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**A COMPARATIVE ANALYSIS OF
FINANCIAL GUARANTEE INSTRUMENTS
FOR MINE CLOSURE RELATING TO THE
INTERESTS OF MEDIUM SIZED MINES.**

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submitted in partial fulfillment of the requirements for the degree

MAGISTER LEGUM (LLM) IN EXTRACTIVE INDUSTRY LAW IN AFRICA

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January 2017

The financial assistance of the National Research Foundation (NRF) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not to be attributed to the NRF.

III SUMMARY

In this dissertation I comparatively analyse the various financial guarantee instruments for mine closure in relation to the interests of medium sized mines. I do this not to compare each instrument against each another but rather in order to ascertain which instruments are more beneficial to medium sized mine companies when included in a state legislation or a contract. Mine closure is clearly a certainty for all mines, however acquiring sufficient funding in order for holistic closure to occur has always been problematic. Thus the use of financial guarantee instrument may mitigate such concern and streamlining the choice will lead to attaining the holistic mine closure objectives.

In chapter 1 I trace the history of mine closure as concept which has developed since the 1870s and I illustrate how the concept of mine closure has taken into consideration technical, social and environmental aspects. I do so in order to reinforce not only the scope of mine closure but to further emphasise the progression of the concept. Finally, I establish the current concept of mine closure, representing a meticulous concept comprising of far more than the traditional physical closure. Arising from this meticulous notion I discuss in chapter 2 the need for funding mine closure as the foremost concern regarding mine closure. I highlight the key justifications for the necessity for funding, I discuss the likely sources of such funding and I argue with whom the responsibility of funding falls onto. As the substantive core of this paper, in chapters 3 and 4 I introduce the most commonly opted for financial guarantee instruments and the most significant interests of medium sized mines regarding the financing of mine closure respectively. I deliberate concisely on each of the following instruments, namely: letter of credit; surety bond; cash trust fund; insurance scheme and self-guarantee and I discuss very briefly the most significant interests, namely: profitability, liquidity, accessibility, corruption and tax implications.

Finally in chapter 5 I analyse and compare the discussed financial guarantee instruments for mine closure against the interests of medium sized mines in order to establish which are the most beneficial to the medium sized mine company in the completion of holistic mine closure.

ACKNOWLEDGEMENTS

My curiosity of the extractive industries and introduction to the field first began when Adv. Leon Gerber, my supervisor, had presented a course outline for the LLM: Extractive Industries in Africa at the University of Pretoria. Numerous speakers throughout my LLM course had inspired this dissertation and encouraged ambition in my research. I am indebted to the course coordinators, planners and sponsors for inspiring such a holistic and practical LLM course.

I am respectfully appreciative to Adv. Leon Gerber – for his continued support, vigorous guidance and knowledge of mine closure funding. That knowledge had allowed me to research a profound field of the extractive industries. I am further grateful to Prof. P.A Carstens who had nominated me for a NRF and DST Innovation Scholarship which was positively granted to me.

I hereby acknowledge the financial assistance of the National Research Foundation (NRF) towards this research. Opinions expressed and conclusions arrived at, are mine and are not necessarily to be attributed to the NRF.

Lastly, this dissertation could not have been completed without the sustained support and patience of my family and friends.

I humbly thank you all.

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Introduction

It was in the 1870's where litigation involving farmers and mining companies first saw the recognition of the impact of mining operations where the effect of tailings being dumped into nearby water sources had decreased the quality of water available to these farmers.¹ These impacts have since transformed and developed to include the now established environmental and social aspects, and has produced an obligation on mining companies, through the law, to plan and effect active and holistic mine closure.²

These financial, environmental and social impacts are regarded as paramount in mine closure, and even though necessary, has become extremely costly, with the financial burden being placed on the company itself.³ The bulk of mining operations are medium sized⁴ and the financial consequences of compulsory mine closure has forced these mining companies to perform dense feasibility reports⁵ prior to investment in order to confirm its ability to cover these high costs whilst performing the capital intensive mining operations.

¹ Kelley *Gold vs. grain the hydraulic mining controversy in California's Sacramento Valley* (1959) 132.

² Robertson and Shaw *Mine Closure* (2002) 3. Accessed at http://www.infomine.com/library/publications/docs/e_book%2002%20mine%20closure.pdf Retrieved 2016-07-22.

³ World Bank *It's not over when it's over: Mine closure around the world* (2002) 5. Accessed at <http://siteresources.worldbank.org/INTOGMC/Resources/notoverwhenover.pdf> Retrieved 2016-08-26.

⁴ As above 8.

⁵ Justis "The feasibility study as a tool for venture analysis". *Business Journal of Small Business Management* 1979 35-42. Justis describes a feasibility study as one which rationally and objectively aims to ascertain the prospects of success of a venture.

Accordingly, medium sized mining companies take into consideration, among other factors, the form of financial guarantee instrument⁶ most beneficial to them whilst still meeting closure obligations. It is therefore an inherent influence to investment into nations where these instruments are prescribed or common practice in contract.

In this dissertation I aim to demonstrate the more beneficial financial guarantee instruments for medium sized mine companies based on their core financial interests. Due to mine closure now being a certainty and financial guarantee instruments being prescribed in legislation or a choice in a contract it is vital that the best instrument is opted for as it will always influence not only the mining company, but mine closure itself and its ancillary effects.⁷ The legislature of nations may thus using this comparative analysis opt for prescribing financial guarantee instruments which focus on the broader interests of these companies.

Financial guarantee instruments have the potential first to promote investment in these mining operations which will see a benefit towards the financial interests of the mine company, the interests of society and communities and the environment.⁸ Secondly, it may ensure completion of a mining operation whilst allowing a mine company to uphold its duty towards complete mine closure.⁹ Thirdly, financial guarantee instruments could ensure that the decision-making process of these companies is fair and equitable to all stakeholders.¹⁰

⁶ Mota de Lima *Financial guarantee for mine closure* Minas Ouro Preto 2003 182. Financial guarantee instruments are elected from various types or forms and each may be appropriate in difference circumstances which depends largely on the financial state of a mining company.

⁷ As above.

⁸ As above.

⁹ Dixon "Mine closure from a legal perspective: Do the provisions of the new minerals and petroleum resources development Act and draft regulations make closure legally attainable" *The Journal of The South African Institute of Mining and Metallurgy* 2003 7. Accessed at <http://www.saimm.co.za/Conferences/MineClosure/002-Dixon.pdf> Retrieved 2016-08-23.

¹⁰ As above 10.

Rather than ascertaining overall the best financial guarantee instrument, this dissertation seeks to identify the various advantages and disadvantages of each mine closure instrument discussed based on the more paramount interest of medium sized mines.

In this dissertation I comparatively analyse the various financial guarantee instruments for mine closure in relation to the interests of medium sized mines. I do this in order to ascertain which instruments are more beneficial to medium sized mine companies when included in national legislation or a contract.

Mine closure is clearly a certainty for all mines, however acquiring sufficient funding in order for holistic closure to occur has always been problematic. Thus using a financial guarantee instrument may mitigate this issue and streamlining the choice may assist in completing holistic mine closure objectives.

I begin, in chapter 1, by tracing the history of mine closure as concept which has developed since the 1870s and I illustrate how the concept of mine closure has taken into consideration technical, social and environmental aspects.¹¹ I do so in order to reinforce not only the scope of mine closure but to further emphasise the progression of the concept. Finally, I establish the current concept of mine closure, representing a meticulous concept comprising of far more than the traditional physical closure.

I discuss in chapter 2 the need for funding mine closure as the foremost concern regarding mine closure.¹² I highlight the key justifications for the necessity for funding, I discuss the likely sources of such funding and I argue with whom the responsibility of funding falls onto.

¹¹ Epstein *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts* (2014) 33.

¹² Van Zyl *Financial Provision for Rehabilitation and Closure in South African Mining: Discussion Document on Challenges and Recommended Improvements* 2012 20.

