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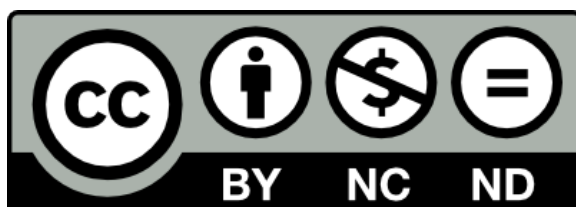
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Planning for artisanal and small-scale mining during EIA: exploring the potential

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Abstract

This review considers the potential to better plan for artisanal and small-scale mining (ASM) during the Environmental Impact Assessment (EIA) phase of new major mine developments. We contrast and contextualise the parallel development of comprehensive mine closure regulation in South Africa with the resultant lack of progress in actual rehabilitation of its large and growing negative mining legacy. We discuss socio-economic conditions around the mine and the current tendency/ flaw in governance that ignores the extensive ASM activities that exist. The ramifications of omitting the known large cumulative impact of ASM compromises efforts to undertake large-scale mine closure effectively both in theory and practice. This leaves some large-scale mine rehabilitation and closure plans unachievable due to cessation of ASM activity, consequently 're-opening' the mine. We discuss the EIA process as an existing legal mechanism to generate wider consultation for post-mine ASM activity options, and to formally recognise and incorporate ASM as a known impact to plan for. Governance obligations for mining companies and policymakers should directly cater for ASM, with the focus directed towards mitigating negative consequences and maximising local socio-economic development benefits that the sector can create, managed through EIA processes.

Keywords: artisanal and small-scale mining (ASM); Environmental Impact Assessment (EIA); mine closure; South Africa

1. Introduction

The responsibilities of the South African Government in relation to mine closure was insiduously summarised by Swart (2003) as follows: the 'guardian' of the environment; to act as a responsible mechanism to serve the public and taxpayer's interest; to ensure a safe and healthy environment that is not detrimental to the health and well-being of citizens; to promote sustainable development; the final inheritor of remaining problems and mine legacies; and the regulator of the mining industry. Despite these responsibilities, there are approximately 6,000 abandoned, derelict, and ownerless mines in South Africa, including known hazardous sites such as former asbestos sites (Auditor-General South Africa (AGSA), 2009; Mining Minerals and Sustainable Development (MMSD), 2002; Sustainable Development Through Mining (SDTM), 2013; Wyngaart, 2012).

All countries in the eastern and southern regions of Africa require some form of Environmental Impact Assessment (EIA) to be carried out for major projects prior to their commencement. The impacts relevant covered by EIA include "[a]ny change, potential or actual, to the physical, natural, social, cultural and economic environment resulting from the business activity or proposal" (United Nations Development Programme, 2012, p viii). Some EIAs are common at the mining/infrastructure project level, while others are useful as regional-wide tools at higher levels. While individual artisanal and small-scale mining (ASM) activities are by definition not a major development undertakings, cumulatively they can be significant. The existing EIA legal framework provides an opportunity for incorporating ASM activities into both impact mitigation and also local development strategies for new major developments. As ASM largely falls outside of conventional government policies, plans, and programmes, EIA can be used as a platform for securing meaningful long-term commitment and responsibilities among various stakeholders to consider ASM. Such a move would be consistent with Mineral Resources for Africa's Development consensus statement arising

from the African Development Forum VIII (ADF-VIII, 2012) to extend significant support to ASM in recognition of the role these miners play in socio-economic development in rural communities. For certain minerals and ore bodies, ASM can and should be given the opportunity to extract the resource and be given the same levels of support from government with regard to safely achieving development outcomes as large-scale miners. Outside of the need for safety and environmental considerations, ASM provides many benefits and by its very nature, does not take the form of enclave structures: the smaller scale of operations removes the asymmetry and economic disconnect inherent with large-scale miners and the local and regional communities.

The purpose of this paper is to consider the potential for ASM to be planned and provided for as an extension of EIA activity. We start by considering some of the complexities of ASM before turning our attention to the mining and EIA regulatory arrangements in South Africa and the potential to integrate ASM planning and controls into EIA.

