industrialized sector'

in this case is, as noted earlier, mostly primary resource extraction, notably large-scale oil production and/or mining.

Central to this investigation is how the sweeping changes that took place in sub-Saharan Africa during what Amankwah-Amoah (2016) refers to as ‘Phase 2 (1980-1999): embryonic phase’ have influenced the growth and development of the region’s ASM activities. Phase 2 was marked by unprecedented intervention by the World Bank, which, along with the IMF, would oversee the implementation of a series of structural adjustment programs. As Lancaster (1997) explains, the Bank’s landmark document, *Accelerated Growth in Sub-Saharan Africa: An Agenda for Action* (World Bank, 1981), which argued that policy reform was critical to stabilizing and facilitating the economic recovery of sub-Saharan Africa, provided the rationale for adjustment lending in the region. In most instances, adjustment lending was continuous, spread across three ‘generations’, which emphasized, respectively, stabilization, adjustment and governance (Lopes, 1999). This explains why many countries in sub-Saharan Africa have implemented an inordinate number of programs, a list which includes Niger, 14; Zambia, 18; Madagascar, 17; Cote D’Ivoire, 26; Mali, 15; and Ghana, 26 (Easterley, 2005). By 1990, close to US\$1.4 billion, or approximately 34 percent, of Bank lending to Africa was in support of some form of structural adjustment lending (Lancaster, 1997).

The conditionalities attached to structural adjustment lending, and the sweeping changes it would usher in, were unprecedented: the privatization of parastatals; the devaluation of local currencies; the liberalization of trade; and deregulation and the consequent ‘roll back’ of the state (Crisp and Kelly, 1999; Hilson and Potter, 2005). In the business and management literature, coverage of the impacts of structural adjustment in sub-Saharan Africa has been mostly descriptive and underwhelming, confined to a small collection of reviews (e.g. Anisette, 2004; Sheriff and Muffatto, 2014). But the development studies literature provides a comprehensive breakdown of structural adjustment, including how the World Bank has used ‘programs, sectoral reform lending, and technical assistance projects to encourage African countries to deregulate, liberalize and privatize their extractive sectors in order to attract foreign direct investment (FDI) and repay their debts’ (Pegg, 2003, p. 3). As will be explained in the next section of the paper, the impact on ASM has been profound, transforming it into the region’s most important nonfarm activity. Recent analysis (e.g. Dreschler, 2001; Banchirigah, 2006) has helped to establish links between structural adjustment, the restructuring of industries and corresponding unemployment on the one hand, and the growth of ASM in sub-Saharan Africa on the other hand – links which scholars and policymakers failed to notice at the time.

3. Diagnosing Entrepreneurship at Artisanal and Small-Scale Mines in Sub-Saharan Africa: Initial Reflections

Given these circumstances, can ASM be a centrepiece for local economic development in the way in which the architects of the AMV believe? As noted at the outset, one of the core objectives of the AMV is *Boosting Artisanal and Small Scale Mining*. Recognizing that ‘ASM has become integral to the economies of many mining countries in the developing world’, particularly ‘in rural and remote areas, where alternative livelihoods are few’,³ its architects call for ‘ASM policy...to be formulated and implemented as part of a broad rural development strategy’. To achieve this, they explain, host governments should prioritize and undertake a series of comprehensive policies initiatives, each of which is outlined in Table 2.

³ ‘Boosting Artisanal and Small-Scale Mining’, www.africaminingvision.org/Boosting.html (Accessed 5 December 2016).

Table 2: Actions prescribed under the Africa Mining Vision to mainstream ASM in development policy

Action and Description
Regularizing informal ASM
Simplifying and decentralizing procedures for acquiring ASM rights
Providing a realistic implementation plan, including institutional capacity enhancement
Assisting miners to graduate from subsistence to sustainable businesses
Assuring a legal regime that gives ASM right holders enough viable land, adequate duration of rights and security of tenure
Providing accessible institutional, technical and financial support
Encouraging support for ASM from the more established private sector, including large-scale mining
Expanding exploration work that leads to the designation and allocation of areas for ASM
Ensuring regional and international cooperation to address the challenges of conflict minerals
Raising capacity locally to run tracking and certification schemes before enforcing bans on transporting noncompliant minerals
Enforcing international norms prohibiting child labour
Exploring and launching measures to redress discrimination against women, whether due to the law or operation in practice
Promoting sub-regional cooperation in technology development, research, construction of appropriate plant and machinery, technical standards, compilation of a database of local capacity and generation of financial resources

Source: UNECA, 2011

On the one hand, this is a positive and encouraging development, as it appears that proponents of the AMV believe that increasing the level of support for ASM could help to catalyze economic growth. This certainly bodes well for people who have turned to ASM because of hardship. The AMV website and accompanying documents are laced with references to ‘entrepreneurship’, ‘investment’ and ‘innovation’. Examples include statements such as ‘Many of the difficulties in boosting ASM revolve around the problem of raising the capital to finance larger scale operations’; ‘ASM is challenged technically’; ‘without capital to invest, suitable plant and equipment becomes prohibitively expensive’; ‘without access to investment capital, ASM cannot afford to get involved in this early stage’;⁴ and ‘A mining sector that harnesses the potential of artisanal and small-scale mining to stimulate local/national entrepreneurship, improve livelihoods and advance integrated rural social and economic development’ (UNECA, 2011, p. 4). The broad consensus seems to be that in sub-Saharan Africa, the conditions are conducive for wealth creation and innovation in the ASM sector.

These ideas resonate quite powerfully with donors and policymakers, who, for decades, have consistently portrayed those engaged in ASM as opportunistic – and occasionally, rogue – entrepreneurs. In what would become a seminal document commissioned by the World Bank, Noetstaller (1987) reflected on popular opinion of ASM in the mid-1980s, arguing that, ‘in contrast to large-scale industry, the small enterprise segment has consistently been identified as a fertile ground for the growth of indigenous entrepreneurship’, which ‘is particularly true for the artisanal operations of the [very small-scale mines] VSSM-segment’ (p. 6). These claims complemented the views and ideas expressed in a handful of scholarly pieces produced *hitherto* (e.g. Brower, 1979; Carman, 1985, 1987; Stewart, 1987). There seemed to be broad agreement at the time that ASM is populated by

⁴ ‘Boosting Artisanal and Small-Scale Mining’, www.africaminingvision.org/Boosting.html (Accessed 5 December 2016).

individuals who are looking to 'get rich quickly', a view which continued to be championed heavily in the 1990s.

The ideas contained in Noetstaller (1987) and the dialogue it spawned would heavily inform *A Strategy for African Mining* (World Bank, 1992), the blueprint for mining sector reform in sub-Saharan Africa. This document, which also failed to take stock of how structural adjustment was fuelling the growth of ASM in the region stated, rather inexplicably, that 'A state mining enterprise should compete on the same terms as a privately-owned company, foreign on the same terms as national, large companies under the same broad rules as small ones' (p. 22). Elaborating on the latter point, it stressed that 'new policy frameworks should eliminate distinctions between small and large-scale mining so as to encourage all potential interested parties' (p. 22). It was not until the World Bank-hosted *Roundtable on Artisanal Mining*, held in Washington DC in 1995, that the popular view of ASM would be remotely challenged. Here, delegates drew attention to ASM's much-overlooked livelihoods dimension, arguing that the sector's growth is largely 'poverty-driven' and that many engaged in its activities are trapped in a 'vicious cycle of poverty' (Barry, 1996). A rich and diverse body of literature has since emerged (e.g. Banchirigah, 2008; Hiron, 2011; Perks, 2013) which reinforces these points as well as draws attention to how, in sub-Saharan Africa in particular, ASM is now a rooted and integral segment of countless rural economies, helping to sustain agriculture, injecting wealth into subsistence communities, and providing employment to millions of people. But significantly, the 'new policy frameworks' which emerged at the time – by the end of 1995, 36 African countries had implemented rigid policy schemes and legislation with the aim of legalizing ASM and/or had established sector-specific administrative and technical institutions to facilitate this, or were in the process of doing so (Fisher, 2007) – were designed without taking into account these very important dynamics, and the sector's livelihoods 'dimension' more broadly.

On the other hand, despite recognizing these problems, there is a sense that champions of the AMV have vastly underestimated the challenge with implementing the steps proposed in Table 2. They do concur that ASM's growth in sub-Saharan Africa is, in large part, 'poverty-driven', as mentioned, and that the sector is 'beset with problems of sustainability' and plagued by a 'low capital and asset base' (AU, 2009). They even go as far as to argue that, in the past, lasting support for the sector failed to materialize because 'there was poor understanding of the nature of the problem of ASM and its finite and poverty-driven trait' (UNECA, 2011, p. 28). Yet, there seems to be a general underplaying of the unique context in which most ASM activities in sub-Saharan Africa surface and flourish: namely, informal or unregulated 'spaces'. The architects of the AMV appear cognizant of the hardships faced by those confined to working in these 'spaces', reporting, *inter alia*, that 'worse still, the informal, unregulated nature of much ASM makes it an easy victim of organised crime and paramilitary operations, especially in high value minerals like diamonds, gold and coltan' (AMV, 2009, p. 2). But at the same time, there seems to be very little appreciation of how difficult 'fixing' these problems promises to be. Whilst doing so may temper growing enthusiasm about 'upscaling' ASM, ignoring *why* these informal ASM 'spaces' have surfaced altogether could potentially spawn ineffective and/or inappropriate policy interventions aimed at regulating and supporting the sector.

Academics have offered very little guidance on this front. Some researchers have even suggested that analysis of ASM's organizational structures and development must move beyond investigations of why these 'spaces' have emerged. One of the more vocal critics is Verbrugge (2015), who seems to take issue with scholars and donors associating the sector's growth with poverty. The author claims that 'Arguably more problematic is that explanations which treat ASM as a poverty-driven subsistence sector often fail to account for its heterogeneous and segmented character', and that 'The injection of outside capital has led to a growing differentiation among ASM operations in terms of their level of

capitalization and professionalization, but also between a nascent group of ASM entrepreneurs and a poverty-driven workforce' (p. 1029). It has indisputably become fashionable to describe ASM as 'poverty-driven', a label which several organizations, from the World Bank through to the United Nations, have assigned to the sector in recent years (e.g. UNECA, 2003; World Bank, 2005). As Verbrugge (2016) correctly points out, 'ASM-expansion creates opportunities for a heterogeneous group of actors that are able to capitalize on the increased and more diverse demands of the mining community' (p. 109). In the case of sub-Saharan Africa, however, generally, it is typically *after* an initial mineral 'rush' period when an ASM site tends to attract the 'heterogeneous group of actors' the author speaks of. In fact, contrary to Verbrugge's (2015) claim that scholars' focus on poverty has detracted from the sector's dynamic make up, it is precisely the opposite: in linking the sector's growth to structural adjustment, research has rather sought to illustrate how nuanced the 'poverty-driven' argument is. As will be explained, in recent years, the literature has weighed in on how it has been highly-heterogeneous groups of people, whose lives have been impacted by the sweeping changes ushered in by structural adjustment, who have sought employment in ASM communities.

Fisher et al.'s (2009) claim that 'studies on ASM frequently use the metaphors of the "poverty trap" or "poverty cycle" to describe how it is "poverty driven"' is, indeed, a legitimate point. In contextualizing their research in Tanzania, the authors report that they 'find these metaphors unhelpful as a means to frame the analysis because they tend to homogenise the complexity of change in ASM communities' (p. 32-33). But studies consistently point to individuals attributing their decision to pursue work in ASM to a lack of income, few alternative employment options, and/or a general concern that earnings from their present occupations are unable to satisfy their daily needs. Perhaps, therefore, as a starting point, African policymakers should be encouraged to adopt more flexible definitions of poverty in this context, interpretations which, in line with Fisher et al. (2009), take stock of individuals' vulnerability and the full spectrum of reasons which drive people who are struggling financially to mine on a small scale. To hastily move beyond analysis of the circumstances which are fuelling peoples' participation in ASM, as Verbrugge (2015, 2016) suggests must happen, would run the risk of misdiagnosing the *type* of entrepreneurship found at sites.

