

New interventions and sustainable solutions

Reappraising illegal artisanal mining in South Africa

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Despite its contribution to the South African economy, the South African mining industry is plagued by illegal artisanal mining (IAM). Although artisanal mining was recognised as a means to alleviate poverty after 1994, current legislation criminalises such work. This article reviews the limited literature on IAM in South Africa to show that there is poor synergy between mining industry stakeholders. It recommends two theoretical perspectives from which to reappraise the underlying causes of IAM, concluding that an industry-tailored, theoretically informed intervention is required.

Illegal artisanal mining (IAM) is a serious environmental and social problem in South Africa.¹ 'Illegal' mining is an act of mining that contravenes the Mineral and Petroleum Resources Development Act (MPRDA). Despite its illegality, many scholars believe such mining has an important role to play in rural economic development.² The global demand for gold has triggered a surge in illegal mining in various parts of the world, including Indonesia, Venezuela (where 91% of gold is produced illegally), Colombia (80%) and Ecuador (77%).³

After agriculture, more South Africans are employed in the mining sector than in any

other.⁴ The industry provides 500 000 direct and 800 000 indirect jobs, and contributes 16% to the country's gross domestic product (GDP).⁵ Nevertheless, gold and diamonds are frequently extracted informally, with serious environmental consequences.⁶ While this harm is done, scholars have struggled to quantify it, as there is no common international or national definition of what illegal mining entails.⁷

Research on IAM in South Africa is limited.⁸ Available statistics are primarily rough estimates, and thus lack credibility.⁹ The resulting misunderstandings over unregulated and informal mining impede solutions to related challenges.¹⁰

Aside from Thornton, few scholars have explored IAM in South Africa with any nuance. His work offers a groundbreaking interdisciplinary approach to IAM.¹¹ He

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posits that illegal artisanal miners (IAMs) are largely misrepresented by the South African government and media.¹² As a consequence, fragmented and parochial interventions are adopted. Inevitably these are generalised, and often involve violent crackdowns, the imposition of penalties and the marginalisation of IAMs, with little consideration as to how they might otherwise earn their livelihoods.

The purpose of this review is to develop an integrated approach in reappraising IAM in South Africa. It draws from local and international best practices, and aims to answer two questions, namely: what is a viable approach to IAM, and what are international best practices for achieving sustainable artisanal mining?

The need for networked governance

Mineral and financial losses due to IAM are widespread, despite collaborative efforts between the South African Police Service (SAPS) and the mining industry's security personnel. Coetzee and Horn suggest that a lack of context-specific, integrated and standardised methods for managing illegal activities has perpetuated the problem.¹³

Solving highly complex problems such as IAM requires cross-sector cooperation, organisation and governance.¹⁴ This must be implemented alongside capacity building (e.g. training for IAMs) and exploration of contextually relevant solutions. The integration of capacities and resources is best achieved through the networked governance perspective, where a culture of close cooperation between government, local communities, law enforcement agencies, the South African National Defence Force (SANDF), SAPS, civil society organisations (CSOs) and non-governmental organisations (NGOs) is instilled. However, this cooperation needs to be aligned with other global and regional initiatives

such as the Communities of Artisanal and Small-scale Mining (CASM) Charter, Yaoundé Vision and Africa's Mining Vision, wherein the practice of IAM is not criminalised but is encouraged as a niche source for sustainable livelihoods.¹⁵

Similarly, interventions will benefit from collaborative arrangements at the global level through the United Nations (UN), World Bank and International Monetary Fund; at the regional level through the Southern African Development Community; and at the domestic level. Collaborative arrangements can be viewed both as bottom-up and multi-level approaches. Operationally, government (national and local) needs to spearhead the reappraisal of IAM through poverty alleviation strategies. Tactically, all stakeholders should be included as much as is practically possible.

This article uses the theoretical models of networked governance and capitalism in crafting and understanding a context-specific approach to reappraising IAM.

Conceptual analysis

IAM may be understood differently by different people in different countries. This article understands it as artisanal and small-scale mining (ASM), which, when informal, is described as informal artisanal mining (IAM). In Ghana, IAM is referred to as *galamsey*, in Mongolia it is referred to as *ninja mining*, while in South Africa illegal miners are referred to as *zama zamas* – an isiZulu term meaning 'try and try again'.¹⁶ Because there is no common definition of IAM, Zvarivadza asserts that such activities are largely attributed to informal and unregulated ASM.¹⁷ Formal or legal ASM occurs when companies comply with environmental and health-related mining regulations, while informal ASM (IAM) occurs when they do not. Importantly, small-scale mining can be regulated like large-scale mining but, as a

result of widespread flouting of artisanal mining legislation, is often regarded as IAM.¹⁸

ASM is as important as large-scale mining as a provider of livelihoods in poverty-stricken communities.¹⁹ The same holds true for IAM. Hentschel et al. contend that ASM relates to 'mining by individuals, groups, families or cooperatives with minimal or no mechanization, largely in the informal (illegal) sector of the market'.²⁰ They acknowledge the challenges in differentiating 'artisanal mining' that is purely manual/informal and very small in scale from 'small-scale mining', involving mechanisation and somewhat larger scales.