2. Not acknowledging ASM complexities literally ‘undermines’ the concept of mine closure

The ASM sector can be characterised along the spectrum of a complexity of largely illegal and unstructured activities occurring in impoverished remote areas (Hein and Funyufunyu, 2014; Labonne, 2014; Nhlengetwa and Hein, 2015). Governments, officials, and the media present and/or vilify ASM: that it poses serious problems for national sovereignty; generates pollution; and is responsible for numerous deaths linked to mining, illegal trade and cartel activity, and associated violence (Hilson and McQuilken, 2014; Nhlengetwa and Hein, 2015; Thornton, 2014). Due to its perceived illegality individuals involved in ASM activities are known to be mercilessly exploited and sometimes killed by police, government representatives and criminal organisations (Nyame and Grant, 2014; Thornton, 2014).

In reality ASM can be both poverty-driven and entrepreneurial, with a ready market for produce. It can be a legitimate means for reducing hardship, serving major political, economic and demographic functions in rural societies (Hein and Funyufunyu, 2014; Hilson and McQuilken, 2014; Labonne, 2014; Thornton, 2014). The influence of unemployment or low wages on the growth of ASM activity has been well-documented (Nhlengetwa and Hein, 2015); yet the sector remains marginalised in policy (Hilson and McQuilken, 2014; Labonne, 2014), despite central governments often making windfall returns and valuable foreign exchange from activities. At the same time, local institutions and governments, which are more exposed to poverty and social deprivation, rarely receive financial returns from ASM unless specific legislation exists such as revenue sharing (Labonne, 2014). Some non-community-based ASM activities operate outside of traditional and governmental legal control, in addition to customary law where wealth is shared with local custodians (Nhlengetwa and Hein, 2015). However, from a governance perspective, it is inappropriate to isolate ASM from mainstream development policies and to simply assert that it occurs outside of the law (Labonne, 2014; Thornton, 2014). While the labour intensity, tools, and processes of ASM have changed very little for hundreds of years, the level of technical knowledge of many operators is now highly advanced, with the sector remaining widespread despite the advent of large-scale mining (Hein and Funyufunyu, 2014; Hilson and McQuilken, 2014; Thornton, 2014).

Compared to large-scale mining, the ecological footprint of an individual ASM site is small, as ore is generally visually sorted from the soil and transported for further processing (Thornton, 2014). However, the widespread nature of the sector and the cumulative impact of numerous operators can pose substantial risk. To date, insufficient research and policy development has been afforded ASM activity; a sustained effort to quantify the (positive and negative) impacts of these linkages to national economies and local environments, therefore, is a key imperative. This knowledge can, in turn, inform policymakers and those responsible for national resource allocation. If ASM operators can be incentivised to integrate into the formal economy, earnings from their activities can be used to ‘scale up’ activities (e.g. finding cheaper, safer and user-friendly means to produce and process minerals). This would improve the security of tenure and provide more appropriate governance to enable the sector to operate, save, invest, and advance in a similar manner to large operations, and also aim to buffer the often inflated living costs in ASM-intensive locations (Hilson and McQuilken, 2014; Labonne, 2014).

We suggest that it may be possible to integrate ASM into key legislative processes and other large-scale mine rehabilitation and closure plans, facilitated by the EIA process. In terms of mine closure, it is known that large-scale mine abandonment and/or a lack of mine decommissioning can enable small-scale miners to have easier access to some minerals (Nhlengetwa and Hein, 2015). The parallel existence of governance for mine closure and the occurrence and indirect impact of ASM activities may explain why rehabilitation and closure has not always been implemented for large-scale mining operations in South Africa, despite the world-class legislation¹. Nonetheless, it is clear that implementation of major policies and legislation in South Africa would benefit from recognising that ASM is a known impact in many regions. Successful rehabilitation or closure of large-scale mining operations that delivers socially and environmentally responsible outcomes may warrant inclusion of ASM in governance arrangements. We further examine these issues, with special emphasis on South Africa.

3. Policies and legislation applicable to mine closure planning in South Africa

During the post-Apartheid era in South Africa, a comprehensive environmental governance regime, designed to permeate mineral policy and regulation, has been implemented (Table 1). Historically the alignment of mining and environmental laws, which according to Glazewski (2013, p 17-18), “is a perennial problem”, remains very much a work in progress, and is generally deemed to be confusing and unsatisfactory in relation to implementation. While large-scale mine operators are responsible for adhering to the relevant legislation (Swart, 2003), in practice, compliance is less straightforward. In the words of the Institute of Directors Southern Africa (2009, p 6), in the King Code of Governance for South Africa (King III), “Good governance is not something that exists separately from the law and it is entirely inappropriate to unhinge governance from the law”.