In chapter 3 introduce the most frequently exploited financial guarantee instruments for mine closure. I deliberate concisely on each of the following instruments, namely: letter of credit; surety bond; cash trust fund; insurance scheme and self-guarantee. I do so in order to not only better comprehend the essential aspects of each but to further do so in the context of mine closure. I illustrate some case examples of host nations and the various instruments which are imposed or recommended legislatively.¹³ Finally, I give mention to some of the less common instruments and remark on the case examples.

In this chapter 4 introduce the most significant interests of medium sized mines regarding the financing of mine closure. I discuss very briefly the most significant interests, namely: profitability, liquidity, accessibility, corruption and tax implications. I do so to introduce an elementary understanding of each interest in the context on mine closure funding. Finally, I give mention to some less imperative interests which may play a role in the decision to opt for using a certain financial guarantee instrument/s. The overall purpose of this chapter is to advance an understanding of the most essential interests of medium sized mines relative to mine closure

As the heart of the dissertation, in chapter 5, I analyse the financial guarantee instruments for mine closure against some the interests of medium sized mines, and compare each in order to establish which may be more beneficial to the mine company in the completion of holistic mine closure.

I finally conclude by considering the future of financial guarantee instruments of mine closure and the challenge faced by mining companies and host nations in order to effect complete mine closure in the most neglected operations in the world.

¹³ More specifically the European Union, Queensland Australia and The Republic of South Africa.

CHAPTER 1:

A historical background of mine closure

In this chapter I trace the historical background of mine closure not only as a physical act but as concept which has developed over the history of mine closure. I highlight the key historical developments which have created the most significant changes in the concept since the 1870s. I illustrate how the concept of mine closure has taken into consideration new technical methods, social considerations and environmental concerns. I do so in order to reinforce not only the scope of mine closure but to further emphasise the progression of the concept high costs related thereto. Finally, I establish the current concept of mine closure, representing a meticulous concept comprising of far more than the traditional physical closure.

The overall purpose of this chapter is to contextualise mine closure as a concept in the current era so that the financial challenges can be understood as more than a rudimentary physical deed thus highlighting the necessity to guarantee funding to ensure comprehensive mine closure.

The key histories of mine closure

In order to determine the key histories of mine closure it is necessary to accept that mine closure is a historical phenomenon, which permits us to apply the standard methods of historical research, more specifically a review of primary and secondary written sources.¹⁴

The first development of the concept of mine closure began in the 1556 where documentation discusses and appreciates what we now recognise as environmental impacts of mining operations.¹⁵

¹⁴ Hockley *Some histories of mine closure, the idea* (2015) 1.

¹⁵ Hockley (note 14 above) at 2. This development can directly be found in Agricola, Georgius De Re Metallica (1556), translated from the first Latin edition of 1556 by Hoover, Project Gutenberg (2011).

It was only in the 1870's and 1880's when the first legal dispute arose between farmers and miners regarding hydraulic mining¹⁶ of gold in California's Sacramento Valley, which had brought the attention of local farmers whose lands had been impacted by mining operations.¹⁷ After much conflict between the stakeholders in the dispute and damage to a nearby river, the federal court made unlawful any discharge of tailings¹⁸ into rivers, creating the first legal decision protecting the environment against mining operations.

In the early 1920's a greater movement began, one which saw land reclamation being identified in articles written in the 1920's,¹⁹ but it was only in the 1930's where reclamation began to be a tentative practice²⁰. Much of this focus was with making the mined land more economically viable for various endeavors which required the land to have some form of rehabilitation before such endeavors would even be possible.²¹

The period between the 1930's and 1960's is significant as a transition phase in mine closure. Strip mining²² had begun in the US which had impacted farmers and their farmland. This had directly influenced food sources of the national population and thus a transition in mine closure from an individualistic concern to a national

¹⁶ Thrush *A Dictionary of Mining, Mineral, and Related Terms* (1968) 560. Thrush describes hydraulic mining as a form of mining that uses high-pressure jets of water to dislodge rock material or move sediment.

¹⁷ *Supra* fn 1.

¹⁸ Nedhi "Stabilization of sulphidic mine tailings for prevention of metal release and acid drainage using cementitious materials: a review" *Journal of Environmental Engineering and Science* 2007 425. Nedhi describes tailings as the materials left over after the process of separating the valuable fraction from the uneconomic fraction (gangue) of an ore.

¹⁹ Croxton "Revegetation of Illinois coal-stripped lands" *Ecology* 1928 160. McDougall "Forests and soils of Vermilion county, Illinois with special reference to "striplands"" *Ecology* 1925 373.

²⁰ Holmes "Reclaiming stripped land in Illinois" *The Scientific Monthly* 1944 414-420.

²¹ Morissey *Rich crevices of inquiry: mining and environmental history* (2010) 399.

²² <http://www.greatmining.com/strip-mining.html> Retrieved 2016-08-19. Strip mining is a kind of surface mining. The ore is very near to the surface of the land but has one or more layers of rock and filth on top of it. To mine the ore, these layers have to be removed.

concern had developed.²³ Due to the public interest, various regulations and laws had emerged as to ensure that land would remain farmable after such mining operations and further that financial security be posted for land reclamation to be guaranteed.²⁴

The recent 1960's and 1970's showed a vast increase in conservation and awareness of the impacts of mining activities.²⁵ Numerous activist groups formed during this period with particular reference to the distinguished WWF²⁶, Greenpeace International²⁷ and the Environmental Defense Fund²⁸ who had amongst other acts, either directly or indirectly opposed the lack of environmental concern by mining companies. This era saw the establishment of both civil awareness and legislative opposition to Appalachian strip mining²⁹, which may be best illustrated by the increased mining impacts, competition between land and water users, the broader environmental concerns of civil society and most notably US President Carter's passing of the Surface Mining Control and Reclamation Act³⁰.

The above histories of mine closure are the foundation of the increased mine closure legislation which developed internationally in the 1980's and 1990's and further acted as a launch-pad for the scientific and technical studies of mine closure within the past 3 decades.³¹

²³ Montrie *To save the land and people: a history of opposition to surface coal mining in Appalachia* (2003) 17.

²⁴ As above.

²⁵ Turner "The Specter of Environmentalism": Wilderness, Environmental Politics, and the Evolution of the New Right" *The Journal of American History* 2009 96.

²⁶ http://wwf.panda.org/who_we_are/history/sixties/ World Wide Fund for Nature. Retrieved 2016-08-19.

²⁷ http://www.greenpeace.org/international/en/about/faq_old/questions-about-greenpeace-in/ Greenpeace.org. Retrieved 2016-08-19.

²⁸ <https://www.edf.org/about> "About Environmental Defense Fund." Retrieved 2016-08-19.

²⁹ Website (note 26 above).

³⁰ *Surface Mining Control and Reclamation Act of 1977*.

³¹ Brune *Extracting the Science* (2010) 15.

Developmental considerations, technical, social and environmental

From the above historical review it is evident that there has been much development and change in the concept of mine closure. These trends can be seen from through the following observations:

- In the late 19th and early 20th centuries a change in the requirements of mine closure emerged, where there was specific concern over the mining impacts on land and water use motivated by competition between users.³²
- The long period between the 1930's and 1960's saw the initial concern of civil society against land and water use which would influence food sources.³³
- In the late 1960's moving towards the 1970's the continued growth of mining operations had led to regulatory efforts which had increased environmental awareness, albeit only for financial reasons, still a notable development.³⁴
- In the 1980's and 1990's the concept of mine closure became more inclusive of environmental protection and remediation along with land reclamation and water use controls which is evident from the global legislation.³⁵
- Since the 1990's, far more factors are placed into consideration which include stakeholder input and the sustainability of mining affected communities, whilst taking into consideration the technical aspects to mitigate negative impacts on the environment and affected communities.³⁶

This illustrates how mine closure began as a physical act, and has over time come to include various technical, social and environmental aspects. Each of these have various specific areas of concern which overall lead to a very detailed concept of mine closure.

³² Croxton (note 19 above) at 160.

³³ Montrie (note 23 above) at 17.

³⁴ Turner (note 25 above) at 96.