Characteristics to be considered in defining the type of mining include, inter alia, 'production volume, number of people per productive unit, intensity (volume) of capital employed, labour productivity, size of mine claim, quantity of reserves, sales volume, operational continuity, operational reliability, and duration of the mining cycle'.²¹

IAM can occur on the surface or underground, and in either formal or abandoned/closed mines.²² Thornton offers four key challenges with regard to how IAM is conceptualised. First, he contends, it is not clear what legislation or by-laws criminalise IAM. Second, if miners are considered trespassers it is difficult to identify them among the many other people using informal pathways that criss-cross mineral-rich land. Third, South Africa's surface laws do not relate to its underground resources. Finally, IAMs are not 'stealing gold' from actively worked industrial mines.²³ So how does one properly define an illegal miner?

One way of defining IAMs is to consider them as those who contravene the Mineral and Petroleum Resources Development Act (MPRDA) in South Africa. ASM is not only recognised as a sub-sector of formal mining but is also considered a poverty alleviation strategy acceptable in terms of the MPRDA.²⁴ The act

places all minerals under custodianship of the state, and requires that anyone wanting to extract minerals must first apply for a permit from the state.²⁵ Mining activities are illegal when they fail to comply with the required permit, health and safety obligations. In this regard, Section 2 of the Mine Health and Safety Act (MHSA) prescribes three conditions that govern both operational and dormant mining activities.²⁶

First, the employer of a mine needs to provide conditions for safe operations and a healthy working environment.²⁷ If a mine is not being worked, but a closure certificate has not been issued, the owner must take reasonable steps to 'continually prevent injuries, ill-health, loss of life or damage of any kind from occurring at or because of the mine'. The act also requires that the holder of a mining concession apply for a closure certificate upon, among others, the lapsing, abandonment or cancellation of the concession.

Taking the above into account, it may be posited that the fundamental difference between legal miners and illegal miners is that illegal miners do not pay taxes, lack permits and environmental impact analyses, and have lower labour standards.²⁸ They also lack the capital and equipment required for large-scale mining.

Theoretical and ideological perspectives

Network governance

Various theoretical and empirical efforts have informed recommendations aimed at reappraising IAM. It has proven difficult to deal with IAM where strategies and resources are not integrated across and between stakeholders. For this reason, network governance is appealing.

Network governance sees actors with shared interests come together as co-producers

of governance strategies.²⁹ The resulting accumulation of competencies and knowledge can help overcome complex challenges.³⁰ Network governance proposes that NGOs, the private sector, scientific networks, local communities, CBOs, CSOs, and regional and international institutions collaborate to foster reciprocal trust in cooperative rather than top-down partnerships.³¹ Of course, because such synergies are difficult to create and manage, network governance can be difficult to implement.

Capitalism

Capitalism is an economic system that allows private actors to own and control property to serve their own interests. In democratic capitalist states the activities of private actors are bound by the rule of law. At first glance, this appears to support equality. But, as Anatole France noted with unabashed irony over a hundred years ago: 'In its majestic equality, the law forbids rich and poor alike to sleep under bridges, beg in the streets and steal loaves of bread.'³² As a result, rich and poor do not begin their days on an equal economic footing. To this end, Merkel maintains that capitalism and democracy follow different logics, the former promoting the unequal distribution of property and goods, the latter, equal rights and the wellbeing of all.³³

Democracy has been condemned for increasing economic inequality in South Africa and elsewhere.³⁴ Apartheid's race-based capitalism benefitted the white minority and marginalised the black majority.³⁵ Importantly, mining and racial domination have been central to South African capitalism, but its harm is not easy to undo.³⁶ In mid-2017, under the guise of addressing this, Mineral Resources Minister Mosebenzi Zwane proposed a highly controversial mining charter, calling for increases in black ownership of mines by 4% to 30% within a year.³⁷ The charter also

requires that 14% of mining shares should be given to black entrepreneurs.³⁸ While change is imperative, the minister's move may be self-serving as he tries to leverage populist calls for 'radical economic transformation' to further his own political career. While the proposed charter was immediately rejected by the Chamber of Mines of South Africa and relevant trade unions, its proposal still resulted in an estimated R50 billion in stock being lost overnight.³⁹

South Africa's broader neoliberal macro-economic policy, Growth, Employment and Redistribution (GEAR), has also impacted the economy. While it sought to redistribute wealth through job creation and economic growth, this has not been achieved.⁴⁰ In August 2017 Statistics South Africa announced that more than 30 million South Africans lived in poverty.⁴¹ Yet there are no obvious alternatives to capitalism after the collapse of Soviet-era socialism. How can South Africa's mining industry benefit the poor? Might IAM hold an answer?