It is beyond the scope of this paper to attempt to explain the complex and rapidly-evolving details of, and interactions between, these collective mining legislative provisions in South Africa. In this section, we rather focus on salient sections of the principal legislation only, namely the Minerals and Petroleum Resources Development Act (28 of 2002) (MPRDA), as well as the National Environmental Management Act (NEMA), which as of December 8th 2014, regulates mine closure. The key legislation relevant for EIA is the NEMA (Department of Environmental Affairs, 2014), which covers development at all scales, from major new undertakings (e.g. large-scale coal mining and power stations) down to small, localised initiatives (e.g. individual fuel retailing sites) consistent with the scale and nature of ASM. Retief *et al.* (2011) determined that on average, 3,600 EIA applications are made in South Africa. The system is well established and NEMA is framed in the context of delivering sustainable development through EIA (see e.g. Morrison-Saunders and Retief, 2012).

The Minerals and Petroleum Resources Development Act (MPRDA) also applies to mining activity in South Africa (Department of Mineral Resources, 2002). In 2003, the MPRDA was seen as a milestone in the transformation into a socially and environmentally responsible mining industry in South Africa. According to Swart (2003), the MPRDA provides a holistic ‘cradle-to-grave’ approach to prospecting and mining by fully considering the economic, social, and environmental costs of achieving sustainable development of South African mineral resources. It was developed to tackle the major deficits of improper mine closure and associated rehabilitation (Table 2). Importantly, in Section 38, it stipulates that a mine holder is responsible for environmental damage or pollution, and further stresses that holders of mining rights much give effect to the principles of integrated environmental management set out in NEMA.

¹ The authors clarify that when management personnel in a large mining operation are not incentivised to understand and integrate ASM communities in the region within post-mine planning, the perception of the ASM illegality and apparent lawlessness will unlikely engender enthusiasm for implementing ‘best practice’ mine closure and rehabilitation.

Table 1: Selected South African policies/legislation applicable to mine closure planning and/or rehabilitation

Legislative measures, RESPONSIBLE MINISTER AND REGULATORY AGENCY:

- Mine Health and Safety Act 29 of 1996. – *Department of Mineral Resources, Mine Health and Safety Inspectorate of the Department*. The Act requires that managers must identify hazards and assess any related risks to which persons who are not employees may be exposed, thus bringing the application of these duties not only to the work place, but to the environment as a whole (Glazewski, 2013).
- National Environmental Management Act 107 of 1998 (and amendments) (NEMA) - Minister of Water Affairs and Environment; Department of Environmental Affairs.
- Minerals and Petroleum Resources Development Act 28 of 2002 (and amendments) (MPRDA) - *Minister of Mineral Resources; Department of Mineral Resources*. The MPRDA and its regulations were promulgated on 1 May 2004 and gives effect to the section 24 of the constitutional commitments and also to Chapter 5 of NEMA.
- National Environmental Management: Protected Areas Act 57 of 2003, and . and Protected Areas Amendment Act of 2004 - *Minister of Water Affairs and Environment; Department of Environmental Affairs*. Section 48; “Prospecting and mining activities in protected area” and in restricted areas (also see National Parks Act 57 of 1976). If mining activities commenced before enactment of the Act, then the Minister of Mineral Resources must review such activities and may prescribe conditions under which such activities may continue, including mine rehabilitation and closure.
- Companies Act 71 of 2008 and the King III Report – *Minister of Trade and Industry, Department of Trade and Industry, Board of Directors*.

Other measures: Accords, Policies and strategies:

- Constitution of the Republic of South Africa, 1996 and Common law.
- The 1970 Fanie Botha Accord stated that mines that closed before 1956 are the responsibility of government, with those that closed afterwards to be remediated by the responsible company.