³⁵ <http://technology.infomine.com/reviews/MiningLaw/welcome.asp?view=full>
"Mining Law" Retrieved 2016-08-25.

³⁶ Robertson and Shaw (note 3 above) at 3.

The meticulous current concept of mine closure and the related costs

The ongoing development of the concept of mine closure brings forward a range of considerations, implications and requirements, which continue to expand as attention is given to various stakeholders and their concerns.³⁷ Robertson and Shaw suggest 4 main objectives of the current concept of mine closure, which are:³⁸

- Achieving productive use of land, or return to its original condition or an acceptable alternative. The origins of this objective as discussed above, remains a vital element of mine closure.³⁹ Costs here involved begin in the planning phases, where, scientific and technical studies must be done in order to ascertain the effect of the mining operations during and after operations. Further costs arise in the actual achieving of these goals, which may become an ongoing process years after the operations have ceased.⁴⁰
- Alleviating or eliminating environmental damage. Again, scientific and technical studies must be performed prior to mine operations. Generally environmental impact assessments⁴¹ and environmental management plans⁴² are drafted and implemented which both seek to address the

³⁷ Hockley (note 14 above) at 8.

³⁸ Robertson & Shaw (note 3 above) at 2.

³⁹ WWF *WWF Report ZA 2012* 10.

⁴⁰ As above.

⁴¹ Senecal "Principle of Environmental Impact Assessment Best Practice". *International Association for Impact Assessment* 1999 3. The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made".

⁴² Department of Environmental Affairs & Tourism *Environmental Auditing, Integrated Environmental Management Information Series* 2004 14. The department of Environmental Affairs and Tourism defines an EMO as follows. "An EMP is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction and operation, and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced."

- environmental concerns⁴³ before, during and after such operations and always have extensive costs.
- Protecting public health and safety. Where mining activities begin or persist, a continued influx of people become resident near the developing areas surrounding the mine. It is thus vital for planning and implementation of health and safety standards to occur at a functioning level.⁴⁴
 - To the extent achievable, providing for sustainability of social and economic benefits resulting from mine development and operations. The most recent objective of mine closure has brought the interests of communities around mines into the spotlight. Their interests concern the long term sustainability and growth of their community even after mining operations have ended, which historically has seen the growth of communities stagnate and often reverse.⁴⁵

These four objectives include social, environmental and economic considerations, which thus relate to this all-encompassing concept of mine closure. These considerations, implications and now legal requirements have created new and ongoing costs to mining companies with regards to mine closure. In chapter 2 I discuss these costs and the necessity for funding mine closure as the foremost concern surrounding mine closure, the various sources of such funding and security after award.

⁴³ Miller et al “Guidebook for Evaluating Mining Project EIAs” 2010 8-14. Miller gives mention to the following environmental impacts of mining: Acid mine drainage and contaminant leaching; erosion of soils and mine wastes into surface waters; impacts of tailing impoundments, waste rock, heap leach, and dump leach facilities; fugitive air emissions; incidental releases of mercury; noise pollution; biodiversity impacts; climate change considerations; impact on soil quality and others.

⁴⁴ Miller et al “Guidebook for Evaluating Mining Project EIAs” 2010 15-16. Miller gives mention to the following social impacts of mining: Impacts on migration; human displacement and resettlement; access to clean water; impact on public health; impact on cultural and aesthetic resources and others.

⁴⁵ <http://pubs.iied.org/pdfs/G00901.pdf>. Retrieved 2016-10-11.

CHAPTER 2:

Funding for mine closure

In this chapter I discuss the need for funding mine closure as the foremost concern regarding mine closure. I highlight the key justifications of the necessity for funding with examples engaged with physical stability, environmental impacts, land use and sustainable development. I discuss the likely sources of such funding and I argue with whom the responsibility of funding falls onto. I do this in order to lay a framework of understanding of whom these costs may ultimately rest with. Thereafter, I seek to demonstrate the need for security of such funding after award.

Recognising the need for funding

As the world has become attentive of the many trepidations surrounding mining operations, both law and policy have recognised mine closure as a necessity and is now permanently integrated as an essential step of mining operations.⁴⁶ Funding mine closure has thus become an indispensable cost and the foremost concern regarding mine closure.⁴⁷

Four main categories of costs concerning mine closure may be applied commonly over all medium sized operations: firstly, physical stability,⁴⁸ secondly, productive land use and rehabilitation,⁴⁹ thirdly, alleviating and eliminating environmental damage⁵⁰ and fourthly sustainable development.⁵¹ I examine these categories below:

⁴⁶ Du Plessis and Brent “Development of a risk-based mine closure cost calculation model” *The Journal of The South African Institute of Mining and Metallurgy* June 2006 443.

⁴⁷ Haney & Shkaratan *Mine closure and its impact on the community* (2003) 52.

⁴⁸ <http://www.infomine.com/library/publications/docs/ebook%2002%20mine%20closure.pdf> Robertson & Shaw “Mine Closure” (2002) 3. Retrieved 2016-07-22.

⁴⁹ Turner (note above 25) at 96 and also see discussion in chapter 1.

⁵⁰ As above.

⁵¹ As above.

- Traditional mine closure concerns mostly physical stability, which entails stability of buildings, structures, workings, pit slopes, underground openings and engineered structures which have been built during the operations or at the close of operations.⁵² These costs generally arise from health and safety⁵³ concerns towards nearby communities and the environment.⁵⁴
- A concern brought to light in the early 20th century relates to land use and rehabilitation.⁵⁵ Generally land is either rehabilitated to pre-mining conditions⁵⁶ or to the extent possible to some condition where it may be useful an example of the latter is the Eden Project.⁵⁷
- The alleviation and elimination of environmental damage arising from mine closure is an ongoing cost where such damage may have invaluable consequences.⁵⁸ A few examples of environmental impacts which must be addressed are: Minerals, metals and other contaminants must be stable and not leach or migrate into the environment; weathering oxidation and leaching contaminants must not transport contaminants into the environment and; surface and groundwater must be protected from the impact of mining and processing activities.⁵⁹
- The most recent, yet most notable cost of mine closure can be found in attaining sustainable development.⁶⁰ Consideration must be made of the

⁵² http://www.epa.wa.gov.au/EPADocLib/153549_WEB%20VERSION%20%E2%93%20Guidelines%20for%20Preparing%20Mine%20Closure%20Plans.pdf
Retrieved 2016-08-08.

⁵³ <http://www.ifc.org/wps/wcm/connect/1f4dc28048855af4879cd76a6515bb18/Fina+Mining.pdf?MOD=AJPERES>. Retrieved 2016-08-08.

⁵⁴ Mota de Lima (note 7 above) at 182.

⁵⁵ Montrie (note 23 above) at 17 and also see historical Discussion in chapter 1.

⁵⁶ Limpitlaw et al *Post-mining rehabilitation, land use and pollution at collieries in South Africa* 2005 3.

⁵⁷ <https://www.edenproject.com/eden-story/eden-timeline>. Retrieved 2016-06-03. In 1995 a working kaolinite pit in Cornwall, England was nearing the end of its economic life. In order to promote land rehabilitation two biomes were made over the area which house various flora from different climates. It is now an attraction visited by many, and is exemplary of land rehabilitation.

⁵⁸ Van Zyl (note 12 above) at 12.

⁵⁹ Robertson and Shaw (note 3 above) at 3.

⁶⁰ Keengwe & Jared *Handbook of research on global issues in next-generation teacher education* 2016 135. Keengwe & Jared describe sustainable development as a process for meeting human development goals

sustainability of socio-economic benefit, post mining, and such benefit must be transferred to succeeding custodians.⁶¹ This sustainability extends to the cultural and aesthetic resources⁶² of affected communities, sustainable infrastructure and countless social considerations.

These categories of costs have an innumerable number facets and each medium sized mining operation must, on a case by case basis, consider these vast costs prior, during and after the mining operations.