To what extent are the architects of the AMV doing as Fisher et al. (2009) suggest? Unlike Verbrugge (2015, 2016), they do acknowledge that poverty is linked to the sector's growth in sub-Saharan Africa but fail to articulate precisely how. The literature offers important clues, drawing attention to how the changes made under structural adjustment during the period that Amankwah-Amoah (2016) refers to as 'Phase 2 (1980-1999): embryonic phase', and which were detailed briefly in the previous section of the paper, induced large-scale unemployment across sub-Saharan Africa. The reforms implemented during this period caused the region's manufacturing and public sectors to contract, resulting in hundreds of thousands of redundant labourers, many of whom actively pursued work in ASM communities (Hilson and Potter, 2005; Banchirigah, 2006). They have been joined by a pool of (large-scale) mine workers who also found themselves out of work. As Pegg (2003) explains, since 1990, the World Bank has provided more than US\$2.75 billion in loans and guarantees in support of multinationals' investment in extractive industries projects, including monies to facilitate the privatization of parastatals, usually undertaken within a structural sectoral adjustment program and which is often a precondition for receiving aid. A transfer of ownership, however, has typically been accompanied by considerable job loss, two illustrative examples being Zambia, where employment at large-scale mines declined from 28,000 at the time of privatization, to 20,000 in 2001 (Nellis, 2005), and Ghana, where between 1992 and 1998, there was a net loss of more than 1000 jobs in the gold-producing locality of Tarkwa alone, following the government's sale of the Tarkwa, Prestea and Nsuta mines (Akabzaa and Darimani, 2001). Adjustment-induced change, however, has been particularly visible in the region's agricultural sector, where, as has been reported extensively in the economics

and development studies literature (Cromwell, 1992; Sarris and Shams, 1992; Gibbon, 1992; Nyanteng and Seini, 2000; Banchirigah and Hilson, 2010), a combination of subsidy removal on fertilizers, the dismantling of farm support services and a requirement to produce devalued cash crops, has, in many rural sections, ignited a frantic scramble for supplementary income in the nonfarm economy (Bryceson, 1996, 2002; Ellis, 1998). Because of its low barriers to entry and consistent returns, ASM has become a popular destination for struggling farmers, as a host of case studies published over the past decade, including analysis from Ghana (Hilson, 2010), Sierra Leone (Maconachie and Binns, 2007; Pijpers, 2011), Malawi (Kamlongera, 2011), Liberia (Hilson and Van Bockstael, 2011) and DR Congo (Perks, 2011), reveals.

Have AMV officials taken stock of these dynamics, recognizing the diverse range of circumstances driving different groups of people to informal ASM communities in pursuit of work? It appears that the assumption made is that the abundance of entrepreneurial energy these individuals bring to the region's ASM communities is 'positive' and therefore makes *Boosting Artisanal and Small Scale Mining* a realizable goal. A series of studies (e.g. Perks, 2013) certainly offer inspiration for champions of this position, providing a glimpse of the business acumen of many individuals now engaged in ASM in selected rural communities in the region. On the subject of entrepreneurship, however, the experiences of these 'lifetime miners', or more broadly, the individuals who are born into mining, only tell a part of the story. At most ASM sites in sub-Saharan Africa, the largest segment of the workforce is made up of those impacted in some way by structural adjustment and economic reforms, people with very different aspirations and whose entrepreneurial energy is not necessarily born out of a desire to mine but is rather a manifestation of making the best out of their situations and skilfully using the sector as a platform for improving their quality-of-life.

To summarize, from the evidence available, there appears to be three groups of people found in ASM communities scattered across sub-Saharan Africa: individuals with farming backgrounds, individuals from the manufacturing and public sectors, and those with mining skills. What type of entrepreneurial energy and aspirations do these very different groups of people bring to the region's ASM communities? It leads back to the crude 'necessity versus opportunistic' dichotomy, which resonates powerfully with the debate in the development studies literature on livelihood diversification, a discussion which now includes ASM. This body of literature (see e.g. Ellis, 1998; Barrett et al., 2001) similarly disaggregates motivations for diversification into two categories: 'distress-push' and 'demand pull', the former being more reminiscent of 'necessity'-type entrepreneurship and the latter, 'opportunistic'. Scholars (e.g. Hilson, 2009; Geenen, 2014) who have applied these ideas to ASM have argued that 'distress-push' situations akin to necessity-driven entrepreneurship reinforce the view that the sector is 'poverty-driven', whereas those who contest that the growth of activities is attributed to individuals' desire to 'get rich quickly' draw heavily on scholarship about 'demand-pull', opportunistic scenarios. One argument voiced in the literature on entrepreneurship which is relevant to ASM in sub-Saharan Africa is that necessity and opportunity as *distinct* drivers of activity is an oversimplified diagnosis (Stephan et al., 2015; Harding et al. 2006), or, as indicated in the previous section of the paper, at the very least, that these two types can exist in tandem (Brunjes and Diez, 2012; Williams, 2014) and there can be movement between these two extremes (Edgcomb and Thetford, 2004; Gibbs et al., 2014). A similar point was raised by a reviewer of this paper, who correctly pointed out that 'the distinction between necessity and opportunity implies that they are opposite in some sense, you are either a necessity-driven entrepreneur or an opportunistic entrepreneur, or more likely, somewhere between...But the opposite of necessity is not opportunity and vice-versa. I suspect this is largely semantics, but a more precise discussion of the distinction might help strengthen and clarify the arguments'. Such a distinction, however, cannot be easily made, given the range of people found in ASM communities, and the uncertainty behind their involvement. But

given the diversity of individuals found at sites, the idea of ‘fluidity’ and ‘coexistence’ seems practical. In line with Gibbs et al. (2014), therefore, any interventions aimed at facilitating a transition from necessity to opportunistic in sub-Saharan Africa must be designed with a view that the groups being targeted are diverse in their backgrounds and motivations.

The abundance of energy found at most ASM sites in sub-Saharan Africa can make identifying, with precision, the *type* of entrepreneurship challenging: images of women hauling ore in exchange for a nominal fee from one location to another; sponsors covering operators’ expenses in exchange for gold or diamonds at a reduced fee; and people providing an assortment of services, including fortifying underground shafts using timber, equipment repair, security and taxiing. What circumstances have driven these people to ASM sites? Scholars who have carried out research on ASM in Ghana (e.g. Hilson and Garforth, 2013; Wilson et al., 2015; Ferring et al., 2016) and the Mano River Region (e.g. Pijpers, 2011; Bolay, 2014; Van Bockstael, 2014) have not lost sight of how the sector’s activities are mostly found in informal ‘spaces’. These scholars have mapped in detail the evolution of the sector, explaining, in line with the analysis presented thus far in this paper, how marked economic changes have fuelled the rapid growth of ASM in these countries. Significantly, this body of literature makes frequent reference to, and provides coverage of, entrepreneurial activity at selected sites but at no point is it portrayed as ‘opportunistic’. It recognizes that, in many areas of sub-Saharan Africa, poverty is fuelling the growth of the sector, and most importantly, that the entrepreneurial activities that now flourish in it are largely unique to the informal ‘spaces’ in which they are found. As many of these people have non-mining backgrounds, any intervention aimed at empowering entrepreneurs in ASM must be designed with this in mind.

The same, however, cannot be said about assessments made of a country such as Tanzania, the location of one of the largest ASM sectors in sub-Saharan Africa. Here, there has been a significant amount of work undertaken which examines in detail the movement of people from agriculture into nonfarm activities (McCabe, 2003; Ellis and Freeman, 2004; Rufino et al., 2013; Smith, 2015; Silvestri et al., 2015), the impacts of structural adjustment on subsistence livelihoods more generally (Ellis and Mdoe, 2003; Wells and Wall, 2003; Vavrus, 2005; Murphy, 2006), and the dynamics of ASM specifically (Fisher, 2007; Jønsson and Fold, 2009; Childs, 2014; Potter and Lupilya, 2016). But more recent scholarship appears to have lost sight of how this hardship, along with informality, has shaped the unique organizational structures now found in the country’s ASM sector. It is with this in mind that the work of Deborah Bryceson must be singled out. The author’s earlier research (Bryceson 1996, 2002), which pooled findings from an assortment of published works and data sets, was instrumental in drawing attention to the rural livelihood diversification phenomenon – subsistence households’ movement from agriculture into nonfarm activities – that had intensified throughout sub-Saharan Africa and Tanzania more specifically during the 1980s and 1990s. Her more recent research on ASM, however, is a radical departure from – and at times, contradicts – this analysis. On the one hand, the author acknowledges, in Bryceson and Jønsson (2010) that, in line with the region’s prevailing livelihood diversification patterns, in Tanzania, numerous rural households are, indeed, ‘branching out’ from agriculture into nonfarm activities, one of which is ASM. It is furthermore implied that policy is ‘creating’ informal ASM ‘spaces’ in the country, that ‘while precious mineral discoveries are often made by small-scale miners or local people, the restricted capacity of mining authorities to timely disseminate legislative information on how to acquire PMLs [primary mining licenses] favors large-scale mining companies over small-scale miners’ and that ‘The former secure licenses in mineral-rich areas before the majority of small-scale miners know of the opportunity’ (p. 381). But on the other hand, despite contesting that ASM is a relatively new phenomenon in Tanzania, the author rather curiously portrays these informal ‘spaces’ as areas of ‘opportunity’ (using the headline, ‘Opportunity Knocks’) for ‘apprenticeships’.

At no point should these ‘spaces’ be portrayed as areas teeming with economic opportunities and locations where there are sustainable and coveted career trajectories. The author makes claims of not ‘wanting to romanticize the sector, these collective norms evince movement from individual livelihood choices to collective professional and social identities, from diversification to specialization, and from apprenticeship to skill development’ (Bryceson and Geenen, 2016, p. 313) but ironically, does the precise opposite. This, in all likelihood, is not deliberate on the part of the author. It is rather most probably, much like Verbrugge (2015, 2016), yet another case of a scholar losing sight of *why* people are mining – in this case, in Tanzania – as well as *who* they are and what drove them to the sector in the first place, and consequently overzealously suggesting that the bustling activity found in the landscapes being studied is reminiscent of ‘opportunistic entrepreneurship’.

Nevertheless, this is a serious oversight, an error which, potentially, the architects of the AMV have also made. If its core objective, *Boosting Artisanal and Small Scale Mining*, is to be achieved, there must be an abundance of *opportunistic* entrepreneurial energy that can be harnessed effectively and efficiently, and scores of individuals present who are keen on continuing their work as miners, medium-to-long-term. But an even greater concern is whether sub-Saharan Africa has in place the policy environment and institutional setup to support aspiring enterprising ASM entrepreneurs. Drawing heavily on case study analysis in the literature and findings from recent research carried out in Ghana, the next section of the paper sheds light on this issue.

4. Entrepreneurship at African Artisanal and Small-Scale Mines: Potential, Concerns and Challenges

Putting ASM at the heart of the development agenda in sub-Saharan Africa, which is what the architects of the AMV insist they are attempting to do, is commendable. The AMV’s project documents exude considerable passion about making *Boosting Artisanal and Small Scale Mining* a centrepiece of the initiative. But whilst the architects of the AMV appear to be in tune with the sector’s problems, they seem oblivious to how the current legal and policy frameworks in place for ASM in the region cater to only the small group of operators who fall into the ‘opportunistic’ or enterprising ‘demand-pull’ category of entrepreneur. Having established that most ASM operators in the region are, in fact, ‘poverty-driven’, and generally fit the mould of ‘necessity entrepreneur’, it is imperative that the financial and technological mechanisms in place are flexible enough to also put these individuals, many of whom again, have non-mining backgrounds, in a position to innovate.

Do the architects of the AMV recognize how constrictive the operating environment can be for these miners? To put necessity entrepreneurs in a position to innovate, legislative and policy frameworks must be overhauled to reflect more accurately the livelihoods of these operators. The most formidable task promises to be shifting the policy ‘mindset’: whilst host African governments and donors seem aware of the struggles endured by ASM operators, thus far, they have shown little inclination or urgency towards making the changes needed for them to innovate and flourish as entrepreneurs.

Why has this been the case? As indicated, the region’s governments have a penchant for promoting industrial-scale resource extraction – their policies have what is referred to here as a large-scale ‘bias’ (Hilson, 2017) – because of the ease with which rents can be extracted. Convincing rent-seeking and at times corrupt governments of the need to promote ASM on the grounds that doing so would contribute enormously to community development, therefore, could be futile. Even in cases where governments are willing to make changes, there is the continuous barrage of criticism of ASM in

influential local media outlets, which makes it challenging to manoeuvre. Most of this analysis focuses on the negative aspects of the sector, including its sizable environmental footprint and numerous social 'ills' such as health and safety concerns, and the prostitution, excessive narcotics consumption and child labour found at many sites. What this analysis rarely acknowledges, however, is the stifling legislative frameworks in place for ASM; its livelihoods dimension; and how many of these negative attributes receiving media attention are 'expressions' of the sector's informality – highly-correctable problems that would be minimized considerably if operations were licensed and regulated. In short, formalizing and supporting ASM could be a difficult sell to an African public which seems heavily captivated by these 'expressions' and little more.