It has long been hoped that the NEMA will provide a framework for sustainable development and the integration of environmental considerations into South Africa (Humby, 2009). Chapter 1 of NEMA outlines national environmental management principles and Section 28 is of particular importance and relates to ‘Preventing and remedying the effect of pollution and duty of care’. Duty of care in terms of section 28(1) provides for a general duty of care towards the environment and requires that, “every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment”. Section 28 was amended in 2009 with the addition of sub-section (1A), giving NEMA retrospective application. It now has far-reaching implications for the closure liabilities of organisations and the directors of mines. Thus, there are two major mechanisms in play within South Africa to persuade mining companies to engage at multiple levels to prevent a negative legacy (Humby, 2014). However, it will be interesting to see if the new legislative provisions for integrated environmental management under NEMA will be able to achieve, in the words of King III (2009, p 6) “...good governance and compliance with the law...”, particularly when decades of work undertaken to develop legislation (including the MPRDA and many others²) has seemingly not.

² A brief list of existing and repealed legislation that included provisions for environmental-related mine closure and/or rehabilitation include: the Income Tax Act 58 of 1962, section 10(1); the Hazardous Substances Act 1973, Handling and safe disposal of Group IV hazardous substances; the Conservation of Agricultural Resources Act 43 of 1983, GNR 1048; Minerals Act 50 of 1991; Mine Health and Safety Act 29 of 1996; the Water Services Act 108 of 1997; the National Water Act 36 of 1998, sections 18, 21, 22, 30, and 151; the Nuclear Energy Act 46 of 1999, section 61; National Environmental Management: Protected Areas Act 57 2003, and Protected Areas Amendment Act of 2004, section 48; the National Environmental Management: Air Quality Act 39 of 2004, chapters 2, 4 and 5; the National Environmental Management: Biodiversity Act 10 of 2004, chapters 5, 7, and 13; the National Environmental Management: Waste Act 59 of 2008, etc.

Table 2: Mine Closure Provisions within the Mineral Petroleum Resources Development Act, 2002 (MPRDA) South Africa

The MPRDA and its regulations were promulgated on 1 May 2004 and gives effect to section 24 of the constitutional commitments and also to Chapter 5 of NEMA:

- The MPRDA makes significant inroads into the fundamental principle of company law by providing that (sections 34 and 38): ‘...the directors of a company or members of a close corporation are jointly and severally liable for any unacceptable negative impact on the environment, including damage, degradation or pollution advertently or inadvertently caused by the company or close corporation which they represent or represented’.
- Section 37 of the MPRDA confirms the adoption of the principles for sustainable development as set out in section 2 of NEMA 1998, as well as other generally accepted principles of sustainable development, by integrating social, economic and environmental factors into the planning, implementation, closure and post-closure management of prospecting and mining operations.
- Section 38 of the MPRDA provides for the application of integrated environmental management and the responsibility to remedy. Section 38(2) makes provision to keep directors of companies or members of closed corporations liable for any damage, degradation or pollution caused by the company or closed corporation which they represent or represented. Marais (2009) notes that traditionally mining companies have had the attitude of ‘mine now, rehabilitate and close later’ – even after the Minerals Act, 1991.
- Section 38(1)(d) of the MPRDA obligates the holder to rehabilitate the environment to: natural state; or a predetermined state; or a land use which conforms to the generally accepted principle of sustainable development. Section 28(1)(e) also states that ‘the holder is responsible for any environmental damage, pollution or ecological degradation inside and outside boundaries’.
- Section 39 of the MPRDA provides for an EIA and EMP to be undertaken by the applicant to identify, mitigate and manage the environmental impacts emanating from prospecting or mining activities. The regulations pertaining to the EMPs make provision inter alia for mine closure objectives, the future land use objectives for the mining site, and the proposed closure cost estimates to be described prior to the approval of the EMP.
- Section 40 of the MPRDA makes provision for in consultation decision-making (joint decision-making) by government departments and organs of state on national, provincial, and local authority level. Should objections be obtained, section 58 of the MPRDA, and supporting regulations provide for the establishment of 10 Regional Mineral Development and Environmental Committees.
- Section 41 makes financial provision for the remediation of environmental damage. Regulations in this regard prescribe the methods for financial provision and the detailed itemisation of all costs.
- Section 42 makes provision for the management of residue stockpiles and deposits. Regulations in this regard also adopt the principles of waste management in the Integrated Pollution Control and Waste Management Policy as well as the precautionary approach followed in terms of the National Water Act, 1998. The regulations also prescribe waste management throughout the life-cycle of a mine including decommissioning, closure and post-closure management of deposits. This is highly relevant for ASM activity management.
- Section 43 provides for the issuing of a closure certificate by the Minister of Minerals and Energy and the transfer of environmental liabilities to a competent person. The application for mine closure must be accompanied by an environmental risk report, stipulating the following: the holder remains responsible for any environmental liability, pollution, or ecological degradation until the Minister has issued a closure certificate. The holder must apply for a closure certificate upon: cessation of prospecting or mining; relinquishment of any portion of the prospecting or mining area; and/or completion of the prescribed closing plan. An important factor to consider is that no certificate will be issued unless endorsed in writing by the Chief Inspector (Mine Health and Safety Inspectorate of the Department of Mineral Resources and the Department of Water Affairs (DWA))” (Marais, 2009).³
- Section 44 provides for the retainment or removal of buildings and structures.
- Sections 45 provides for the Minister to take urgent remedial action pertaining to environmental degradation and pollution and to recover costs in this regard.
- Section 46 provides for the Minister to rehabilitate abandoned and ownerless mines/dumps and to register such sites in the title deeds of land and to transfer the liability for maintaining the rehabilitation work being undertaken to the responsible landowner.