The nature of the various costs surrounding mine closure is discoursed by Du Plessis and Brent in their paper focusing on the expanding existing mine closure cost calculation models in South Africa:

“The primary concerns for decommissioning and rehabilitation are to ensure public safety and health, and environmentally stable conditions compatible with the surrounding environment, and consequently minimize the environmental impacts caused by mining. The overall objective is to have socially, economically, and environmentally sustainable development. In summary, the closure process should be a life-of-mine process, where risks are quantified and managed proactively.”⁶³

The cost of mine closure can vary enormously as the following extract from the World Bank and IFC publication (2002) shows:

“Closure costs for environmental issues range from less than US\$1 million each for small mines in Romania to hundreds of millions of dollars for large lignite mines and associated facilities in Germany. More typically, closure costs will range in the tens of millions of dollars. Preliminary research indicates that medium-size open pit and underground mines operating in the past 10 to 15 years cost US\$5-15 million to close, while closure of open pit mines operating for over 35 years, with large waste and tailings facilities, can cost upwards of \$50 million.”⁶⁴

Funding these costs is a foremost concern in mine closure and continues to play a fundamental role in feasibility and investment into the extractive industries. It is

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while sustaining the ability of natural systems to continue to provide the natural resources and ecosystem services upon which the economy and society depends. Hockley (note 14 above) at 2.

62

Fourie et al *Aesthetics for mine closure* 2011 604.

63

Du Plessis and Brent (note 46 above) at 443.

64

World Bank (note 3 above) at 5.

thus paramount that a host nation's legal system is clear with regard to whom the source of funding is.

Sources of funding

Following the discussion on the necessity of funding, the next enquiry is on whom the responsibility of these costs fall on. Various models have been introduced globally and the choice is dependent on the legislative provisions of the country where operations occur.⁶⁵ There are generally three main sources of such funding, first, state funding, secondly third parties and thirdly the mining company itself.⁶⁶

The first model is where responsibility of the costs rests on either, the host nation through taxing of citizens or the host nation through tax of mining companies.⁶⁷ Host nations rarely are the source of such funding as this cost ultimately rests on the taxpayer which may distress investors due to the possible corruption or unreliability of the host nation.⁶⁸

In the second instance, such as that of Australia, a Mining Rehabilitation Fund (MRF) is pooled to which Western Australian mining companies contribute and an advisory panel is established to provide advice on matters concerning the rehabilitation fund.⁶⁹ In this example the mining company will pay a contributory fee to the fund during the life of mine, and will not only contribute to its own rehabilitation but in effect also to the rehabilitation of other member mines. The most common model relates to the costs resting on the mining company and this finds its routes in the polluter-pays-principle⁷⁰ as well as mining companies

⁶⁵ As above.

⁶⁶ As above.

⁶⁷ <http://www.financialmail.co.za/features/2016/06/03/mine-rehabilitation-new-regulations-for-clean-up>. Retrieved 2016-11-18.

⁶⁸ <http://www.usip.org/sites/default/files/ETC-D/NPEC/480021.PDF>. Retrieved 2016-07-22.

⁶⁹ <http://www.dmp.wa.gov.au/Environment/Mining-Rehabilitation-Fund-MRF4906.aspx>. Retrieved 2016-07-22.

⁷⁰ Cortato "The Polluter Pays Principle: A proper guide for environmental policy" *Institute for Research on the Economics of Taxation Studies in Social Cost, Regulation, and the Environment* 2001 1. Cortato describes the 'polluter pays principle' as that whoever is responsible for damage to the environment should bear the costs associated with it.

generally being observed as raiders of resources due to the lack of sustainable legacies left behind after closure.⁷¹ For purposes of this paper the source of the funding is assumed to be the medium sized mining company.

Security after award

Financial guarantee is an essential instrument in safeguarding that funds are available to assure effective mine closure and rehabilitation.⁷² The purpose of the financial guarantee is to ensure that there will be satisfactory funds available to pay for the costs of mine closure set out in chapter 1 above.⁷³ A financial guarantee is essential to ensure that the mining project does not burden a government and thus the taxpayer with a detrimental environmental or social legacy.⁷⁴ Closure may not always occur as planned and the life span of an operation is dependent on the discoveries made, or not, and it is quite common for the life of a mine to be extended by the re-evaluation of existing reserves, changes in the commodity markets, new ore discoveries, etc.⁷⁵ It is also essential that the financial guarantee is quarantined from other company assets, so that it cannot be seized in the event of bankruptcy, and from government abuse depending on whom it is safeguarded by.⁷⁶ The financial guarantee must be returned to the company for purposes of meeting such costs or following the satisfactory completion of mine closure and the rehabilitation program. In chapter 3 below, I examine the most common financial guarantee instruments at the disposal of the medium sized mine companies.

⁷¹ http://www.thebrenthurstfoundation.org/files/Brenthurst_Discussion_Papers/Brenthurst-paper-201607.pdf. Retrieved 2016-06-21.

⁷² Miller *Financial assurance for mine closure and reclamation* 2005 7. Accessed at <http://www.icmm.com/publications/pdfs/282.pdf> Retrieved 2016-08-12.

⁷³ Mota de Lima (note 6 above) at 182.

⁷⁴ Miller (note 72 above) at 7.

⁷⁵ World Bank *Guidance notes for the implementation of financial surety for mine closure* 2008 43. Accessed at http://siteresources.worldbank.org/INTOGMC/Resources/financial_surety_minedf Retrieved 2016-07-13.

⁷⁶ As above 5.

III CHAPTER 3:

Financial guarantee instruments for mine closure

In this chapter I introduce the most frequently exploited financial guarantee instruments for mine closure. I deliberate concisely on each of the following instruments, namely: letter of credit; surety bond; cash trust fund; insurance scheme and self-guarantee. I do so in order to not only better comprehend the essential aspects of each but to further understand each in the context of mine closure. I illustrate some case examples of host nations and the various instruments which are imposed or recommended legislatively. Finally, I give mention to some of the less common instruments and remark on the case examples.

The overall purpose of this chapter is to advance an understanding of the most frequently used financial guarantee instruments for mine closure, so that the central mechanisms of each can be better understood, which I in chapter 5 analyse against some the interests of medium sized mines.

An introduction to financial guarantee instruments

It is now a conventional practice for a mine closure plan to contain specific details of an estimated mine closure cost⁷⁷ and further illustrate financial guarantee and the instrument/s which will be exploited.⁷⁸ The option elected for is occasionally at the restriction of the host nation within which operations occur where such host nation either imposes or recommends an instrument/s.⁷⁹

⁷⁷ Robertson and Shaw (note 2 above) at 3.

⁷⁸ As above.

⁷⁹ Friket and Haddow “Guiding Principles for Durable Mining Agreements in Large Mining Projects” *Journal of Energy & Natural Resources Law* Vol 31 No 4 2013 475.

The varied circumstances within each host nation, and further, each operation prevent establishing an exact guide to be practicable. However for various reasons, one being investor confidence, it is recommended that a host nation apply consistently financial guarantee standards.⁸⁰

The IFC Guidelines include the idea of a holistic mine closure plan, one which contains both physical rehabilitation and socio-economic considerations which, by implication, includes the financial guarantee instrument/s selected.⁸¹ It has however been argued, that due to the separate nature of these considerations, that each should be dealt with separately and in some instances have different instruments guaranteeing each.⁸²

There are an innumerable amount of instruments available to a mining company, and when a choice is allowed by the host nation, this choice will have its dependency on the financial strength of the company, the amount of financial guarantee required and the time frame over which the fund will need to be in place amongst other aspects.⁸³ Below I deliberate concisely on each of the most commonly exploited instruments.

Letter of credit

A letter of credit or a bank guarantee is an unconditional agreement between a person and a bank in order to provide funds to a third party on demand.⁸⁴ In this instance, the third party is the relevant government, department of such government or other authorised body within government, where the agreement is conducted between the mining company which is a juristic person and the bank.

⁸⁰ As above.

⁸¹ See (note 53 above)

⁸² Mota de Lima (note 6 above) at 183.

⁸³ Mota de Lima (note 6 above) at 182.