Explanations for IAM in South Africa

The Chamber of Mines contends that IAM takes place on the surface and underground, at closed, abandoned and operating mines.⁴² It posits that urgent steps need to be taken to address a rise in IAM in South Africa and the continent more broadly.⁴³ Banchirigah confirms that economic stimulus strategies employed by governments in sub-Saharan Africa have not offered sustainable results, but caused environmental and social harm.⁴⁴ In South Africa, it has been suggested that IAMs are misrepresented as poor, ignorant migrants from other African countries.⁴⁵ Such representations weaken efforts to curb illegal activities, by stigmatising rather than promoting support for these miners.

IAM should be recognised and regulated, and understood as a product of particular contexts

and factors. According to Banchirigah, these contexts and factors include persistent poverty and unemployment. The presence of these factors in neighbouring African countries, and South Africa's relative wealth, attract job seekers to South Africa. Those unable to find work may resort to IAM as a form of 'self-employment'. The chamber estimates that 70% of arrested IAMs are from neighbouring countries.⁴⁶

There is no connection between ordinary policing and IAM. SAPS officials are not specifically trained to police IAM. Yet, the chamber has called on the SAPS to deal with IAM criminality, such as the bribing of mine security personnel to gain entry to shafts.⁴⁷

Consequences of IAM in South Africa

If IAM is not reappraised it can lead to undesirable consequences, such as those listed by Zvarivadza in Table 1.

International responses

Internationally, several strategies have been implemented to address IAM. One notable strategy is the CASM Charter, a global initiative launched in March 2001 with the aim of:

- Reducing the occupational health and safety risks to miners
- Improving the policy environment and institutional arrangements governing small-scale mining

Table 1: Challenges posed by informal/unregulated mining activities

Social	Environmental	Economic	Safety and health
Crime	Deforestation	Lack of collateral security	High fatality rate
Sex work and spread of sexually transmitted diseases	Pollution of water bodies	Difficulty in obtaining information for planning purposes	Rapid spread of diseases
Alcoholism and substance abuse	Soil erosion	Rent-capturing difficulties	Lack of protective clothing
Neglect of human rights	Siltation of rivers	Lack of education and professionalism	Unsupported or poorly supported mining activities
Conflict and lack of security	Dust and noise pollution	High grading of mining operations	Unsafe working tools
Child labour	Land degradation	Failure to adapt to technological advances	Chief reliance on natural ventilation
Denigration of cultural and ethical values	River diversion	Mineral rush effect (Tragedy of Commons)	Poor lighting
Destruction of cultural heritage sites	Mercury and cyanide pollution	Retardation of economic growth	Uncoordinated and limited transportation
Gender discrimination	Destruction of biodiversity	Short-sighted planning	Exposure to dust and dangerous gases
Limited social amenities	Poor disposal of mine tailings	Corruption	Insufficient safe drinking water

Source: Zvarivadza⁴⁸

- Increasing the productivity and improving the livelihoods of miners
- Working to advance alternative livelihoods through effective use of their natural resource capital, in part, by conservation of biodiversity in IAM areas⁴⁹

The Yaoundé Vision initiated by the African Union in 2002 and the Mining Minerals and Sustainable Development (MMSD), published in the same year, provide a roadmap in terms of how governments on the continent can assist ASM initiatives.⁵⁰ The Yaoundé Vision operationalised Africa's Mining Vision, which seeks to transform mining into a knowledge-based economy. It identifies IAM as the backbone of many rural economies and a source of livelihoods.⁵¹ It seeks to build grassroots capacity and growth, and encourages inter-linkages with the broader social economy.⁵²

Sustainable employment would most certainly improve the livelihoods of illegal miners. Creating jobs for low-skilled workers in formal ASM and rural areas would dissuade illegal activities. Since IAM is primarily about the search for employment, Banchirigah and Hilson have recommended strong support for agrarian-orientated activities in Sub-Saharan Africa.⁵³ In Ghana, re-agrarian-orientated activities have already been shown to be a viable strategy to reduce poverty, one of the push factors driving IAM.