Notwithstanding the provisions of NEMA that are relevant, mining companies are required by the MPRDA to conduct an EIA, and submit an Environmental Management Plan (EMP) for approval by the DMR (MPRDA, s39(1)). The EMP must include the environment, socio-economic conditions and cultural heritage

³ Note that over the past ten years, the issuing of closure certificates has dwindled. Uncertainties in terms of the long-term water quality in these mines are often too great for the government to issue closure certificates with confidence; see for example (Usher and Scott, 2001). According to Botham (2012) no mine in South Africa has ever received a full mine closure certificate.

affected by the prospecting or mining operations (MPRDA, s39(3b)) and collect baseline information to determine protection and mitigation measures (MPRDA, s39(3a)). Additionally, the EMP must describe “(...) the manner in which he or she intends to: (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) contain or remedy the cause of pollution or degradation and migration of pollutants; and (iii) comply with any prescribed waste standard or management standards or practices” (MPRDA, s39(3d)). The EMP must also include environmental objectives and goals for mine closure rehabilitation and a closure plan (outlined in Government Notice Regulation (GNR) 527 (62)); management of identified environmental risks and liabilities; and financial provision, that is both methods and quantum thereof (GNR 527 (52)). It is within these provisions that ASM activities clearly fall under; yet, there is a lack of adherence to these legislative measures, as well as a lack of integration of ASM.

As an example of continued non-integration of mining and environmental legislation, the Department of Mineral Resources (DMR), which administers the MPRDA and other mining and energy legislation, remains unaligned with the Department of Environmental Affairs (DEA) as the lead agent of environmental management and protection legislation and which administers the NEMA. The NEMA and MPRDA are by no means the only relevant mechanisms that have implications for the mine rehabilitation and closure legacy in South Africa, as well as ASM communities. It is well understood by role-players in mine closure and environmental rehabilitation spheres that there is no ‘one-shoe-fits-all’ scenario in South African politics (Marais, 2009; Humby, 2009). Swart (2003) captures the confusion caused by the various legislative overlapping frameworks for mine closure, including the particular confusion created by ‘closure scenarios’ from the previous (and largely repealed) Minerals Act 50 of 1991. These scenarios include: differentiations between a closed mine (with a closure certificate from various relevant historical and current acts); temporary closure (under care and maintenance); abandoned, derelict, or liquidated mines (including where rehabilitation has not been undertaken to acceptable standards, or the company has been liquidated, the mine has been left without any responsible or traceable legal entity/person); ‘conditional/provisional closure’; ‘partial’ closure; closure under other legislation; and offshore closure. It is clear that at the present stage of mining legislation and associated adherence to ‘best practice’ in rehabilitation and closure in South Africa that it is unrealistic to assume the mining industry is able to reliably achieve mine rehabilitation and closure to meet the retrospective and future liabilities under MPRDA or NEMA.