⁸⁴ http://trade.gov/media/publications/pdf/trade_finance_guide2007ch3.pdf. Retrieved 2016-09-06.

In order to acquire this instrument, the mining company must make evident to the bank that provision has not only made for mine closure in a mine closure plan, but further show that there is sufficient funds to cover its meticulous cost.⁸⁵

It must contain the terms and conditions of the agreement between the mining company and the government, with reference to the mine closure plan and the agreed costs where any amendments require the consent of all parties involved.⁸⁶

Most banks will issue a letter of credit which will be valid for a year and which then must be renewed annually taking into consideration a review of the mine closure plan and the related costs.⁸⁷ If such renewal fails for any reason, the government can request payment for the full outstanding amount of a letter of credit and furthermore this is a cost-effective instrument as it has annual cost which ranges from 1% to 9% of the guaranteed amount and such cost may logically be offset from any interest derived.⁸⁸

Surety bond

A surety bond, a performance bond or an insurance bond, is an agreement between an insurance company and a person in order to provide funds to a third party under certain circumstances.⁸⁹ In this instance, the third party is the relevant government, department of such government or other authorised body where the agreement is between the mining company and the insurance company. The funds provided to the host nation places an onus on that host to ensure that a mine closure occurs.

⁸⁵ World Bank (note 75 above) at 6.

⁸⁶ World Bank (note 75 above) at 7.

⁸⁷ [http://www.wikinvest.com/stock/CPI_International_\(CPII\)/Autorenewal_Letter_Credit](http://www.wikinvest.com/stock/CPI_International_(CPII)/Autorenewal_Letter_Credit). Retrieved 2016-09-23.

⁸⁸ As above.

⁸⁹ Schubert “Q&A, The Legal Basics of Surety Bonds” *Contractions Executive* November 2003 48.

A surety bond will include the terms and conditions of the agreement between the government and the mining company, relating to the mine closure program as well as the contracted cost of mine closure and the conditions for the release of the bond.⁹⁰ Just like any other insurance contract, a surety bond requires the consent of all parties involved in order to amend it.⁹¹

The mining company applying for such bond will have a credit review placed on it which determines how long the bond is issued for and if it can be further renewed.⁹² If the issued time has expired and renewal is denied, the mining company will need to elect for an adequate substitute and failing to do so would result in the host nation drawing the full amount for the purposes of closure.⁹³

Cash trust fund

A cash trust fund, a mining reclamation trust, a qualifying environmental trust or simply a trust fund, is an agreement between a trust company and the proponent for the sole purpose of funding mine closure.⁹⁴ In this instance the agreement is in between the trust company and the mine company where the beneficiary of the trust is essentially the mine company.

However in addition there must be an agreement between the host nation and mining company which stipulates the responsibility of the mine company and further that the trust fund is to provide security for mine closure of a specific mine.

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⁹⁰ World Bank (note 75 above) at 7.

⁹¹ Todd and Bruce *The Law of Miscellaneous and Commercial Surety Bonds* 2001 45.

⁹² MonTec *Guidelines on Financial Guarantees and Inspections for Mining Waste Facilities* 2007 1.

⁹³ As above.

⁹⁴ Peña *A trust fund approach to accelerating deployment of CCS: Options and Considerations* Coal Initiative Reports 2008 5.

⁹⁵ World Bank (note 75 above) at 9.

Trustees may vary from an independent trust company or the host nation itself.⁹⁶ It is widely recommended that a trust fund be maintained by a trust company that is licensed under the relevant legislation.⁹⁷ This will not only allow for some level of objectivity but can further improve the quality of investments made with the trust fund through the better informed decisions such a company is able to make. A trust fund is costly and generally the fees and administration costs must be paid by the mining company.⁹⁸ If the mining company fails to make these payments and further fails to elect for an adequate substitute it will result in the host nation drawing the full amount which must be used for purposes of mine closure.⁹⁹

Trust funds may either have a lump sum contributed throughout the life of mine or may be structured as a series of payments over a specific time period.¹⁰⁰ This allows for any changes in the re-evaluated mine closure plan and costs to be reviewed within the trust fund. Trust funds may be created with various aspects which can lead to uncertainty, however guidelines such as that of the ICMM may assist in that regard.¹⁰¹

Insurance scheme

Various insurance options are available to mining companies, however insurance schemes for mine closure have only been a recent development where they may be tailor made for mine closure costs.¹⁰² General forms of insurance unlike such a scheme, such as premium financing, commercial general liability and professional indemnity do not normally cover environmental liabilities.¹⁰³

⁹⁶ Dixon Supra (note 9 above) at 13.

⁹⁷ As above.

⁹⁸ Pena (note 94 above) at 6.

⁹⁹ Miller (note 72 above) at 3.

¹⁰⁰ <http://budgeting.thenest.com/can-trust-fund-money-allocated-monthly-28970.html>
Retrieved 2016-09-05.

¹⁰¹ The Appendix of the ICMM report, Financial Assurance for Mine Closure and Reclamation (2005), contains a list of the principles, established by the mining industry, for the design, operation and review of a Trust Fund. These are reproduced in full in Appendix Box 2.2 and 2.3.

¹⁰² <http://www.fanews.co.za/article/investments/8/general/1133/nema-new-regulations-new-opportunities/20478>. Retrieved 2016-07-16.

¹⁰³ Dixon (note 9 above) at 12.

A major advantage of an insurance scheme of this kind is that payments made into to the insurance policy are generally tax deductible.¹⁰⁴ Insurance schemes are very versatile instruments where a variety of aspects can be used depending on the circumstances surrounding a specific mining operation. Such an example can be found in the US, where one insurance company set up a custom designed product that is a combination of three products; a conventional surety bond, accumulation of cash within the policy and insurance protection for overruns and changing requirements.¹⁰⁵

Self-Guarantee

Company guarantee, corporate financial test, a balance sheet test or a self-guarantee, is grounded on an assessment of the liabilities and assets of the mining company and the ability to pay the mine closure costs.¹⁰⁶ The onus now being on the mining company thus creates a need for greater transparency of the company's financial status. This is done by granting access to:¹⁰⁷

- The mine company's history of financial stability,
- A credit rating from an authorised credit rating service,
- An annual financial statement.

Entrusting a mining company to self-guarantee mine closure has long been perceived as a contradiction and is a conflict of interest by the public and as such is no longer accepted by various host nations.¹⁰⁸

Case examples and remarks

I discuss 3 case examples below of host nations, namely: The European Union, The Republic of South Africa and Queensland, Australia. I further include various

¹⁰⁴ ICMM (note 101 above).

¹⁰⁵ As above.

¹⁰⁶ Kuipers *Putting a Price on Pollution: Financial Assurance for reclamation and closure* MPC Issue Paper No 4 2003 3.

¹⁰⁷ World Bank (note 75 above) at 9.

¹⁰⁸ Kuipers (note 106 above) at 18.

financial guarantee instruments which are offered legislatively by these nations and the general effect thereto.

European Union¹⁰⁹

The European Union does not dictate the means of achieving specific results however it requires member states to obtain such results. These can be found in the directives of the union, which are similar to legislative provisions. EU Directive 2006/21/EC relates to the Management of Waste from Extractive Industries which had to be implemented by 1st May 2008. Article 14 creates the need for a financial guarantee, to cover the amassing or deposit of waste. It also establishes that the financial guarantee should be in the form of a financial deposit.

The Republic of South Africa¹¹⁰

In South Africa, the Minerals and Petroleum Resources Development Act¹¹¹ (effective in 2004) provides the regulatory environment for the extractive industry. It is supported by the Minerals and Petroleum Resources Development Regulations 2004.¹¹² The section 53 of the 2004 Regulations specify that the financial surety instruments available to the mine company are:

- Cash trust fund
- Letter of credit
- Cash deposit
- Or any other method determined by the Director General of the Department of Minerals and Resources.

¹⁰⁹ World Bank (note 75 above) at 35-36.

¹¹⁰ World Bank (note 75 above) at 31.

¹¹¹ Minerals and Petroleum Resources Development Act 28 of 2002 (hereafter Act 28 of 2002).