At the more traditional security front, companies in China and Turkey have used satellite-borne, repeat-pass differential synthetic aperture radar interferometry (D-InSAR) to detect on- or in-ground IAM activities.⁵⁴ The challenge with D-InSAR is to differentiate between legal and illegal mining activities. Relatedly, Synthetic Aperture Radar (SAR) satellites are able to ensure long-term surveillance of specific mine sites.⁵⁵

An integrated model

Reappraising IAM in South Africa requires context-specific approaches tailored to improving the socioeconomic conditions that drive people to such activities. To start, an empirical needs analysis is required in order to understand what pushes IAMs to the work (push factors) and what attracts them to IAM (pull factors). It is important to find out from IAMs themselves how they can be assisted, instead of using a top-down approach.

Best practices combine the use of surveillance technology such as D-InSAR with the implementation of strategies such as Africa's Mining Vision and objectives, MMSD, the CASM Charter, and agrarian-orientated activities. If implemented in South Africa, the poor and marginalised must be consulted as part of a 'whole society' intervention, which is inclusive of all stakeholders.⁵⁶

In accordance with a network governance proposition, the South African government has in place national strategies linked with international initiatives. No progress can be made within the mining sector if there are no empowerment projects to alleviate poverty. Essentially, capitalism does not encourage compromise, but rather unidirectional, hierarchical decision-making.⁵⁷ Conversely, the South African government's black economic empowerment (BEE) policies introduced in 2003 (subsequently known as broad-based black economic empowerment) are an important step in reducing economic inequality, as are its affirmative action goals. BEE has sought to increase black participation and ownership of the economy, including the mining industry, but has only benefitted a small, often politically connected elite (the 'New Elite').⁵⁸ According to Jeffery, this elite accounts for only 15% of the black population.⁵⁹ To correct this, regulated, procedurally fair expansion of black ownership of mining is necessary for South Africa as a

whole, for neighbouring states, and for the future of IAMs in particular.

A network governance intervention should include the use of advanced technology such as D-InSAR and surveillance cameras, along with strengthening the security cluster with highly skilled personnel. A reporting system that includes a monitoring and evaluation capacity is needed to assess progress.

Network governance interventions

Because IAM is driven by poverty and a need for rural economic development, scholars have advocated for both proactive and reactive interventions, summarised here:⁶⁰

- All stakeholders, in consultation with government and the Chamber of Mines, need to support initiatives to reduce health hazards and environmental degradation.
- Poverty alleviation initiatives targeting artisanal miners must be implemented. These should include providing IAMs with skills that improve their prospects of employment in the formal sector, specifically, for non-South Africans, in their countries of origin.
- Subsidies and financing should be made available for ASM together with business development aid, such as technology transfer and managerial and accounting support. This should be provided by government, the CM and civil society.
- Partnerships should be fostered between ASM and large-scale mining.
- Corruption in government should be stamped out, and a strong legal framework, which balances the above development goals with strong checks and balances, should be instituted.
- The ASM sector should be formalised and registered. This will allow ASM to become self-sustainable (while remaining

networked) and recognised as a legitimate livelihood strategy.⁶¹

Conclusion and recommendations

This article has argued for a network governance approach to understanding and supporting, rather than criminalising, ASM. IAM, it is suggested, can be viewed both as a governance and security challenge, and as an economic opportunity or survival strategy. Criminalisation of ASM, as is the case with IAM, is unlikely to yield long-term societal gains. Instead, it exposes IAMs to various risks, obscures the root causes of IAM, and leaves these unaddressed, resulting in the further marginalisation of impoverished rural communities.

Network governance models predict that long-term stability is not possible without the investment and collaboration of a broad range of actors. These include government, civil society, and international, regional and local organisations. These groups' resources and programmes should, ideally, be strategically aligned and integrated in ways that produce holistic, sustainable solutions to IAM.

Understanding the daily lives of IAMs is crucial. Without this understanding, ill-conceived policies such as the 2017 mining charter, BEE and GEAR are bound to fail. New policies should be formulated and implemented in ways that do not reinforce racial discrimination or inequality, but rather grow an inclusive mining sector and general economy.

Since IAM affects many countries in the sub-Saharan region, regional cooperation networks must be developed to understand the push and pull factors driving this sub-type of small-scale mining. For instance, South African companies and authorities may need to invest in the economies of neighbouring states to provide alternatives to IAM and related migration.

It is difficult to deal with IAM amid South Africa's great economic inequality. Thus, gradual transfer of skills and ownership in the mining sector, as in others, is required in ways that do not incentivise or allow room for corruption or political capture. The mining sector and government must do more to support communities surrounding major mines.

Finally, there should be more involvement of universities and research organisations that understand the plight and the needs of IAMs, and can offer effective solutions to the state of IAM.

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Notes

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