Drawing on experiences from Ghana, which hosts one of the largest and most dynamic ASM sectors in sub-Saharan Africa, this section of the paper broadens understanding of the dynamics of a policy environment which largely caters to the opportunistic or enterprising entrepreneur, in the process illustrating its inappropriateness for the poverty-driven, necessity types and how much work the architects of the AMV must undertake if they are to bridge the gap and make *Boosting Artisanal and Small-Scale Mining* a realistic undertaking.

4.1 Research Methods and Data Collection

In addition to engaging critically with case study material contained in the literature, the analysis that follows draws heavily on findings from research conducted in Ghana between February and August 2014 and April and May 2016 in the country capital of Accra and Dunkwa (Upper Denkyira East Municipal District), a township located in the country's Central Region with exceptionally high concentrations of both licensed and informal small-scale gold mining activity. During the first phase of this research, interviews were conducted with representatives from key regulatory bodies. In addition to the Ghana Minerals Commission, the main policymaking body overseeing ASM in the country, consultations were sought with officials from all of the bodies that make up the newly-formed 'Inter-Ministerial Task Force on Illegal Mining', the centrepiece of the government's latest attempt to eradicate informal (ASM) activity: 1) the Ministry of Lands and Natural Resources, 2) the Ministry of the Interior, 3) the Ministry of Defence, 4) the Ministry of Foreign Affairs and Regional Integration, and 5) the Ministry of Environment, Science, Technology and Innovation. Interviews were also pursued, in line with Hirons (2014), who provides a comprehensive assessment of the decentralized regulatory framework and policy apparatus in place for ASM in Ghana, with the relevant district-level Minerals Commission officers and District Chief Executive (local government office) in Dunkwa.

In total, 14 government officials were interviewed during the first phase. Alongside these consultations, interviews were carried out with representatives from five microfinance and banking institutions in Ghana that provide loans to small-scale miners, as well as three executive members of the Ghana National Association of Small-Scale Miners, the 'mouthpiece' of the country's ASM sector. During the second 'grassroots' phase, interviews were conducted with small-scale mine operators. In total, 20 of Dunkwa's most influential operators (both licensed and informal), determined from conversations with local government officials and executive members of the Association, were interviewed; the diversity of these miners' experiences and backgrounds yielded a range of rich data. The data from the transcripts from the interviews conducted during both phases were coded and analyzed.

What type of developmental blueprint is needed for *Boosting Artisanal and Small Scale Mining*, and how close is the current policy and legal framework to achieving this? This section highlights three

main areas in which change must occur if this goal is to be realized: 1) licensing; 2) the policy apparatus; and 3) finance

4.2 Licensing: Is there a Platform for Stimulating Innovation and Entrepreneurship?

For ASM operators to be creative, enterprising entrepreneurs, they must have the 'space' to innovate. A license should, in theory, establish the platform needed to make this possible, providing security of tenure and facilitating access to a host of other services. It was over two decades ago that Davidson (1993) hinted at what this entails:

Governments must be prepared to move beyond the establishment of legal frameworks, to identify deposits and areas amenable to small-scale development, including the preliminary evaluation of their technical and economic viability at different levels of operation. Security of tenure should be respected in such areas. At the same time the barefoot prospecting potential of the artisanal miner to locate new, large deposits should be preserved, and transferability of title permitted under certain conditions subject to safeguards and protection for the deposit's finder(s), as well as for the local communities. [p. 317-318]

Permits *should* open up avenues for ASM operators to innovate by providing a platform for securing the financial and technological support needed to develop. This, however, has not always been the case, a problem which the architects of the AMV appear to recognize. They correctly point out that 'the process of applying for mining rights usually favours LSM [large-scale mining] companies to the extent that ASM frequently operates without security of tenure', and that in order to adequately address this, there must be 'a legal regime that gives ASM rightholders enough land, duration of rights and security of tenure' (UNECA, 2011, p. 2-3).

This is a point that has been raised repeatedly over the past two decades at watershed moments in ASM policy development. The list includes the following:

- 1) The Harare Guidelines, a weeklong international seminar aimed at developing best practice legal, financial, commercial, environmental and social guidelines for ASM, held in Harare in February 1993. Here, it was agreed that 'Governments and their agencies should endeavour to provide a simple, clear and stable set of laws and regulations', as well as 'endeavour to provide an adequate institutional framework and stable business environment by mobilizing and extending social, technical and economic support to small- and medium-scale mining' (Labonne, 1994, p. 15).
- 2) The aforementioned *International Roundtable on Artisanal Mining*, held in May 1995 at World Bank headquarters in Washington DC. Here, it was agreed that 'In order to make the entry process orderly, governments must move toward legalizing artisanal mining and streamlining registration and licensing procedures'. Additional actions prescribed included 'giving legal recognition to security of tenure and to ensure the transferability or mortgageability of mining titles', and incentivizing regularization by 'liberalizing pricing and marketing arrangements, establishing an appropriate taxation regime, and strengthening small-scale mining institutions' (Barry, 1996, p. 12).
- 3) The landmark report, *Social and Labour Issues in Small-Scale Mining* (ILO, 1999), published by the International Labour Organization. It draws attention to the unnecessary bureaucracy prospective small-scale licensees face, across the world, when trying to secure the requisite permits, arguing that 'Small-scale mining is bedevilled with too many regulations that are mostly designed to constrain it and too few inspectors to ensure that they do' (np). The report further hints that a 'large-scale (mining) bias' has been heavily responsible for creating this

bureaucracy. It argues, in line with Davidson (1993), that 'If small-scale mining is to be encouraged to operate legally, legislation must be (at least) even-handed in allowing small-scale miners access to suitable land for prospecting and mining activities'; that 'It must be "user friendly" as far as the issuing of permits and the granting of licences are concerned -- permits that provide clear security of tenure for a reasonable period so that small-scale mining can become established and that 'Conflicting regulations need to be harmonized and needlessly restrictive provisions reviewed' (np).

- 4) The Small-Scale Mining Report of the International Institute for Environment and Development's *Mining, Minerals and Sustainable Development* project, launched in 2000. It attributes informality in ASM to, *inter alia*, 'Limited access to mining titles' and the 'Demanding bureaucratic procedures [needed] to gain and remain formal operation' (Hentschel et al., 2002, p. 6).
- 5) The international *Seminar on Artisanal and Small-Scale Mining in Africa: Identifying Best Practice and Building the Sustainable Livelihoods of Communities*, held in Yaoundé, Cameroon, in November 2002. Here, it was agreed that ASM licensing processes must be simplified and decentralized. To achieve this, it was recommended that user-friendly and transparent systems be implemented; district and regional offices be empowered to handle applications; permits for minerals trading be handled at the regional level; and that procedurally-simplistic environmental management regulations be put in place for the sector (Labonne, 2002; CFC, 2008).

Repeated calls to simplify the procedures that operators must follow to secure the licenses they so desperately covet have been routinely ignored by host African governments over the years.

The importance of *not* making bureaucracy and cost issues when it comes to applying for small-scale mining licenses, as well as ensuring that title holders are adequately empowered, cannot be overemphasized. Both problems still persist in abundance across sub-Saharan Africa and in many cases, have intensified. The constraints now faced by prospective licensees desperate to innovate and increase their production, explains Geenen (2012), 'are numerous', and include 'ineffective policies and bureaucratic inefficiency, a lot of paperwork, long waiting periods for obtaining licences, long distances to travel, high costs for obtaining official documents, including payment of bribes, limited availability of land which artisanal miners can legally work, concern about ensuing high investment costs in a formal exploitation project, and limited education of the miners, which renders bureaucratic and technical procedures not accessible to them' (p 324). Referring once again to the language of Schumpeter, for 'creative destruction' of stationary equilibria to take place, a small-scale miner must have the permits required to access technologies and finances (after Rocha, 2012) – the ingredients needed for opportunistic, enterprising entrepreneurship to flourish and to facilitate the adoption of innovative practices and ultimately, the 'upscaling' of activities the architects of the AMV believe can happen. The low number of licensed operators found across sub-Saharan Africa is further testament to the sizable gulf between how host governments have diagnosed entrepreneurship in ASM on the one hand, and the actual circumstances fuelling individuals' participation in the sector on the other hand. Specifically, and in the spirit of *A Strategy for African Mining* (World Bank, 1992), with few exceptions, licensing procedures for ASM in sub-Saharan Africa were designed with the opportunistic entrepreneur in mind.

Over the past decade, several case studies have emerged which reinforce claims made about the bureaucracy of, and costs associated with, ASM licensing in sub-Saharan Africa. For example, Spiegel (2015) reports how in Zimbabwe, during a period of 'crackdown' on riverbed gold panning, activities were 'subjected to ever-more-costly, bureaucratic and inaccessible national licensing requirements' (p. 551). The same has been observed in the Central African Republic, where artisanal miners struggle

to purchase an annual license (*patente*) at a fee of US\$100, as well as with paying a host of additional taxes, royalties and rents (Hinton and Levin, 2010). The Ghana research truly put these concerns in the spotlight. Nearly a decade and a half ago, Hilson and Potter (2003, 2005) drew attention to the numerous delays often encountered when trying to secure a Small-Scale Gold Mining License in the country, furthermore arguing that these setbacks were needlessly frustrating operators to the point where most elected to work informally, which reinforces points made in Section 2.2 about the informal economy generally. Unnecessary bureaucracy and burdensome costs continue to prevent individuals from securing licenses, as one miner explained during an interview:

Process is very cumbersome and long, and is encouraging illegal mining, and if it takes six months, they will start mining [illegally]...Starting from the district, spends too much time there...Minerals Commission sends to Ministry...I wish the Minerals Commission makes the decision. The CEO there should have the authority to make a decision on licenses because it goes to the Ministry of Lands and Natural Resources and it can sit there for months.⁵

Prospective licensees are also required to make sizable payments, which the local media has raised awareness of in recent years.⁶ Yet, the Government of Ghana has elected to ignore mounting public criticism of these costs, and the impacts they are having on local livelihoods. In fact, it has done precisely the opposite: it has elected to *increase* costs. The aspiring licensee, therefore, is now required to produce detailed surveying plans, which, according to the small-scale miners interviewed, now cost on average GH¢1000⁷ (approximately GH¢800 for the maps and GH¢200 for a licensed surveyor's signature) before the relevant local government officer can be approached; a GH¢100 Application fee; a GH¢250 Processing fee; and GH¢550 Consideration fee. It also – rather inexplicably – recently increased the fee for what is widely believed to be an unnecessary Environmental Protection Agency permit, from GH¢750 to GH¢9600. Who, apart from the opportunistic and enterprising entrepreneur with capital and connections, can possibly cover these expenses?

Some countries in sub-Saharan Africa, notably Tanzania, have done a good job of countering the bureaucracy by decentralizing, completely, the decision-making process for small-scale mining licenses. Prior to implementation of the country's *Mining Act* 2010, the only way a Primary Mining License (PML) could be secured was through application at the head office of the Ministry of Energy and Minerals (MEM) in the country capital of Dar es Salaam (UNEP, 2012). The act, however, was amended 'to include prospecting activities for small-scale miners and addresses licensing barriers by increasing PML tenure to be processed at regional zonal offices' (World Bank, 2015, p. 24-25). But in Ghana, such a move has yet to be entertained. As one small-scale miner explained in an interview, even if '[you are willing] to give a dash [i.e. a bribe]' to people to expedite the process, 'the entire procedure of obtaining a license is still difficult'.⁸ Whereas in Tanzania, the Zonal Office is awarding licenses and providing small-scale operators with much-coveted security of tenure, in Ghana, and as the miner quoted above indicted, the Minister of Lands and Natural Resources stationed in Accra must sign-off on the application, a step that can take many months.

⁵ Interview, Small-Scale Miner, Accra, 12 February 2014.

⁶ 'Delays in obtaining licenses hampering our business - Small Scale Miners: The small scale miners said the procedure was very frustrating and contributed to growing spate of illegal mining in the country' <http://pulse.com.gh/news/bureaucracy-delays-in-obtaining-licenses-hampering-our-business-small-scale-miners-id4292307.html> (Accessed 23 January 2017).

⁷ There are approximately 4.34 Ghana cedis (or GH¢4.34) in one US dollar (US\$1).

⁸ Interview, Small-Scale Miner, Dunkwa, 14 February 2014.