¹¹² Minerals and Petroleum Resources Development Regulations 2004. (hereafter 2004 Regulations).

The major mining companies in South Africa generally use trust funds and centralized them at a corporate level where the financial surety must include 14% VAT. Any contributions to a trust fund are tax deductible as running costs and the trust funds are exempt provided they are used for the purpose of rehabilitation after decommissioning.

However under the Financial Provisions Regulations which was published in 2015 under the National Environmental Management Act¹¹³ rehabilitation trust funds will be restricted for final rehabilitation and includes use for ongoing environmental impacts.¹¹⁴

As discussed above, a trust fund is generally in the form of a lump sum which is used for the mine closure at the end of operations, however, the 2015 regulations suggest that this trust fund must be used to cover ongoing environmental impact costs even after a closure certificate is issued.¹¹⁵ Furthermore such a trust fund must be ceded to the state entity, the Department of Minerals and Resources which may open way to corruption.

The last significant change is which regard to the expiration of financial guarantees upon issuing of a closure certificate, which as it seems is contradictory to having a trust fund still exist after a closure certificate is issued.¹¹⁶ Non-compliance with the 2015 Regulations is also a criminal offence and both the holder and its directors may be held criminally liable.¹¹⁷

¹¹³ National Environmental Management Act 107 of 1998 (hereafter Act 107 of 1998).

¹¹⁴ Gore “Crippling” 2015 Mining Financial Provision Regulations - possible deadline extensions for likely rehabilitation liability increases and income tax penalties due to legislative riddles 2016. Accessed at <http://www.lexology.com/library/detail.aspx?g=a0883dfd-a8bb-4387-90f8789289544448> Retrieved 2016-10-02.

¹¹⁵ As above.

¹¹⁶ As above.

¹¹⁷ As above.

Queensland Australia¹¹⁸

The Minerals Resources Act¹¹⁹ requires that ‘security’ is deposited prior to a mining title being issued. The Environmental Protection Act¹²⁰ requires the mine closure program to contain the projected amount of the financial guarantee for larger projects while the Codes of Environmental Compliance¹²¹ require a financial surety for small projects. A financial guarantee is required for all mining titles but the mining company may lodge a single guarantee instrument to cover the obligations of both the Minerals Resources Act and the Environmental Protection Act. Guideline 17 of The Environmental Protection Act gives the environmental protection authority discretion to regulate the financial guarantee instrument. It specifically gives mention to the letter of credit and the surety bond. A number of small and medium sized mines have closed since the financial guarantee system was introduced to Queensland, where the mining title was withdrawn due to financial failure or non-compliance.

The above list of financial guarantee instruments for mine closure are the most common, however there are an innumerable number of instruments at a company’s disposal. Some of these are:¹²²

- Unit levy
- Fund Pool
- Sinking Fund
- Transfer of Liability
- Pledge of Assets

It must be noted that financial guarantee instruments need not be used in isolation and it is not unusual to find various instruments used for different aspects of mine closure. In chapter 4 I discuss the interests of medium sized mine companies in the context of financial guarantee instruments for mine closure.

¹¹⁸ World Bank (note 75 above) at 17.

¹¹⁹ Minerals Resources Act 1989.

¹²⁰ Environmental Protection Act 1994.

¹²¹ Environmental Protection Regulation 2008.

¹²² World Bank (note 75 above) at 12-13.

CHAPTER 4:

Interests of medium sized mines

In this chapter I introduce the most significant interests of medium sized mines regarding the financing of mine closure. I discuss very briefly the most significant interests, namely: profitability, liquidity, accessibility, corruption and tax implications. I do so to introduce an elementary understanding of each interest in the context on mine closure funding. Finally, I give mention to some less imperative interests which may play a role in the decision to opt for using a certain financial guarantee instrument/s.

The overall purpose of this chapter is to advance an understanding of the most essential interests of medium sized mines relative to mine closure. In chapter 5 I use these interests in relation to financial guarantee instruments in order to ascertain which best meet the interests of medium sized mines.

Recognising the various interests

Medium sized mine companies have an innumerable amount of interests which change prior, during and after mining operations.¹²³ When electing for a specific financial guarantee instrument/s, a host nation or mine company must take into consideration the interests of the mining company.¹²⁴ The main interests, in the context of financial guarantee instruments for mine closure, concern largely the financial interests of the mine company.¹²⁵

Below I introduce some significant financial interests of medium sized mine companies and discuss them in a rudimentary matter whilst further debating these interests in the context of mine closure.

¹²³ Da Rosa "Financial planning for mine closure" *Mining Environmental Management* Volume 7 1999 10-13.

¹²⁴ As above.

¹²⁵ Miller *Use of financial surety for environmental purposes* International Council on Metals and the Environment 1998 32.

Profitability

Acquiring a profit is the primary goal of all business ventures and is measured with the difference in revenue, the money generated from the activities of a business, and cost, the money spent in the course of business.¹²⁶ Thus a business venture which can principally secure a profit can be deemed profitable. However due to the competitive nature of investment varieties, potential investors prefer making informed decisions and one of the principal indices of a credible investment can be seen in the profitability of a project.¹²⁷

The predominant method of ascertaining profitability is through a profitability index (PI)¹²⁸, also known as profit investment ratio (PIR) and the value investment ratio (VIR). It is the ratio of payoff to investment of a proposed project.¹²⁹ It is a useful tool for investors to confirm profitability of a proposed project or an ongoing one. The ratio is calculated as follows:¹³⁰

$$\text{Profitability index} = \frac{\text{Present value of future cash flows}}{\text{Initial investment}}$$

Assuming that the cash flow calculated does not include the investment made in the project, a profitability index (PI) of 1 indicates breaking even.¹³¹ Thus:

- If the PI > 1, then there is a high profitability and,
- If the PI < 1, then there is a low or no profitability.

This simply means that if the present value of future cash flows is greater than the initial investment, then there a high likelihood of profitable project. Thus having low a cash flow may result in an unprofitable project, one which potential investors will have less interest in.

¹²⁶ Carbaugh *Contemporary economics: an applications approach* 2003 12.

¹²⁷ Trivedi *Profitability Analysis* 2006 236.

¹²⁸ Wiley *Pursuing the Competitive Edge* 2005 264.

¹²⁹ As above.

¹³⁰ Garrison et al *Managerial Accounting* 2006 842.

¹³¹ Levine et al *Against Intellectual Monopoly* 2007 312.

Financial security for mine closure is thus one of the fundamental factors which will influence profitability of a mining company due to the meticulous costs which it concerns. This therefore leads to poorer cash flows, where money held in security may prolong breaking even. It is thus vital that the financial guarantee instrument elected by the mining company or host nation takes into consideration profitability, investor interest and ultimately the feasibility of a mining project.

A profitable project is not necessarily one which is without risk, and thus an aspect such liquidity must be taken into consideration.

Liquidity

Liquidity is essentially the ability of a company to pay short-term obligations and is further described as a measure of the ability of a debtor to pay their due debts.¹³² It is usually expressed as a current ratio which is as follows:¹³³

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

The current ratio is the simplest measure and is used universally to determine how easily a company may pay its current debts. Thus a current ratio of 3 means that a company has 3 times more current assets than liabilities. However a current ratio of 1 or below may be an indication that a company cannot support its operations and activities. A low current ratio may ultimately lead to the liquidation¹³⁴ of a company. Thus a high current ratio further allows the company to take on additional debt to assist in supporting operations or show an increase in stock prices creating investor interest.

¹³² Brunnermeier and Pedersen “Market Liquidity and Funding Liquidity” *The Review of Financial Studies* 2009 2202.

¹³³ Tugas “A comparative analysis of financial ratios of listed firms belonging to the education subsector in the Philippines for the years 2009-2011” *International Journal of Business and Social Science* 2012 175.

¹³⁴ <https://www.suu.edu/business/sbdc/pdf/balancesheetratios.pdf>. Retrieved 2016-10-21.