From a more constructive perspective, however, through the EIA process new projects may implement post-mining planning that incorporates the surrounding community and any ASM activities that may continue or proceed in its absence. From a governance perspective, the relevant departments that enforce environmental requirements for current, future, and past mining operations seemingly do not have the necessary resources (capacity, experience, technical expertise, or financial means) to respond to legislative alignment and the enormity of mine closure and related environmental risks. To again reiterate the words of the King III (2009, p 6): “There is always a link between good governance and compliance with law”. There remains a lack of private sector and government alignment, and adherence to various legislative instruments. There is also largely a lack of private sector and government appreciation of the Duty of Care from the perspective of effective mine rehabilitation and closure, including that derived from the South African constitution, the Companies Act, and also the King reports on corporate governance. When the complexity of ASM activity post-mine life is also considered, this becomes a challenging scenario which will likely require a project-based analysis at the level of an EIA. The predominant omission of ASM considerations (even in EIAs) in the relatively wealthy and advanced nation of South Africa underscores the need for alignment of private sector and governments on the ASM ‘issue’.

4. Existing governance direction for government and companies

In this section we consider some of the main governance expectations and requirements that prevail in South Africa, commencing with the Constitution formulated in 1994. We discuss how these implicitly and explicitly have linked large-scale mining interests and responsibilities to the surrounding communities and also elements that integrate ASM activity.

4.1. The Constitution of the Republic of South Africa

Section 24 of NEMA requires that mineral and petroleum resources be developed in ecological sustainable manner (regardless of the scale of operation). It fleshes out specific requirements relevant to upholding the

environmental right in South Africa's Constitution which states that: “Everyone has the right [...] to an environment that is not harmful to their health or well-being; and [...] to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that [...] prevent pollution and ecological degradation; [...] promote conservation; and [...] secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development” (Minister for Justice and Constitutional Development, 1996). This constitutional law supersedes all other legislation in South Africa (Swart, 2003: 490). The meaning of ‘reasonable’ and ‘other measures’ is understood to imply executive measures (other than legislative ones) such as the establishment of well-directed policies and programs; agencies; education; capacity building; facilitation of disputes; and the funding of these initiatives (Glazewski, 2013). Constitutional law is clearly inclusive in intent. All mining activities are required to comply with constitutional law and common law. Common law claims from a closed mine are required to be instituted by the plaintiff within three years of the pollution incident, unless it is an ongoing source. Claims can be based on (Swart, 2003) nuisance (infringement of the right of a neighbouring owner’s use and enjoyment of property); property rights (subsidence); aquilian action (damage to person or property); or administrative law (review of an administration decision or act by an official or organ of the state).

4.2. The Companies Act 71 of 2008 and the King Report on Corporate Governance

In 1994, a South African Committee headed by Judge Mervyn King issued the King Report on Corporate Governance (King I). This report incorporated a code of corporate practice and conduct that went beyond the corporation and its financial matters, taking into account the organisation’s impact on the larger community. In 2002, the King Committee released the King II report, which took the inclusive approach to business even further. Following King II, the Johannesburg Stock Exchange Limited (JSE) required listed companies (including listed mining companies) to include in their annual report a narrative statement as to how they had complied with the principles set out in King II, providing explanations that followed practices recommended but which have explained the practice adopted and have prospered (Institute of Directors Southern Africa (IoDSA), 2009). In 2009, King III was published as a supplement to the new Companies Act (Act 71 of 2008) which was implemented in April 2011. King III (2009, p 6) states “...the starting point of any analysis [of the link between good governance and compliance with law] is the duty of directors and officers to discharge their legal duties”. It is also the opinion of the Institute of Directors that “as far as the body of legislation that applies to a company is concerned, corporate governance mainly involves the establishment of structures and processes, with appropriate checks and balances that enable directors to discharge their legal responsibilities, and oversee compliance with legislation” (Institute of Directors Southern Africa (IoDSA), 2009, p 61). Further to the King I (1994), II (2002), and III (2009) reports, the MPRDA itself provides some excellent guidance on how to incorporate corporate governance for the prevention and/or management of environmental impacts, and is a good basis to develop an EIA for a project and understanding how to include ASM in the mine closure planning process.

4.3. Future and Present Corporate Governance and Government Responsibility

Closure of mines in terms of the MPRDA is predominantly regulated by Section 43. Section 43(1) outlines of the process which should be followed by regulatory bodies to grant closure certificates, and states that the holder of a mining right remains responsible for any environmental liability, pollution, or ecological degradation, and the management thereof, until the Minister has issued a closure certificate. However, the process is currently stalled as at present the Mineral and Petroleum Resources Development Amendment Bill of 2013 was approved by Parliament to be signed by the President, but was referred back to Parliament. These somewhat controversial amendments extend future liabilities further, and also retrospectively: the holder of *inter alia* a mining right will remain liable for any latent or residual environmental liability, pollution, ecological degradation and/or the pumping and treatment of extraneous water as these liabilities may arise in the future, even though a closure certificate might have been issued in the past. Despite the nuances of South African politics, long-term post-mine planning is clearly a focus, and attempts to bolster the ability to find the holder of a certificate responsible for any post-mine use, in many cases implying any ASM activity as well.