Of course, and as revealed during the research, some individuals have been minimally affected by bureaucracy and cost. For example, there is 'Gus', who has lived in Germany, where he mainly mobilized the foreign investment in his operation, and 'Vic' and 'Fergus', who were able to advance by chance, the former with assistance from individuals met in the town of Prestea and the latter, courtesy of connections forged through working various apprenticeships. But these individuals, whose connections are unrivalled and who have significant experience, are exceptions, rather than the rule, and speak to the points shared earlier from scholars who have reflected, more generally, on the criteria which contribute to the 'success' of an entrepreneur in sub-Saharan Africa. It is only the small group of opportunistic entrepreneurs such as 'Gus', 'Vic' and 'Fergus' who can realistically 'upscale' their operations in line with the objectives enshrined in the AMV.

In other African countries, it is the restrictions attached to specific categories of licenses which *prevent* individual miners from innovating or 'upscaling'. For example, in Liberia, progression from a Class C License to a Class B license requires payment of a US\$5000 fee, renewable annually, and the preparation of site plans and other documents, which incur additional costs. The key difference is that those in possession of the former cannot use heavy machinery, whereas those in possession of the latter can. The cost impedes mechanization, therefore preventing miners from increasing their production (Hinton and Levin., 2010; Van Bockstael, 2014): without machinery, there is little chance of 'upscaling'. The same applies in neighbouring Sierra Leone, where those in possession of an artisanal mining license are also prohibited from using heavy machinery. Here, individuals are required to secure a small-scale mining license if they intend on mechanizing, which requires paying US\$600 per hectare of land and additional costs for environmental permitting, the latter often amounting to tens of thousands of US dollars.

In summary, to date, host African governments have been somewhat averse to making ASM regulations and policies simple and user-friendly, electing rather to implement systems which mirror in complexity those in place for their large-scale, highly-mechanized and sophisticated counterparts. For opportunistic entrepreneurship to flourish in ASM communities across sub-Saharan Africa, there must be adequate 'space' to innovate. Licenses should create this by providing the security of tenure operators need to develop and 'upscale' their activities in the ways described in the blueprints of the AMV. The problem, however, is that few governments in the region seem to have recognized the importance of a streamlined licensing process in the sector. As indicated, the ASM policy and legal frameworks now in place in sub-Saharan Africa were designed with the view that the sector's operators are, indeed, mostly opportunistic entrepreneurs. Frameworks must be overhauled if poverty-driven groups are to be mobilized: these necessity-driven entrepreneurs, who constitute by far the largest share of the region's ASM workforce, must also be given every opportunity to flourish as legal and legitimate businesspeople if *Boosting Artisanal and Small Scale Mining* is to be achieved.

4.3 Is the Policy Apparatus Changing?

Mine operators may be in favour of a system which guarantees security of tenure and willing to pay a tax in exchange for this. But are host governments willing to make the changes needed to achieve this, given how most ASM activities in sub-Saharan Africa are found in the informal economy. The architects of the AMV offer an illustrative glimpse of the dynamics of these unregulated and unpoliced 'spaces':

The informal nature of much ASM makes it amenable to illegal dealings, especially in high-value minerals such as diamonds, gold and coltan. The value chain for such minerals, from mining, through processing, trade and transportation to external markets is often characterized by

leakage, particularly in countries recovering from conflict where prolonged security issues are part of the background to informal operations...As an informal activity with weak or non-existent legal protection, ASM is an easy victim of organized crime and paramilitary organizations... [UNECA, 2011, p. 72]

At the same time, however, the architects fail to explain how they intend to transition ASM out of these informal 'spaces', an enormous challenge which cannot be fixed with 'user friendly' policies and improved support services alone. As captured in a flood of recent studies (e.g. Hilson and Pardie, 2006; Garrett, 2007; Bodenheimer, 2014), exploitative, and no doubt embedded, lending and buying arrangements between operators and middlemen are a major hallmark of these 'spaces'. Moreover, these territories are often in the clutches of local chiefs, militia and/or corrupt government officials, all of whom extract a 'rent' from, and rely heavily upon, ASM operators (Small, 2012; Hirons, 2014; Hilson et al., 2014; Crawford and Botchwey, 2016). Only assumptions can be made at this point but perhaps proponents of the AMV believe that if support structures for ASM are strengthened, operators will gradually decrease their dependency on these informal sector actors. It is certainly the most appropriate approach to take, regardless – empowering individuals to make their own decisions – but whether these are the true intentions of the architects of the AMV is open to debate.

Although concrete conclusions cannot be drawn without further investigation, it appears that the policy 'mindset' remains the same: that the individuals found in these 'spaces' are opportunistic mining entrepreneurs or aspire to be. This position is legitimized by *A Strategy for African Mining* (World Bank, 1992), which misleadingly suggests that there is a visible and achievable development trajectory for ASM in countries where large-scale mineral exploration and extraction is prioritized. It calls on host governments to implement 'procedures for artisanal miners' to be 'freely tradeable so that the artisanal miner can later sell that right to a commercial mining company if the opportunity arises', and that 'if he can sell his rights to a mining company he may prefer to continue as an employee' (World Bank, 1992, p. 44). The architects of the AMV share a similar view, arguing that 'To stop the poverty cycle, the approach should be broadened to include the development of diversified and alternative livelihoods to ASM (artisan training on alternative skills such as carpentry and brick laying, diversifying income sources and broadening nonmining incomes), which would facilitate ASM transitions from artisanal to small-scale mining' (Africa Mining Vision, 2009, p. 28). For this to happen, however, there must first be an unwavering commitment from host governments, beyond rhetoric, to making *Boosting Artisanal and Small Scale Mining* an achievable goal. On the one hand, collectively, the pledges of the region's policymakers to fulfilling this objective are now enshrined in the AMV. But on the other hand, there is little evidence to suggest that they are changing licensing systems, as well as making the additional modifications to policy needed to fully empower ASM operators and put them in a position to innovate along the lines described above. In fact, the lack of meaningful action being taken on this front suggests that host governments are content with maintaining the *status quo*: allowing an ASM sector populated by mostly unlicensed operators to continue flourishing. Is a 'large-scale bias', and a consequent fixation on extracting rents, causing host governments to be complacent with ASM-related developments and to lose sight of how existing policy and regulatory frameworks are potentially stifling operators' efforts to innovate?

This is certainly a part of the problem but experiences from across sub-Saharan Africa suggest that the explanation for governments' pedestrian response to legalizing ASM spaces is far more nuanced. Specifically, there are signs that, in addition to the abovementioned grassroots-level parties, there are too many people benefitting from the sector's current informal setup to justify making sweeping changes to ASM policy frameworks and laws. This includes host governments themselves. There have been rumblings about how politicians, through intermediaries, are financing informal mining, supplying individuals with heavy machinery, as well as extracting bribes from unlicensed operators. This was communicated during the Ghana research: several miners interviewed reported having to

pay government officials whilst waiting for their applications for licenses to be processed, as well as many top politicians owning their own excavators that are available for hire. But a lukewarm commitment to formalization also puts governments in a position to extract more finance from the few legal and legitimate actors in the system, including the small group of operators who have managed to secure a license to mine on a small scale, gold buyers, and the occasional large company. These actors are nestled within a system populated by hundreds of thousands of necessity-driven entrepreneurs who are mining *without* a license. Verbrugge (2015) claims that viewing this group of individuals as poverty-driven 'is surprisingly akin to earliest dualist understandings of the informal sector which treat it as a marginal subsistence economy' (p. 1028). But this is far from being the case in sub-Saharan Africa. The practices of the abovementioned legal actors are rather fused with, and in some cases, inseparable from, the activities of these necessity-driven mining entrepreneurs, spawning hybrid, quasi-formal structures around which host governments are taxing 'legitimately'.

Many paint the relationships between these parties as exploitative. Yet, under the exceptionally difficult circumstances in which most of the region's necessity-driven miners find themselves, they should be viewed as being more symbiotic than parasitic, particularly in cases where legitimized by the sections of the state. In Ghana, for example, the state-run Precious Minerals and Marketing Company (PMMC) employs a network of over licensed 700 buyers. Each employs his/her own network of agents who travel to all corners of the country, sponsoring miners and purchasing their gold. These buyers, however, do not discriminate when it comes to the legal status of the miner, and overall, purchase a much larger share of their gold from unlicensed operators. But the state does not intervene because offering PMMC buyers competitive prices assures that it captures a significant percentage of the gold being mined in Ghana on a small scale (Tschakert and Sinha, 2007; Hilson et al., 2014). A similar situation appears to be unfolding in Mali, currently the third-largest gold producer in sub-Saharan Africa but where the government has been exceptionally *laissez-faire* when it has come to policing villages engaged in subsistence-level ASM found within the boundaries of exploration concessions and mining leases awarded to foreign multinationals. The government – rather inexplicably – calls on companies to broker working agreements with these local *orpaillage*,⁹ which in most cases, forces them to exercise some tolerance (Maconachie and Hilson, 2011; Dell, 2013; Techner, 2014). Mali, however, now has the ability to refine gold, its largest facility, Bamako-based Kankou Moussa, which is owned by the Swiss Bullion Co., possessing the capacity to produce 100 kg of gold daily.¹⁰ Significantly, most of the gold Kankou Moussa refines originates from unlicensed *orpaillage* based in the Southwest of the country in areas demarcated to large companies, dynamics which the government seems reluctant to change because it is able to levy a tax on refined production.

But whilst permitting registered buyers to acquire gold from unlicensed miners may be justifiable, host governments seem to be willing to openly extend this to production itself, provided it is put into the hands of elite or the more well-connected and monitorable operators. In Tanzania, for example, a new category of permit, the Processing, Smelting and Refining license, was enshrined in the *Mining Act 2010* (Kibugi et al., 2015). As detailed in Sections 59 through 61 of the Act, an applicant must disclose to the authorities the areas where processing, smelting and/or refining activities will be sited. If the plan is to locate the facility outside of an area leased for mining, a separate Processing, Smelting and Refining license must be obtained. To secure this license, applicants must prepare a series of fairly comprehensive documents, including an environmental management plan, a haulage and processing inputs plan, and in cases where land is acquired, a compensation, relocation and resettlement plan. The Tanzanian landscape is now dotted with complex cyanide leaching facilities, each valued at over US\$500,000 and demanding a significant amount of skill and experience to operate. The origin of a large quantity of the ore which these units process, however, is unknown, although it is assumed that

⁹ A local term for artisanal mining.

¹⁰ 'Mali's informal gold miners could soon rival industrial producers', www.theafricareport.com/West-Africa/malis-informal-gold-miners-could-soon-rival-industrial-producers.html (Accessed 20 January 2017).

a sizable portion originates from concessions that have been leased to large-scale companies. But the government does not seem interested in inquiring about this because, as Kapinga and Sinda (2012) explain, it extracts a predetermined percentage of minerals as payment from the license holder. A similar setup exists in Ghana, where Prestea Sankofa Gold Ltd., a subsidiary of the state-owned Ghana National Petroleum Company, buys tailings from unlicensed miners at its facility in the locality of Prestea. After small samples of tailings are taken to an assay laboratory in an adjacent town to determine gold concentration, Sankofa staff negotiate with each *galamsey*¹¹ operator, based on grade, tonnage and recovery. Most of the tailings Sankofa processes originate from the concessions of the Denver-headquartered multinational mining company, Golden Star Resources. In exchange for payment, the government is willing to ignore these illegal transactions. These cases illustrate quite clearly how, across sub-Saharan Africa, several actors, including policymakers, are benefitting, financially, from ASM's informality, to the point where it is unclear whether host governments would commit to making the changes needed to make *Boosting Artisanal and Small Scale Mining* a realizable goal.