Due to the capital intensive nature of mining operations, many current assets such as cash will always be spent on fixed assets used in operations. This leads to a lower current ratio and the risks associated thereto. A financial guarantee instrument for mine closure must consequently not deteriorate too much current assets in the form of cash which will eventually decrease the current ratio and lead to the consequences mentioned above. Mine closure costs are a necessity however it must be noted that due to the ongoing changes and re-evaluation of these costs that this will further lead to a more fluctuating liquidity.

If a mining company is struggling financially and at the verge of liquidation, surely a financial guarantee instrument which allows access to secured cash and prevent liquidation is beneficial.

Accessibility

The finances set aside for mine closure through the use of a financial guarantee instrument/s must be reasonably readily accessible to the mining company and released under certain agreed upon instances or circumstances.¹³⁵

This has the effect of not only improving cash flow, but possibility production and ultimately profitability. A mining company may often require accessibility to such funds especially at the early stages of operations where as a capital intensive industry such as mining will require.¹³⁶ This accessibility may easily be regulated to allow a limited amount to be accessed under certain conditions. However each financial guarantee instrument contains its own mechanisms, where some might allow readily allow for accessibility and others may wholly prevent it. Where a mine company is on the verge of liquidation and where access to such funding is needed to save the operations as a whole, surely in this instance access ought to be allowed.¹³⁷

¹³⁵ World Bank (note 75 above) at 5.

¹³⁶ Ruage *Mining Economics Discover Mongolia 2012 International Mining Conference and Investors forum 2012* 3.

¹³⁷ As above.

Corruption

Corruption is a practice of deceitful or unethical behavior by a person entrusted with a position of power, often to procure individual benefit.¹³⁸ It is a comprehensive term which may comprise of undertakings including embezzlement¹³⁹ and theft.¹⁴⁰ Corruption is not necessarily only an occurrence in the public sector and often concerns collusion among parties usually both from the public and private sectors. Corruption is strongly negatively associated with the share of private investment and, hence, it lowers the rate of economic growth.¹⁴¹ In addition it has a robust association with government where corruption occurs when an office-holder or other governmental employee acts in an official capacity for personal gain.¹⁴²

The effect of corruption in mine closure may arise where the financial guarantee instrument administrator seeks to place private interests first. Whilst it may be unlikely that financial guarantee does not result in the finance being provided, it must be noted that in some nations, certain conduct is not considered corruption and therefore will be allowed.¹⁴³ Where the government of the host nation administers the financial guarantee, the mining company generally will be uncertain due to the lack of trust between these parties. The same can be noted for the host nation where the mining company itself administers the financial guarantee. A third party or objective party with the interests of financial guarantee is thus most appropriate when selecting a financial guarantee instrument.

¹³⁸ Rock *Corruption and Democracy* DESA Working Paper No. 55 2007 9.

¹³⁹ <http://www.legal-explanations.com/definitions/embezzlement.htm>. Retrieved 10 12-26. Embezzlement is defined as “The crime of stealing the funds or property of an employer, company or government or misappropriating money or assets held in trust.”

¹⁴⁰ Kaplan *Criminal Law – Cases and Materials* Wolters Kluwer Law & Business 7th ed 2012 42. Kaplan defines theft as, “The taking of another person's property or services without that person's permission or consent with the intent to deprive the rightful owner of it”

¹⁴¹ Mo “Corruption and Economic Growth” *Journal of Comparative Economics* 2001 79.

¹⁴² Rock (note 138 above) at 11.

¹⁴³ World Bank (note 75 above) at 52.

The last significant interest discussed is that of the tax implications of selecting a financial guarantee instrument and the effect of tax thereto.

Tax implications

The World Bank lists four main concerns related to the tax implications of a financial guarantee instrument for mine closure. They are as follows: ¹⁴⁴

- Does the money paid into the financial guarantee instrument count as an operating cost or an expense and is therefore tax deductible?
- Does mine closure costs count as an operating cost and are therefore tax deductible?
- Is there any interest earned and if so is such interest taxable?
- When the financial guarantee is released back to the company is it taxable?

Each host nation has varied taxing systems which may clearly answer the above questions, however certain financial guarantee instruments may further change the taxing outcomes if used. Each of the financial guarantee instruments discussed in chapter 3 shall be analysed and compared to these tax implications. Mine closure as a necessity to protect the environment, communities and overall wellbeing of a host nation ought not to be hindered due to taxing which ultimately is for the benefit of that same nation.

The above list of interests of mine companies may be described as paramount, however there are an innumerable number of interests which mine companies will be take into consideration when electing for financial guarantee instrument.

Chapter 5 below is the central section of this paper, where I analyse the financial guarantee instruments against the interests of medium sized companies and compare them to illustrate the benefits and concerns each hold.

¹⁴⁴ World Bank (note 75 above) at 49.

||| CHAPTER 5:

Comparative analysis of financial guarantee instruments in relation to the identified interests

In this chapter I analyse the various financial guarantee instruments for mine closure discussed in chapter 3 against the interests of medium sized mines introduced in chapter 4. I do so in order to illustrate the interaction between these instruments and interests and how they may influence each other. I then compare each instrument in order to establish which may be more beneficial to a medium sized mine company in the completion of holistic mine closure.

The overall purpose of this chapter is to bring more certainty towards the instruments which host nations ought to prescribe in legislation, which parties should contract to and ultimately assist in a universally accepted system which benefit medium sized mine companies in fulfilling their mine closure duties.

Analysis of instruments against interests

The previous chapters contain various developments of mine closure, its justifications, the need for funding, various mine closure instruments and the most significant interests of medium sized mine companies in that regard.

This foundation of insight allows for this analysis, where below I discuss each instrument separately against each interest. Some interests will not be analysed against every instrument, such as the tax implications, as they may not be applicable, however are still paramount in this paper.

Letter of credit¹⁴⁵

A letter of credit is commonly utilised and is a popular instrument¹⁴⁶ due to the involvement of an independent bank which implicitly creates a guarantee and some objectivity. This mitigates any corruption which is less likely to occur with the involvement of a bank as opposed to the host nation or company itself whom have their own interests.

Letters of credit work uniquely as the payout only becomes due upon completion of the mining operations and may be either the closure phase or where the company defaults in the obligation to perform complete closure. Thus it has miniscule effect on both liquidity and profitability as the mining company need only prove an ability to cover the meticulous costs as opposed to paying the full amount for mine closure upfront. However due to the annual renewal and continuously fluctuating costs of mine closure costs, it is vital that a mining company always have enough funding set aside to prove an ability to cover the costs when payment becomes due. This allows the mining company to hold the funding during the operations, yet simultaneously not have full access to using these funds as proof must again be shown annually, thus factual access to this funding is limited. It is also a cost effective instrument as it has annual cost which ranges from 1% to 9% of the guaranteed amount and such cost may be offset from any interest derived.¹⁴⁷ Tax implications vary depending on the host nation's tax system in this regard however due to the low cost, and possible higher interest, the tax could be further offset against any extra interest gained.

The above analysis clearly illustrates why a letter of credit is widely used. The objective third party bank and payment of the money to the host nation mitigates trust concerns between stakeholders, whilst a lessor onus of proving an ability to pay these costs has minimal effect on the mine company's liquid assets or profit making goals.

¹⁴⁵ See (note 84 above)

¹⁴⁶ Montec (note 92 above) at 2.

¹⁴⁷ World Bank (note 75 above) at 23.

Surety bond¹⁴⁸

The surety bond, also known as a performance bond or insurance bond is also a popular instrument and involves an insurance company as a surety which pays out an agreed amount for funding mine closure upon certain conditions being met (Generally default of the mining company meeting its obligations).¹⁴⁹

A mining company will on an agreed payment schedule, compensate the insurance company as to ensure that if the mining company cannot meet its obligation to mine closure, that the insurance shall pay out. This allows for stronger liquidity and a faster rate of breaking even, as no lump sum needs to initially be paid, and the full mine closure cost need not be set aside from start. However a mining company must renew the bond intermittently, and in each instance undergo a credit review, which will require setting aside some funds for closure in advance in order to pass such review.¹⁵⁰ Furthermore, if credit review shows higher risk, premiums may increase and have the opposite effect to liquidity and also profitability. The profitability of the company may be influenced by the continuous insurance payments, and will clearly delay breaking even, however due to the payment nature of insurance, the mine company will most likely afford a surety bond. There will also be continuous access to the main funding where needed, but no access to the insurance unless default occurs. Tax implications shall again depend on the host nations regulations.