It is clear that corporate governance is a major focus of South African legislation, and it seems to us that the government has developed some excellent legislation. Yet this legislation has failed to be implemented effectively in the diverse socio-political environment of the post-apartheid era. Indeed, remaining local socio-economic and ASM challenges are the ‘elephant in the room’ when discussing mine closure in South

Africa. Similarly, the conspicuousness of informal communities that rapidly spring up in very close proximity to, or on the edge of, the mine are a stark indication of the lack of alternative livelihoods and the associated issues of persisting poverty. We suggest at least a partial solution lies in managing community expectations surrounding new development proposals (Ferguson, 1999; Mining Minerals and Sustainable Development (MMSD), 2002). Mining companies and governments (as far as reasonably possible) can develop and enforce land use planning ordinances to prevent negative health impacts when populations establish un-planned communities in or near unsafe mining operations. However, a deeper understanding and alleviation of social issues would go a long way toward mitigating the challenges associated with ASM and mine closure/abandoned sites in areas with high poverty.

In terms of legislation, while there are specific provisions addressing the long-term environmental consequences of mining in South African legislation, it is clear that the long-term economic or social consequences of mining are underemphasised in actual planning (Marais and Cloete, 2013; Rao and Pathak, 2009). With high relevance to ASM, research into the social aspects of mine closure remains scarce, with a lack of systematic, high quality research into community networks, human capital, and developmental possibilities (Botham, 2012; Stacey et al., 2010). In terms of establishing sustainable revenues of income for surrounding communities for when large mines do close (Botham, 2012), the effective implementation of the social and labour plans (See S23e of the MPRDA), and actively addressing local economic development issues have the potential to minimise the social and economic impact of mining downscaling and mine closure, and also post-mine life use, including appropriately integrated and governed ASM activities. This is a major opportunity for large-scale producers to either minimise net-harmful ASM activities and problems, or enhance the total value of positive aspects of ASM in post-mine operations, both as part of corporate responsibility and a risk management strategy for any future legal liabilities. It is interesting to note that this opportunity has been available through the EIA process, is an implied requirement of an EMP, and is implied or explicitly included in numerous South African Acts of Parliament, including the NEMA and MPRDA. This is a lesson for many jurisdictions considering an expansion of mineral activity. Simply having in place legislation alone has not been an effective approach to mine closure and ASM in most of Africa, and which many jurisdictions continue to struggle with.

5. Conclusion

In South Africa, while there is a long history of commitment by the DMR (and its predecessors) to facilitate socio-economic development and uphold constitutional environmental rights by the mining industry, a balance should be struck between encouraging development and attaining high standards of environmental stewardship (Department of Minerals and Energy, 1998; Glazewski, 2013). As such, it is clear that South African legislation implies that a large-scale mining operation will have a corporate and legislative obligation to consider local communities and also ASM for their mine closure and post-mine activities. Further afield from South Africa, as ASM to varying extents can be expected to occur on the continent when establishing large-scale mines, particularly post large-scale mine closure, their EIA processes could usefully integrate and manage the sector. To what end will depend on the assumptions that large-scale mining practices during the mine life would either enhance or reduce the ease with which ASM activity can be carried out and also its value as a livelihood. This might provide sufficient scope for large-scale producers to either minimise ASM activity or enhance the total value of ASM post large-scale mining as part of an economic diversification strategy. From this perspective, it seems that with the historical resilience and sustainability of ASM as a rural livelihood, the concept of mine closure itself is under examination. Indeed mine closure is seemingly a theoretical definition in many regions until a greater economic development opportunity arises for those engaged in ASM activities. We see value in ensuring that the governance obligations for large-scale mining companies directly cater for the known ASM activities likely to arise. Such a focus could be directed toward mitigating negative consequences while seeking to maximise the local socio-economic development benefits that ASM can create, all managed through EIA processes.

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