In addition to an unwavering commitment from host governments to *Boosting Artisanal and Small Scale Mining*, individual miners must genuinely be interested in 'upscaling' their activities as prescribed. It is here where there is a visible disconnect between the type of entrepreneur the architects of the AMV believe is generally found in ASM communities on the one hand, and who are *actually* found working in these 'spaces' on the other hand. There are certainly people mining on a small scale in sub-Saharan Africa who fall into the former category: individuals who are driven by opportunity, have the financial influence to overcome most bureaucratic obstacles, and are genuinely looking to 'upscale' their operations. In Ghana, in addition to 'Gus', 'Vic' and 'Fergus', the short list includes 'Albert', who claims to own 13 excavators, and has 128 labourers and 16 office personnel. 'Albert' earned Bachelors and Masters degrees in the United States, where he lived and worked on Wall Street for more than a decade after graduating, is bankrolled by family members and American investors, and is working to secure 10 additional small-scale mining concessions.¹² There is also 'Tom', who runs what would be considered a 'medium-scale' mining company, and worked in government for 17 years, departing as a chief finance officer, a position which put him in an excellent position to network and ultimately, secure five concessions, lease excavators to other operators and export gold.¹³

But the experiences shared by most of the miners interviewed in Ghana are, as indicated, more reminiscent of 'necessity-entrepreneurship': young boys and girls mining ore to accumulate funds to attend university; the farmer desperate to bolster production by increasing labour, achieved through an injection of finance provided by ASM; and the occasional owner of a local small business, such as a hotel, restaurant and chemical dispensary, financed also with funds from the sector (Hilson and Garforth, 2013). Reinforcing points raised in the previous section of the paper, these are individuals who, if given the opportunity, would likely pursue alternative employment. Each has rather skilfully used the ASM sector as a 'platform for wealth creation', making the best out of a difficult situation to improve his/her quality-of-life. Without an intimate knowledge of the mindsets and ambitions of these individuals, their efforts to earn money and energy could very easily be misdiagnosed as 'opportunistic entrepreneurship', analogous to the way in which necessity-type situations born out of hardship have been over-romanticized in places such as Tanzania.

¹¹ A local term for artisanal mining.

¹² Interview, Small-Scale Miner, Accra, 12 February 2014.

¹³ Interview, Small-Scale Miner, Accra, 12 February 2014.

4.4 Finance?

For decades, scholars and donors have marvelled at ASM's ability to sustain itself with minimal resources. The heterogeneity of its workforce, exemplified by the breadth of backgrounds of the people engaged in activities, is a true testament to its 'poverty-driven' nature or ability to absorb individuals who have endured hardship, irrespective of their experience and skillsets. The message consistently preached over the years is that ASM's rapid growth and popularity is owed to its 'low barriers to entry', a point which Noetstaller (1995) first discussed at length over two decades ago:

...the most significant attribute of artisanal mining is low barriers to entry. The concept of barriers to entry relates to the basic requirements for the start-up of a new mining operation in terms of skills, investment capital, infrastructure, implementation time and minimum reserves. These requirements are lowest for artisanal mining, growing with increasing scale of operation. Under favorable circumstances, an artisanal operation exploiting placer minerals, can be started immediately, with as little as a pick, a shovel and a pan. [p. 2]

Others (Mainardi, 1997; Oomes and Vocke, 2003; Snyder and Bhavani, 2005; Siegel and Veiga, 2010; Kamlongera, 2011) have since emphasized this point. Illustrating, inadvertently, points made by Noetstaller (1995), Snyder (2006), reflecting on the case of alluvial diamonds, argued that to extract these, 'a pick, shovel and sweat are the only requirements' (p. 950).

Whilst entering the sector has proved relatively straightforward in many instances, as indicated, once engaged, operators have struggled to innovate and 'upscale' their operations. This has been primarily due to a shortage of finance, which the architects of the AMV recognize. They outline the challenge very clearly, explaining that 'Efficient mining requires long-term financing for initial exploration and then to assess feasibility of extraction' but 'without access to capital, ASM cannot afford to get involved at this early stage', which 'has an impact on raising further funds; without quantified reserves miners cannot develop the strong business plan required by investors' (AMV, 2009, p. 2). This, they contest, has created the opportunities for exploitative middlemen identified above.

This *should* only apply to individuals operating in the informal economy. But it also applies to many of those in possession of a license: the supposed security of tenure provided by permits, which legitimize operators as businessmen in the eyes of the law, have not necessarily facilitated improved access to finance. An acute shortage of reliable sources of finance has long been identified as one of the sector's major problems, and a main reason why legal operators have struggled mightily to 'upscale' their activities. Over the years, countless ASM documents (e.g. ILO, 1999; UNECA, 2002) have identified a shortage of finance in the sector as a priority concern, calling on banks to develop mine expertise, for the establishment of mobile and commercial banks in mining regions, and for the creation of funds which operators can access to purchase or lease equipment. The broad consensus at the *International Roundtable on Artisanal Mining* was that this is the responsibility of host governments, specifically, for 'ensuring that appropriate institutions are established and adequately financed', and that 'Organizations such as the World Bank can play a catalytic role in disseminating best practices and experiences, financing policy reforms and targeted actions, and supporting microfinance programs' (Barry, 1996, p. 12-13). As a starting point, Davidson (1993) explained, 'Because of the subsistence nature of much small-scale and most artisanal mining and the general lack of capital, international donors, technical assistance agencies and development banks can play the role of sponsors and project evaluators in the areas of baseline studies and technological development' (p. 220).

Bringing these interventions to fruition has proved particularly challenging in sub-Saharan Africa, where there is an abundance of uncertainty surrounding the people who mine and whose reputation

for not repaying loans often precedes them, as well as a banking/financial services landscape that is such a 'mixed bag'. There is, on the one hand, a host of foreign banks – dominated by the likes of Barclays, Standard Chartered and Societe Generale – which offer the full range of services, including commercial accounts, personal banking and mortgages. But the priority and main source of income for these institutions, many of which have had a presence in the region since the colonial period, seems to be the growing middle classes, *established* local businesses and the expatriate communities. At the same time, they are not particularly well-oriented to support a predominantly local, and arguably risky, industry such as ASM. One banker interviewed during the Ghana research shed light on why this group of institutions is mostly interested in supporting in the mining sector:

I am aware that some international banks in the system, maybe Standard Chartered or maybe Barclays, may have done some transactions for these [mining] companies...what we do, just like most banks do is to therefore bank the next in the value chain, so there's Newmont and there's someone who does contract mining for Newmont, so there's engineer suppliers, there are a lot of engineer suppliers who do contract mining...so they are supposed to get the heavy duty equipment...So they get contracts from these mining companies to be able to do these kind of works for them...¹⁴

The host of local finance institutions now firmly rooted in sub-Saharan Africa, on the other hand, are better-equipped to fill the funding gap. The emergence of local finance institutions, including microcredit facilities, in the region has received considerable coverage in the business and management literature (Mori et al., 2015; Cull et al., 2015; Abdallah, 2016; Augustine et al., 2016). Many of these organizations are 'home grown' and should, therefore, be more in tune with the local context and have lending policies which reflect this. But whilst potentially providing benefits to domestic economies, as has been the case with the initial wave of such banks which initially emerged in the likes of Nigeria, Kenya and Zambia, many have experienced financial distress, have pursued imprudent lending strategies, have had low levels of capitalization, and have had very low success rates when it has come to collecting repayments on loans (Brownbridge, 1998). The results have, not surprisingly, been equally uninspiring in ASM from the beginning: As Davidson (1993) explains, 'The involvement of state banks and lending institutions in small-scale mining has often been characterized by disappointing results, mainly because borrowers default on their loans' (p. 220).

Although there has been a recent surge of interest in providing financial support to ASM, the results have been mixed. In addition to their well-documented struggles, many of these smaller institutions are specialized, established specifically to provide support to a designated activity, such as agriculture (e.g. Ranjan, 2015; Larsen and Birch-Thomsen, 2015; Abdallah, 2016) and fishing (e.g. Ataguba and Olowosegun, 2012; MacPherson et al., 2015), and are therefore not particularly well-equipped to service a sector such as ASM, which, organizationally, is very different. There is the added challenge of how to justify providing increased financial support for ASM at a time when public pressure on governments to crack down on illegal mining is at an all-time high. In a country such as Ghana, there are signboards, including posters at the Kotoka International Airport, which contain graphic images of the country's *galamsey* activities.¹⁵

With a license failing to improve access to finance, who, then, are banks supporting? The small-scale miners who have managed to land funding from Africa-based banks mostly fit the profiles of 'Gus', 'Alvin' and 'Fergus': individuals with capital and quantifiable assets, and who fit the mould of the 'successful' African entrepreneur outlined in Section 2.1. This resonates powerfully with Schumpeter

¹⁴ Interview, banker, 30 May 2016, Accra.

¹⁵ 'Signage to Sensitize Foreigners on Ghana's Mining Law Unveiled' https://article.wn.com/view/2015/06/22/signage_to_sensitize_foreigners_on_ghana_s_mining_law_unveil/ (Accessed 3 January 2017).

(1934), who believed that ‘the services provided by financial intermediaries – mobilizing savings, evaluating projects, managing risk, monitoring managers, and facilitating transactions – are essential for technological innovation and economic development’ (King and Levine, 1993a, p. 718) but that these ‘financial institutions are important because they evaluate and finance entrepreneurs in their initiation of innovative activity and the bringing of new products to market’ (King and Levine, 1993b, p. 514). The Ghana research shed light on what, in the case of ASM, factors into this evaluation process, and why individuals such as ‘Gus’, Alvin and ‘Fergus’ emerge successfully on the one hand, and why the more necessity-driven masses who, even with a license, tend to be excluded on the other hand. The main reason seems to be a lack of collateral: the necessity-driven miner is not in as favourable position as, for example, the farmer, who can use harvests for this purpose. There has been some speculation that banks could use mineral tenure and accompanying geological assessments, which confirm how much ore is in a designated plot, as collateral for loans (Mwaipopo et al., 2004; Wilson et al., 2015). But one financier confirmed in an interview why, despite calls for finance institutions to acquire more geological expertise for this very purpose, it is not a popular idea among lenders:

That would be a security or collateral that keeps reducing every single minute...so the extent that the place is being mined, the value of that land in the bush without the ore maybe US\$1000, which is small, low commercial value. The commercial value is inherent in the amount of mineral deposits in the land. Now if it is being mined, every day it is being mined, that mineral deposit is depleting, that resource is depleting, so the value of the collateral, which is ordinary supposed to be stable or appreciate keeps declining so I would rather take something else alongside it...¹⁶

The few lenders who have attempted this have not had much success. The following excerpts from interviews with various lenders shed light on why:

We gave 400,000 cedis for two excavators in 2011, interest 6% per month, 6 months, but after 3 months not doing well...Also, the interest was high, 24,000 cedis a month for interest. So, when we encountered problems, he couldn’t get money to pay. So, we came in three times and gave him additional loans to help him service equipment...you see price of gold is down, so no if the price of gold starts going up, we may reconsider...would have called for a landed property and the excavator as collateral and I do not think he would have been able...¹⁷

For leasing, first you use the machine as collateral, slightly used machine (US\$120,000-US\$150,000), then we add a margin of 20 percent and transfer ownership to them [but still not enough]...¹⁸

Yes we do...we do financing for the mining sector...in terms of financing, the ticket sizes are quite huge...a lot of them will come in with their own capital and for most them...their ticket size are the kind of things local banks cannot support...If a mining company wants financing, you know, for the exploration part, it should largely be equity because you don’t know what you’re going to find there but once they have the geological information and all that and they want to go into full scale mining, the ticket size the transactions amount is quite huge, and every bank, based on your capital, you have a maximum limit that has been set by your regulators that you can lend to any particular customer...because of that it is a restriction because Ghanaian banks

¹⁶ Interview, bank manager, Accra, 30 May 2016.

¹⁷ Interview, manager, microfinance institution 13 February 2014.

¹⁸ Interview, finance officer, microfinance institution 12 February 2014.

are quite smaller, and of course in our type of economy, interest rates are quite high because of the risks in the markets...¹⁹

...most times, they are not well-structured, a one man operation, so we see it as high risks. Two, the monitoring aspect is difficult. Three, some institutions, because of CSR [Corporate Social Responsibility], some banks do not want to fund small-scale mining because of environmental and social impacts so we see it as a big risk.²⁰

The final two quotations are particularly revealing, and underscore the challenge which the architects of the AMV face moving forward. How can a viable and equitable source of finance, essential for innovating small-scale miners, be established in an environment in which public perception of the sector is negative, lending institutions view the sector as risky, and there has never really been a culture of lending to ASM? These are enormous hurdles that must be overcome if a financial platform is to be established for the eclectic group of ASM operators found in sub-Saharan Africa, and ultimately, if *Boosting Artisanal and Small Scale Mining* is to become a realizable objective moving forward.

5 Critical Reflections and Conclusion

The aim of this paper was to critically examine the state of entrepreneurial activity found in ASM communities in sub-Saharan Africa. Under the auspices of the AMV's programs, host governments are being engaged to promote ASM as an entrepreneurial venture by following an ambitious developmental blueprint. But this strategy has clearly been designed with the enterprising 'opportunistic entrepreneurs' in mind, whom, as this paper has explained, constitute a small segment of the region's ASM population. There is certainly an abundance of entrepreneurial energy found in ASM communities across sub-Saharan Africa but most of it is inked to poverty and is of the necessity variety. Are the plans being implemented by the architects of the AMV sufficiently flexible to accommodate these individuals?

The thinking certainly does not seem to reflect this, at least during the early phases of implementation. It seems that the architects of the AMV have made two bold assumptions, the first being that ASM is populated mostly by opportunistic entrepreneurs, which, as indicated, is not the case. As the paper has explained, most people found in ASM camps are more of the 'necessity entrepreneur' variety, and have non-mining backgrounds. This leads to the second assumption, which is that all of the elements are in place needed to ensure that *Boosting Artisanal and Small Scale Mining* is an achievable objective. The analysis has illustrated very clearly, focusing on licensing, finance and the current policy apparatus, that the platform needed to stimulate innovation is not yet in place. Only a select few can flourish as 'true' entrepreneurs in the small 'space' available to innovate. What changes can be made to strengthen the platform for innovation and to make it more appealing for the diverse group of individuals found operating in the ASM sector in sub-Saharan Africa?

The first move – and reinforcing a point raised repeatedly in the literature over the past two decades and also made throughout this paper – would be to ensure that the licensing process is free from bureaucracy and does not burden the operator with unnecessary payments. Host governments which exhibit 'sloth' behaviour are unlikely to make any move that would compromise their ability to freely extract revenues from mining companies with operations and/or concessions. The challenge, given this 'large-scale (mining) bias', is identifying ways in which to empower the pockets of necessity

¹⁹ Interview, finance manager, microfinance institution, 30 May 2016.

²⁰ Interview, finance officer, microfinance institution, 12 February 2014.

entrepreneurs who are interested in continuing to cultivate their presence as ASM operators but who are unable to do so. There are ways of achieving this in the immediate term. For example, governments could pursue a variation of what is labelled here as the 'Guyana Model', which would help to solve the security of tenure problem. Guyana is one of few countries that has experimented and achieved enormous success with promoting ASM. For nearly 20 years, the government ringfenced its gold mining sector for indigenous small and medium-scale operators. It has achieved this by ensuring that its small-scale claim holders²¹ can renew their permits indefinitely, provided that they pay their annual rental fee on time. In line with the 'Guyana Model', some countries in sub-Saharan Africa have made a point of lengthening the period of lease for the small-scale mining license, a move which the architects of the AMV should continue to encourage.

Another way would be to pursue what is referred to here as the 'Mongolian Model': empowering a local government body to support ASM. In Mongolia, the government passed, on 1 December 2010, *Regulation No. 308*, 'Extraction Operations of Minerals from Small Scale Mines', which permits small-scale miners to organize into unregistered partnerships to work areas not yet licensed for exploration or extraction. Managed by the district governor, these miners are given the opportunity 'to scale up their activities into more formalised small-scale mining, [and] to have a plot of land upon which to legally mine', provided that the deposits are not of commercial value for industrial exploitation, deposits are already exploited waste deposits that have been abandoned and left as waste, and that the local authorities have mutually agreed to allow ASM work to take place (Hatcher, 2016, p. 191). Although not nearly enough 'space' needed for ASM to flourish, this is certainly a promising start, and a sign that the Government of Mongolia recognizes that its two very different mining sectors (large and small) require separate policy interventions and must be supported individually. In a number of countries in sub-Saharan Africa, including DR Congo and Mozambique, the governments have put aside 'corridors' for ASM, areas which are reserved for licensed operators. In these countries, however, a comparative level of geological assessment and intervention from local government has not yet taken place. But these changes could be readily made in even the most large-scale mining 'biased' and 'sloth' settings.

A second possible move would be to ensure that licensing schemes can truly engineer the scale of innovation which the architects of the AMV assume can happen in the current policy environment. This would require tweaking the systems already in place in the likes of Liberia and Sierra Leone, which again, demand that operators make significant payments to obtain a license in order to use machinery, and ultimately, mechanize. In addition to reducing costs outright, perhaps governments could assist operators by subsidizing equipment for those looking to 'graduate'. This would be a worthwhile pursuit for the Government of Ghana, for example, which currently is in the midst of overhauling its mine licensing system to include, in addition to the current 'small-scale' category, separate 'artisanal' and 'medium-scale' permits.

The third possible move, which would assist immeasurably with the financing gap, would be to encourage ASM associations, the mouthpieces of the sector and which are found in most African countries, to assist with collateralizing lending. This was a recommendation put forward by Mwaipopo et al. (2004) but which has not been examined in much depth. Most associations in the region are woefully underfunded but significantly, have a presence at the national level and are therefore better positioned to catalyze lending for operators from lending institutions. This could certainly be achieved in countries such as Tanzania, Ghana and Zambia, which have the most well-established and resourced

²¹ Guyana's *Mining Act 1989* allows for three scales of (mining) operation: 1) Small-Scale, a land claim covering 1500 X 800 feet; 2) Medium Scale, which cover an area between 150 and 1200 acres; and 3) Large Scale, which cover an area of between 500 and 12,800 acres.

ASM associations in sub-Saharan Africa. In countries where ASM associations do not have as much of a presence or influence, they must be resourced adequately and empowered.

To summarize, the entrepreneurial energy found in ASM communities across sub-Saharan Africa ranges from the necessity through to opportunistic variety. The problem, however, is that the architects of the AMV are attempting to stimulate innovation in this sector, region-wide, following a policy framework more suitable for the latter category but in landscapes where most operators fall into the former category. Stimulating innovation across the full spectrum of ASM operators will require significant changes to be made to policy frameworks, with a view to accommodating individuals from numerous backgrounds. Drawing on findings from the literature and from recent research in Ghana, this paper has illustrated how heterogeneous the sector's workforce is, and ultimately the magnitude of the challenge which lies ahead for the architects of the AMV if they are to make any real progress toward achieving their objective of *Boosting Artisanal and Small Scale Mining*.

Acknowledgements

The authors would like to thank 'Atta', 'Kwade' and 'Emma' for their assistance with the fieldwork, and for the editor, Dr. Joseph Amankwah-Amoah, and an anonymous reviewer for their comments on an earlier draft. The research reported here was supported with a grant awarded by the International Growth Centre under the project, 'The "Informalization" of Ghana's Small-Scale Gold Mining Economy: Drivers and Policy Implications'.

References

- Abdallah, A.H. 2016. Does credit market inefficiency affect technology adoption? Evidence from Sub-Saharan Africa. *Agricultural Finance Review* 76(4): 494-511.
- African Economic Outlook. 2016. *African Economic Outlook 2016: Sustainable Cities and Structural Transformation*. African Development Bank, Tunis.
- African Union (AU). 2009. *African Mining Vision*. African Union, Addis Ababa.
- Africa Mining Vision (AMV). 2009. *Boosting Artisanal and Small-scale Mining*. Africa Mining Vision, African Union, Addis Ababa.
- Akabzaa, T., Darimani, A. 2001. *Impact of Mining Sector Investment in Ghana: A Study of the Tarkwa Mining Region*. SAPRIN, Washington DC.
- Altenburg, T., Melia, E. 2014. Kick-starting industrial transformation in sub-Saharan Africa, pp. 355-378, in *Transforming economies: making industrial policy work for growth, jobs and development* (eds. Salazar-Xirinachs et al.), International Labour Office, Geneva.
- Amankwah-Amoah, J. 2016. Coming of age, seeking legitimacy: The historical trajectory of African management research. *Critical Perspectives on International Business* 12:22-39.
- Annisette, M. 2004. The true nature of the World Bank. *Critical Perspectives on Accounting* 15: 303-323.
- Amine, L., Staub, K. 2009. Women entrepreneurs in sub-Saharan Africa: An institutional theory analysis from a social marketing point of view. *Entrepreneurship and Regional Development* 121(2): 183-211.
- Ataguba, G.A., Olowosegun, O.M. 2012. Micro-credit: Financing fish production in Nigeria: A review. *Journal of Fisheries and Aquatic Science* 8(1 SPL. ISS.): 190-195.
- Augustine, D., Wheat, C.O., Jones, K.S., Baraldi, M., Malgwi, C.A. 2016. Gender diversity within the workforce in the microfinance industry in Africa: Economic performance and sustainability. *Canadian Journal of Administrative Sciences* 33(3): 227-241.
- Auriol, E. 2013. *Barriers to formal entrepreneurship in developing countries*. World Development Report Background Paper, World Bank, Washington DC.
- Banchirigah, S.M. 2006, How have Reforms Fuelled the Expansion of Artisanal Mining? Evidence from Sub-Saharan Africa. *Resources Policy* 31(3): 165-71.
- Banchirigah, S.M. 2008. Challenges with eradicating illegal mining in Ghana: a perspective from the grassroots. *Resources Policy* 33: 29-38.
- Banchirigah, S.M., Hilson, G. 2010. De-Agrarianization, Re-Agrarianization and Local Economic Development: Re-Orientating Livelihoods in African Artisanal Mining Communities. *Policy Sciences* 43(2): 157-180.
- Barrett, C.B., Reardon, T., Webb, P. 2001. Nonfarm income diversification and household livelihood strategies in rural Africa: concepts, dynamics, and policy implications. *Food Policy* 26(4): 315-331.

- Barry, M. (Ed.), 1996. *Regularizing Informal Mining. A Summary of the Proceedings of the International Roundtable on Artisanal Mining*. Organized by the World Bank, 17–19, May 1995, Industry and Energy Department Occasional Paper No. 6, Washington, DC.
- Beegle, K., Christiaensen, L., Dabalen, A., Gaddis, I. 2016. *Poverty in a Rising Africa*. World Bank, Washington DC.
- Beeka, B.H., Rimmington, M. 2011. Entrepreneurship as a career option for African youths. *Journal of Developmental Entrepreneurship* 16(1): 145-164.
- Bhave, M. P. 1994. A Process Model of Entrepreneurial Venture Creation. *Journal of Business Venturing* 9: 223–242.
- Bodenheimer, M. 2014. *Certifying Improvement, Improving Certification: An Analysis based on the Artisanal and Small-Scale Mining Sector*. Working Paper Sustainability and Innovation, Karlsruhe.
- Bolay, M. 2014. When miners become “foreigners”: Competing categorizations within gold mining spaces in Guinea. *Resources Policy* 40: 117-127.
- Brixova, Z., Ncube, M., Bicaba, Z. 2015. Skills and Youth Entrepreneurship in Africa: Analysis with Evidence from Swaziland. *World Development* 67(3): 11-26.
- Brower, J.C. 1979. Small Scale Mining and Economic Aid in Bolivia. *Natural Resources Forum* 3(3): 263-279.
- Brownbridge, M. *The Causes of Financial Distress in Local Banks in Africa and Implications for Prudential Policy*. UNCTAD Working Paper 132, UNCTAD, New York.
- Bruenjes, J., Diez, J.R. 2012. *Opportunity entrepreneurs – potential drivers of non-farm growth in rural Vietnam?* Working Papers on Innovation and Space No 01.12, University of Marburg, Marburg.
- Bryceson, D.F. 1996. Deagrarianization and rural employment in sub-Saharan Africa: A sectoral perspective. *World Development* 24(1): 97-111.
- Bryceson, D.F. 2002. The scramble in Africa: Reorienting rural livelihoods. *World Development* 30(5): 725-739.
- Bryceson, D.F., Jønsson, J.B. 2010. Gold Digging Careers in Rural East Africa: Small-Scale Miners’ Livelihood Choices. *World Development* 38(3): 379-392.
- Bryceson, D.F., Geenen, S. 2016. Artisanal frontier mining of gold in Africa. Labour transformation in Tanzania and the Democratic Republic of Congo. *African Affairs* 115(459): 296-317.
- Carman, J.S. 1985. The Contribution of Small-Scale Mining to World Mineral Production. *Natural Resources Forum* 9(2): 119-124.
- Carman, J.S. 1987. Why Small Mining? *Episodes* 10(3): 159-164.
- Childs, J. 2014. From 'criminals of the earth' to 'stewards of the environment': The social and environmental justice of Fair Trade gold. *Geoforum* 57: 129-137.

Common Fund for Commodities (CFC). 2008. *2008 Regional Workshop: Small-Scale Mining in Africa – A Case for Sustainable Livelihood*. Common Fund for Commodities, Amsterdam.

Crawford, G., Botchwey, G. *Conflict, collusion and corruption in small-scale gold mining in Ghana: Chinese miners and the state*. Colloquium Paper No. 48, Institute for Social Studies, The Hague.

Crisp, B.F., Kelly, M.C. 1999. The Socioeconomic Impacts of Structural Adjustment. 1999. *International Studies Quarterly* 43(3): 533-552.

Cromwell, W. 1992. *The impact of economic reform on the performance of the seed sector in Eastern and Southern Africa*. OECD Development Centre Technical Paper, No. 68, OECD, Paris

Cull, R., Harten, S., Nishida, I., Rusu, A.B., Bull, G. 2015. Benchmarking the financial performance, growth, and outreach of greenfield MFIs in Africa. *Emerging Markets Review* 25: 92-124.

Dana, L.P., Ratten, V. 2017. International entrepreneurship in resource-rich landlocked African countries. *Journal of International Entrepreneurship* (accepted for publication). DOI 10.1007/s10843-017-0211-6

Danquah, M., Amankwah-Amoah, J. 2017. Assessing the relationships between human capital, innovation and technology adoption: Evidence from sub-Saharan Africa. *Technological Forecasting and Social Change* 122: 24-33.

Davidson, J. 1993. The transformation and successful development of small-scale mining enterprises in developing countries. *Natural Resources Forum* 17(4): 315-326.

De Gobbi, M.S. 2014. Making Youth Entrepreneurship Work in Sub-Saharan Africa: Some Factors of Success. *Open Journal of Business and Management* 2: 305-313

Dell, M. 2013. Undermining the 'Local': Migration, Development and Gold in Southern Kayes. *Journal of Intercultural Studies* 34(5): 584-603.

Diomande, M. 1990 Business creation with minimal resources: Some lessons from the African experience. *Journal of Business Venturing* 5(4): 191-200.

Dreschler, B. 2001. *Small-scale Mining and Sustainable Development within the SADC Region*. Mining, Minerals and Sustainable Development (MMSD). International Institute for Environment and Development and World Business Council for Sustainable Development. London.

Easterly, W. 2005. What did structural adjustment adjust? The association of policies and growth with repeated IMF and World Bank adjustment loans. *Journal of Development Economics* 76: 1-22.

Edgcomb, E.L., Thetford, T. 2004. *The informal economy: making it in rural America*. Aspen Institute, Washington DC.

Edoho, F.M. 2015. Entrepreneurship paradigm and economic renaissance in Africa. *African Journal of Economic and Management Studies* 6(1): 2-16.

Elkan, W. 1988. Entrepreneurs and Entrepreneurship in Africa. *The World Bank Research Observer* 3(2): 171-188.

Ellis, F. 1998. Survey article: Household strategies and rural livelihood diversification. *The Journal of Development Studies* 35(1): 1–38.

- Ellis, F., Freeman, H.A. 2004. Rural livelihoods and poverty reduction strategies in four African countries. *Journal of Development Studies* 40(4): 1-30.
- Ellis, F., Mdoe, N. 2003. Livelihoods and rural poverty reduction in Tanzania. *World Development* 31(8): 1367-1384.
- Ferring, D., Hausermann, H., Effah, E. 2016. Site specific: Heterogeneity of small-scale gold mining in Ghana. *The Extractive Industries and Society* 3(1): 171-184.
- Fisher, E. 2007. Occupying the Margins: Labour Integration and Social Exclusion in Artisanal Mining in Tanzania. *Development and Change* 38(4): 735-760.
- Fisher, E., Mwaipopo, R., Mutagwaba, W., Nyange, D., Yaron, G. 2009. "The ladder that sends us to wealth": Artisanal mining and poverty reduction in Tanzania. *Resources Policy* 34: 32-38.
- Fu, X., Mohnen, P., Zanello, G. 2017. Innovation and productivity in formal and informal firms in Ghana. *Technological Forecasting and Social Change*. Article in Press.
- Gamu, J., Le Billion, P., Spiegel, S. 2015. Extractive industries and poverty: A review of recent findings and linkage mechanisms. *The Extractive Industries and Society* 2(1): 162-176.
- Garrett, N. 2007. *The Extractive Industries Transparency Initiative (EITI) & Artisanal and Small-Scale Mining (ASM): Preliminary Observations from the Democratic Republic of the Congo (DRC)*. Extractive Industries Transparency Initiative (EITI), Oslo.
- Geenen, S. 2012. A dangerous bet: The challenges of formalizing artisanal mining in the Democratic Republic of Congo. *Resources Policy* 37(3): 322-330.
- Geenen, S. 2014. Dispossession, displacement and resistance: Artisanal miners in a gold concession in South Kivu, Democratic Republic of Congo. *Resources Policy* 40(1): 90-99.
- George, G., Corbishley, C., Khayesy, J.N.O. 2016. Bringing Africa In: Promising Directions for Management Research. *Academy of Management Journal* 59(2): 377-393.
- Gibbon, P. 1992. Structural adjustment and pressure toward multipartyism in Sub-Saharan Africa, pp. 156-177, in *Authoritarianism, Democracy and Adjustment: The Politics of Economic Reforms in Africa* (eds. Gibbon et al.), Scandinavian Institute of Africa Affairs, Uppsala.
- Gibbs, S.R., Mahone, C.E., Crump, M.E.S. 2014. A framework for informal economy entry: Socio-spatial necessity-opportunity, and structural-based factors. *Academy of Entrepreneurship Journal* 20(2): 33-58.
- Gilberthorpe, E., Papyrakis, E. 2015. *The extractive industries and development: The resource curse at the micro, meso and macro levels*. *The Extractive Industries and Society* 2(2): 381-390.
- Gough, K.V., Langvang, T. (eds.) 2017. *Young Entrepreneurs in Sub-Saharan Africa*. Routledge, London.
- Harding, R. 2006. Entrepreneurs: the world's lifeline? *Business Strategy Review* 17(4): 4-7.
- Hatcher, P. 2016. The politics of artisanal and small-scale mining in Mongolia. *Third World Thematics* 1(2): 184-201.

- Hayes, R.N., Robinson, J.A. 2012. An economic sociology of African entrepreneurial activity. *International Journal of Entrepreneurship* 16: 51-67
- Hentschel, T., Hruschka, F., Priester, M. 2002. *Global Report on Artisanal and Small-Scale Mining, Minerals Mining and Sustainable Development (MMSD) Project*. International Institute for Environmental Development, London.
- Hilson, G. 2009. Small-scale mining, poverty and economic development in sub-Saharan Africa: An overview. *Resources Policy* 34(1-2): 1-5.
- Hilson, G. 2010. 'Once a Miner, Always a Miner': Poverty and Livelihood Diversification in Akwatia, Ghana. *Journal of Rural Studies* 26(3): 296-307.
- Hilson, G. 2016. Farming, Small-Scale Mining and Rural Livelihoods in Sub-Saharan Africa: A Critical Overview. *The Extractive Industries and Society* 3(2): 547-563.
- Hilson, G. 2017. Why is there a large-scale mining bias in sub-Saharan Africa? *Land Use Policy* (accepted for publication).
- Hilson, G., Pardie, S. 2006. Mercury: An agent of poverty in Ghana's small-scale gold mining industry? *Resources Policy* 31(2): 106-116.
- Hilson, G., Garforth, C. 2013. 'Everyone Now is Concentrating on the Mining': Drivers and Implications of Rural Economic Transition in the Eastern Region of Ghana. *The Journal of Development Studies* 49(3): 348-364.
- Hilson, G., Potter, C. 2003. Why is Illegal Gold Mining Activity so Ubiquitous in Rural Ghana? *African Development Review* 15(2-3): 237-270.
- Hilson, G., Potter, C. 2005. Structural adjustment and subsistence industry: artisanal gold mining in Ghana. *Development and Change* 36(1): 103-131.
- Hilson, G. Van Bockstael, S. 2011. Diamond Mining, Rice Farming and a 'Maggi Cube': A Viable Poverty Alleviation Strategy in Rural Liberia? *Journal of International Development* 23(8): 1042-1053.
- Hilson, G., Hilson, A., Adu-Darko, E. 2014. Chinese Participation in Ghana's Informal Gold Mining Economy: Drivers, Implications and Clarifications. *Journal of Rural Studies* 34: 292-302.
- Hinton, J., Levin, E. 2010. *Proposed Regulations Governing Mining Under a Class C Mining License of the Republic of Liberia*. USAID, Washington DC.
- Hirons, M. 2011. Managing artisanal and small-scale mining in forest areas: perspectives from a poststructural political ecology. *The Geographical Journal* 177(4): 347-356.
- Hirons, M. 2014. Decentralising natural resource governance in Ghana: Critical reflection on the artisanal and small-scale mining sector. *Futures* 62: 21-31.
- International Labour Organization (ILO). 1999. *Social and labour issues in small-scale mines*. Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines. International Labour Organization, Sectoral Activities Program, International Labour Office, Geneva.

- International Labour Organization (ILO). 2016. *World Employment and Social Outlook: Trends 2016*. International Labour Office, Geneva.
- International Monetary Fund (IMF). 2017. *Regional Economic Outlook Sub-Saharan Africa: Restarting the Growth Engine*. International Monetary Fund, Washington DC.
- Jiao, H., Yang, D., Gao, M., Xie, P., Wu, Y. 2016. Entrepreneurial ability and technological innovation: Evidence from publicly listed companies in an emerging economy. *Technological Forecasting and Social Change* 112: 164-170.
- Jønsson, J.B., Fold, N. 2009. Handling uncertainty: Policy and organizational practices in Tanzania's small-scale gold mining sector. *Natural Resources Forum* 33(3): 211-220
- Juma, C. 2015. Complexity, Innovation, and Development: Schumpeter Revisited. *Journal of Policy and Complex Systems* 1(1): 4-21.
- Kamlongera, P. J. 2011. Making the poor 'poorer' or alleviating poverty? Artisanal mining livelihoods in rural Malawi. *Journal of International Development* 23: 1128-1139.
- Kapinga, W., Sinda, A.A. 2012. Tanzania, pp. 243-258, in *Minerals and Mining* (ed. P. V. Pedersen), Globe Law and Business, London.
- Khavul S., Bruton G.D., Wood E. 2009. Informal Family Business in Africa. *Entrepreneurship: Theory and Practice* 33(6), 1219-1238.
- Kibugi, R., Wardell, D.A, Cordonier Segger, M.C., Haywood, C., Gift, R. 2015. *Enabling legal frameworks for sustainable land-use investments in Tanzania: Legal assessment report*. Working Paper no 191, CIFOR, Bogor.
- Kiggundu, M.N. 2002. Entrepreneurs and entrepreneurship in Africa: What is known and what needs to be done. *Journal of Developmental Entrepreneurship* 7(3): 239-258.
- King, R.G., Levine, R. 1993a. Finance and Growth: Schumpeter Might be Right. *The Quarterly Journal of Economics* 108(3): 717-737.
- King, R.G., Levine, R. 1993b. Finance, entrepreneurship and growth: Theory and evidence. *Journal of Monetary Economics* 32: 513-542.
- Kuada, J. 2015. Entrepreneurship in Africa – a classificatory framework and a research agenda. *African Journal of Economic and Management Studies* 6(2): 148-163.
- Labonne, B. 1994. Small- and medium-scale mining: The Harare seminar and guidelines. *Natural Resources Forum* 18 (1): 13-16.
- Labonne, B. 2002. *Seminar on Artisanal and Small-Scale Mining in Africa: Identifying Best Practice and Building the Sustainable Livelihoods of Communities: A Synthesis Report*. UNDESA, New York.
- Lancaster, C. 1997. The World Bank in Africa since 1980: The Politics of Structural Adjustment Lending, in *The World Bank: Its First Half Century* (ed. Kapur et al.), The Brookings Institution, Washington, DC.
- Langevang, T., Gough, K.V. 2012. Diverging pathways: young female employment and entrepreneurship in sub-Saharan Africa. *The Geographical Journal* 178(3): 242-252.

- Larsen, M.N., Birch-Thomsen, T. 2015. The role of credit facilities and investment practices in rural Tanzania: a comparative study of Igowole and Ilula emerging urban centres. *Journal of Eastern African Studies* 9(1): 55-73.
- Levin, E., Hinton, J. 2010. *Comparative Study: Legal and Fiscal Regimes for Artisanal Diamond Mining* USAID, Washington DC.
- Lindell, I. 2010. Between Exit and Voice: Informality and the Spaces of Popular Agency. *African Studies Quarterly* 2-3: 1-11.
- Lopes, C. 1999. Are Structural Adjustment Programmes an Adequate Response to Globalisation?
- Maconachie, R., Binns, T. 2007. 'Farming miners' or 'mining farmers'? Diamond mining and rural development in post-conflict Sierra Leone. *Journal of Rural Studies* 23(3): 367-380.
- Maconachie, R., Hilson, G. 2011. Safeguarding livelihoods or exacerbating poverty?: Artisanal mining and formalization in West Africa. *Natural Resources Forum* 35(4): 293-303.
- MacPherson, E., Sadalaki, J., Nyongopa, V., Nkhwazi, L., Phiri, M., Chimphonda, A., Desmond, N., Mwapasa, V., Lalloo, D.G., Seeley, J., Theobald, S. 2015. Exploring the complexity of microfinance and HIV in fishing communities on the shores of Lake Malawi. *Review of African Political Economy* 42(145): 414-436.
- Mainardi, S. 1997. Mineral resources and economic development: A survey. *Development Southern Africa* 14(1): 61-77.
- McCabe, J.T. 2003. Sustainability and livelihood diversification among the Maasai of northern Tanzania. *Human Organization* 62(2): 100-111
- Mendi, P., Mudida, R. 2016. The effect on innovation of beginning informal: Empirical evidence from Kenya. *Technological Forecasting and Social Change*. Article in Press.
- Mori, N., Golesorkhi, S., Randøy, T., Hermes, N. 2015. Board Composition and Outreach Performance of Microfinance Institutions: Evidence from East Africa. *Strategic Change* 24(1): 99-113.
- Mueller, p. 2005. *Entrepreneurship in the region: Breeding grounds for nascent entrepreneurs?* Freiberg Working Papers No 2005, 05, Technical University of Freiberg, Freiberg.
- Murphy, J.T. 2006. The sociospatial dynamics of creativity and production in Tanzanian industry: Urban furniture manufacturers in a liberalizing economy. *Environment and Planning A* 38(10): 1863-1882.
- Mwaipopo, R., W. Mutagwaba, W. D. Nyanga, Fisher, E. 2004. *Increasing the contribution of artisanal and small-scale mining to poverty reduction in Tanzania*. Department for International Development, London.
- Nellis, J. 2005. *Privatization in Africa: What has happened? What is to be done?* Fondazione Eni Enrico Mattei, Milan.
- Noetstaller, R. 1987. *Small-Scale Mining: A Review of the Issues*. World Bank Technical Paper Number 75. Industry and Finance Series. The World Bank, Washington D.C.

- Noetstaller, R. 1995. Historical Perspective and Key Issues of Artisanal Mining, paper presented at the *International Roundtable on Artisanal Mining*, World Bank, Washington DC.
- Nyanteng, V.K., Seini, A.W. 2000. Agricultural Policy and the Impact on Growth and Productivity 1970-95, in *Economic Reforms in Ghana: The Miracle and the Mirage* (ed. E. Aryeetey et al.), Africa World Press, Trenton.
- Oomes, N., Vocke, M. 2003. *Diamond Smuggling and Taxation in Sub-Saharan Africa*. IMF Working Paper, IMF, Washington DC.
- Pegg, S. 2003. *Poverty Reduction or Poverty Exacerbation? World Bank Group Support for Extractive Industries in Africa*. OXFAM America, Washington DC.
- Perks, R. 2011. 'Can I Go?' – Exiting the Artisanal Mining Sector in the Democratic Republic of Congo. *Journal of International Development* 23(8): 1115-1127.
- Perks, R. 2013. Digging into the past: critical reflections on Rwanda's pursuit for a domestic mineral economy. *Journal of Eastern African Studies* 7(4): 732-750.
- Pijpers, R. 2011. When Diamonds Go Bust: Contextualising Livelihood Changes in Rural Sierra Leone. *Journal of International Development* 23(8): 1068-1079.
- Potter, C., Lupilya, A.C. 2016. 'You have hands, make use of them!' Child labour in Artisanal and Small-scale Mining in Tanzania. *Journal of International Development* 28(7): 1013-1028.
- Ranjan, R. 2015. Rural entrepreneurship and developmental outcomes under climate change threats. *Climate and Development* 7(4): 353-366.
- Rocha, V.C. 2012. *The Entrepreneur in Economic Theory: From an Invisible Man Toward a New Research Field*, FEP Working Paper 459, University of Porto, Porto.
- Rufino, M.C., Thornton, P.K., Ng'ang'a, S.K., Mutie, I., Jones, P.G., van Wijk, M.T., Herrero, M. 2013. Transitions in agro-pastoralist systems of East Africa: Impacts on food security and poverty. *Agriculture, Ecosystems and Environment* 179: 215-230.
- Sachs, J.D., Warner, A.M. 1997. *Natural Resource Abundance and Economic Growth*. Center for International Development and Harvard Institute for International Development, Harvard, Massachusetts.
- Sahn, D.E., Sarris, A. 1991. Structural adjustment and the welfare of rural smallholders: A comparative analysis from sub-Saharan Africa. *World Bank Economic Review* 5(2): 259-289.
- Sahut, J.-M. 2014. Innovation, R&D and entrepreneurship. *Technological Forecasting and Social Change* 88: 287-289.
- Sahut, J.M., Peris-Ortiz, M. 2014. Small business, innovation, and entrepreneurship. *Small Business Economics* 42(4): 663-668.
- Sarris, A.H., Shams, H. 1992. *Ghana Under Structural Adjustment: The Impact on Agriculture and the Rural Poor*. New York University Press, New York.

- Schumpeter, J. 1934. *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. Transaction Books, New Brunswick.
- Schumpeter, J. 1942. *Capitalism, socialism and democracy*. Impact Books, Virginia.
- Sembene, D. 2015. *Poverty, Growth, and Inequality in Sub-Saharan Africa: Did the Walk Match the Talk under the PRSP Approach?* IMF Working Paper 15/122, IMF, Washington DC.
- Sheriff, M., Muffatto, M. Reviewing existing policies for unleashing and fostering entrepreneurship in selected African countries. *Journal of Developmental Entrepreneurship* 19(3), art. no. 1450016.
- Sheriff, M., Muffatto, M. 2015. The present state of entrepreneurship ecosystems in selected countries in Africa. *African Journal of Economic and Management Studies* 6(1): 17-54.
- Siegel, S., Veiga, M. 2010. The myth of alternative livelihoods: artisanal mining, gold and poverty. *International Journal of Environment and Pollution* 41(3-4): 272-288.
- Silvestri, S., Sabine, D., Patti, K., Wiebke, F., Maren, R., Ianetta, M., Carlos, Q.F., Mario, H., Anthony, N., Nicolas, N., Joash, M., Lieven, C., Cristina, R.M. 2015. Households and food security: Lessons from food secure households in East Africa. *Agriculture and Food Security* 4(1): art. no. 23,
- Small, R. 2012. *Artisanal and Small-Scale Mining in and Around Protected Areas and Critical Ecosystems Project*. WWF. Amsterdam.
- Smith, N.M. 2015. Gender and Livelihood Diversification: Maasai Women's Market Activities in Northern Tanzania. *Journal of Development Studies* 51(3): 305-318.
- Snyder, R. 2006. Does Lootable Wealth Breed Disorder? A Political Economy of Extinction Framework. *Comparative Political Studies* 39(8): 943-968.
- Snyder, R., Bhavani, R. 2005. Diamonds, Blood, and Taxes: A Revenue-Centred Framework for Explaining Political Order. *Journal of Conflict Resolution* 49(4): 563-597.
- Spiegel, S. 2015. Shifting Formalization Policies and Recentralizing Power: The Case of Zimbabwe's Artisanal Mining Sector. *Society and Natural Resources* 28(5): 543-558.
- Spring, A., McDade, B. (eds.) 1998a. *African Entrepreneurship: Theory and Reality*. University Press of Florida, Gainesville.
- Spring, A., McDade, B. 1998b. Entrepreneurship in Africa: Traditional and Contemporary Paradigms, pp. 1-34, in *African Entrepreneurship: Theory and Reality* (eds. A Spring and B. McDade), University Press of Florida, Gainesville.
- Stephan, U., Uhlaner, L., Stride, C. 2015. Institutions and social entrepreneurship: The role of institutional voids, institutional support, and institutional configurations. *Journal of International Business Studies* 46(3): 46(3): 308-331.
- Stewart, D.F. 1987. Small-scale Mining and Development: The Case of Gold Mining in Papua New Guinea. *Natural Resources Forum* 11(3): 219-227.

Stoner, C., Fry, F. 1982. The Entrepreneurial Decision: Dissatisfaction or Opportunity? *Journal of Small Business Management* 20(2): 39-44.

Surie, G., Groen, A. 2017. The importance of social entrepreneurship in national systems of innovation — An introduction. *Technological Forecasting and Social Change* 121: 181-183.

Teschner, B.A. 2014. “Orpaillage pays for everything”: How artisanal mining supported rural institutions following Mali's coup d'état. *Futures* 62: 140-150.

Tschakert, P., Singha, K. 2007. Contaminated identities: Mercury and marginalization in Ghana's artisanal mining sector. *Geoforum* 38(6): 1304-1321.

Turró, A., Urbano, D., Peris-Ortiz, M. 2014. Culture and innovation: The moderating effect of cultural values on corporate entrepreneurship. *Technological Forecasting and Social Change* 88: 360-369.

United Nations (UN). 2008. *Innovation for Sustainable Development: Local Case Studies from Africa*. United Nations, New York.

United Nations (UN). 2014. *Entrepreneurship for Development: Report of the Secretary-General*. United Nations, New York.

United Nations Conference on Trade and Development (UNCTAD). 2011. *Entrepreneurship education, innovation and capacity-building in developing countries*. United Nations Conference on Trade and Development (UNCTAD), Geneva.

United Nations Conference on Trade and Development (UNCTAD). 2015. *State of Commodity Dependence 2014*. United Nations Conference on Trade and Development (UNCTAD), Geneva.

United Nations Economic Commission for Africa (UNECA). 2002. *Compendium on best practices in small-scale mining in Africa*. UNECA, Addis Ababa.

United Nations Economic Commission for Africa (UNECA). 2003. *Report on Selected Themes in Natural Resources Development in Africa: Artisanal and Small-Scale Mining and Technology Challenges in Africa*. United Nations Economic Commission for Africa and African Union, Addis Ababa, Ethiopia.

United Nations Economic Commission for Africa (UNECA). 2011. *Minerals and Africa's Development: The International Study Group Report on Africa's Mineral Regimes*. United Nations Economic Commission for Africa and African Union, Addis Ababa, Ethiopia.

United Nations Economic Commission for Africa (UNECA). 2015. *Contribution to the 2015 United Nations Economic and Social (ECOSOC) Integration Segment*. United Nations Economic Commission for Africa, Addis Ababa.

United Nations Development Program (UNDP). 2015. *Human Development Report 2015: Work for Human Development*. UNDP, New York.

United Nations Environment Program (UNEP). 2012. *Analysis of formalization approaches in the artisanal and small-scale gold mining sector based on experiences in Ecuador, Mongolia, Peru, Tanzania and Uganda*. UNEP, Nairobi.

- Van Bockstael, S. 2014. The persistence of informality: Perspectives on the future of artisanal mining in Liberia. *Futures* 62: 10-12.
- Vavrus, F. 2005. Adjusting inequality: Education and structural adjustment policies in Tanzania. *Harvard Educational Review* 75(2): 174-201.
- Verbrugge, B. 2015. The Economic Logic of Persistent Informality: Artisanal and Small-Scale Mining in the Southern Philippines. *Development and Change* 46(5): 1023-1046.
- Verbrugge, B. 2016. Voices from below: artisanal and small-scale mining as a product and catalyst of rural transformation. *Journal of Rural Studies* 47: 108-116.
- Wells, J., Wall, D. 2003. The expansion of employment opportunities in the building construction sector in the context of structural adjustment: Some evidence from Kenya and Tanzania. *Habitat International* 27(3): 325-337.
- Williams, C.C. 2014. *Informal Sector Entrepreneurship*. OECD Working Paper, OECD, Paris.
- Wilson, M.L., Renne, E., Roncoli, C., Agyei-Baffour, P., Tenkorang, E.Y. 2015. Integrated Assessment of Artisanal and Small-Scale Gold Mining in Ghana – Part 3: Social Sciences and Economics. *International Journal of Environmental Research and Public Health* 12(7):8133-8156.
- World Bank. 1981. *Accelerated Growth in Sub-Saharan Africa: An Agenda for Action*. World Bank, Washington DC.
- World Bank. 1992. *A Strategy for African Mining*. World Bank, Washington DC.
- World Bank. 2005. *The Millennium Development Goals and Small-Scale Mining*. World Bank, Washington DC.
- World Bank. 2015. *The Sustainable Management of Mineral Resources Project (SMMRP) Phase II: The Environmental and Social Management Framework*. World Bank, Washington DC.
- Wong, K.P., Ho, Y.P., Autio, E. 2005. Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data. *Small Business Economics* 24(3): 335-350.