As the most utilised form of insurance, the mine company still bears the onus to perform mine closure and it is only where it defaults that the insurance will pay out. The varied premiums together with holding sufficient funds for closure may negatively influence liquidity and profitability, yet at the same time provide for access to the main funding.

¹⁴⁸ See (note 89 above).

¹⁴⁹ Shubert (note 89 above) at 49.

¹⁵⁰ Todd and Bruce (note 91 above) at 45.

Cash trust fund¹⁵¹

A cash trust fund, a mining reclamation trust, a qualifying environmental trust or simply a trust fund, is an agreement between a trust company and the proponent for the sole purpose of funding mine closure.¹⁵² Trustees may vary from an independent third party, to the nation itself, and as such corrupt practices may ensue differently depending. Where a host nation with a corrupt history administrates the trust fund, corruption is more likely to occur.¹⁵³

A trust fund is costly due to there being either a lump sum or continued payments or a combination of both which must be paid into an inaccessible trust. The high general fees and administrative costs involved will directly influence profitability and liquidity in varied degrees. The best case scenario for liquidity and profitability would come from continued payments as opposed to a lump sum, however it is general practice that a lump sum be paid. Due to the trust being created for the sole purpose of closure itself access to these funds are very limited.¹⁵⁴ It is worth noting that where the host nation play the role of trustee, there may be no taxes or deductible taxes, which is beneficial toward the company in meeting its obligations to holistic mine closure, yet simultaneously creates an opening for corrupt practices.

The cash trust fund has become a common financial guarantee instrument in nations where there is an historic mistrust between the host-nation and mine companies such as in South Africa. It is however costly and requires a lot of initial funding from the mine company before operations have begun and makes an already capital intensive industry daunting to investors.

¹⁵¹ See (note 94 above).

¹⁵² Montec (note 92 above) at 2.

¹⁵³ Rock (note 138) at 11.

¹⁵⁴ As above.

Insurance scheme¹⁵⁵

Insurance schemes are extremely flexible and vary within their inner workings.¹⁵⁶ As a competitive market, insurance companies tend to provide various benefits towards mining companies which other instruments cannot.¹⁵⁷ It decreases the likelihood of any corruption, as insurance will only pay out where the mine company defaults and is liquidated.

Insurance companies may tailor make the instrument to suit the needs of the medium sized mine company, taking into consideration the interests of the mine company. However insurance of this type will always be more costly to the mine company due to the administrative and general costs, affecting profitability and liquidity to a higher degree than a simple surety bond.

The advantageous aspects are found in the payment scheme nature as opposed to a lump sum, which can benefit in the ways of liquidity and breaking even, but the high costs may decrease this effect. Furthermore access to the main funding for closure will always be available to the mine company, up to and until the date of beginning closure. Tax implications are again dependent on the host nation's regulations.

If regulated well, insurance schemes can be in a form of an improved surety bond, or provide for different insurances for the environment, the physical closure and the sustainable growth of the surrounding communities.

¹⁵⁵ See (note 102 above).

¹⁵⁶ Hill and Robles *Flexible insurance for heterogeneous farmers: results from a small scale pilot in Ethiopia* 2010 11.

¹⁵⁷ Arnott *Moral Hazard and Competitive Insurance Markets Contributions to Insurance Economics* 1992 333.

Self-guarantee¹⁵⁸

Company guarantee, corporate financial test, a balance sheet test or a self-guarantee, is grounded on an assessment of the liabilities and assets of the mining company and the ability to pay the mine closure costs.¹⁵⁹ This only requires the need for auditors, which most companies already have and some extra calculation. As such it is one of the cheapest instruments in terms of general or administrative costs however due to the conflict of interest of a company regulating its own guarantee, the public or host nation will always perceive a high likelihood of corrupt practices.

A mining company will thus need to prove, transparently, that it has the ability to pay these meticulous costs, and has set aside a sufficient amount of funding to do so. Thus where there may be temptation for corruption, profitability and liquidity must be higher in order for the assessments to be passed. Therefore whilst the self-guarantee provides control over the funding by the mining company, it poses a high risk that the company won't meet its profit targets or worse, its obligations to mine closure.

Most mine companies would prefer this instrument completely due to the control aspect, however its fundamental interest of meeting its statutory obligation to perform mine closure still exists, and thus may lead to internal policy which may be detrimental to the operation as a whole.¹⁶⁰

Overall, each instrument favours mine closure, however each to some degree are at the detriment of the interests of mine companies. It is vital to now compare these instruments, in order to ascertain which are more or less beneficial to mine companies when investing in mine operations within a specific host nation.

¹⁵⁸ See (note 106 above).

¹⁵⁹ ICMM (note 101 above).

¹⁶⁰ Da Rosa (note 123 above) at 12.

Comparing instruments based on analysis

Comparing the above instruments against each other is not the intention of this dissertation, but rather comparing the instruments against the interests of medium sized mines in order to ascertain which are more or less beneficial. As such I shall highlight which instruments meet or have the potential to best meet these interests and which don't. This will enable each mine company to firstly take into consideration its own circumstances against these comparisons when opting for the use of an instrument.

As mentioned in chapters 2¹⁶¹ and 3¹⁶² above, profit making is the main goal for mine companies, and as such the profitability of a mining operation is an initial hurdle ascertained in feasibility studies much prior to operations. It is clear that the meticulous costs of mine closure remains, regardless of the instrument chosen, however some instruments allow for the funding to be kept in possession of the mine company until its closure obligations must be met. Such instruments include the letter of credit, surety bond, insurance bond and self-guarantee.

The letter of credit works well to promote profitability as the mining company need only prove, on a regular basis, that it has the ability afford to cover costs, and as such will likely break even sooner than without having such funds in hand. The surety bond, works on a credit review basis, which has a similar effect to a letter of credit, however the premiums paid are risk based, and as such may possibly have a negative effect on profitability. An insurance bond is, as discussed above, a very expensive, yet flexible instrument. It may hinder profitability during the early stages of operations where risk is high, but if the mine can show that its chances to pay the mine closure costs is high, than premiums may decrease to a far more manageable amount which shall promote profitability as there will be a higher present value of cash flows.

¹⁶¹ See page 11.

¹⁶² See page 17.

Finally the self-guarantee, is an instrument which may completely favour profitability as the mine company is in full control of its finances, however the risk here lies in making a profit at the detriment of closure, which would cause profits to then be used to cover such costs. The cash trust fund is the least effective instrument with regards to profitability, due to its high costs and large upfront payments.

The most fundamental interest which ties up to profitability is liquidity. The assessments which may take place annually or on an agreed period for surety bonds and letter of credits promote liquidity as in surety bonds a credit review is done and for letters of credit, and assessment proving the ability to cover costs are done. The costs involved in a surety bond may slightly influence liquidity however this is less than the cash trust fund or insurance scheme. The costly insurance scheme will definitely decrease the company's current assets, and thus liquidity. Similarity the lump sum nature and administrative costs of a surety bond will have the biggest negative influence on a company's liquidity. The self-guarantee may have varied effects, and is dependent on how the company decides to guarantee itself, however if the money is contained as current assets, it will definitely promote liquidity.

Independent third parties generally lead to objectivity, and based on this assumption, a letter of credit, a surety bond, and an insurance scheme will assist in the prevention of corruption due to them all containing an objective third party. However it is not impossible for these independent bodies to perform corrupt practices. A cash trust fund may vary in the trustees of the fund and it has become a trend, for the host nation to administrate such a trust fund, an example which was discussed above in chapter 3 is South Africa's new regulations. A criticism here is due to the corrupt nature of many host nations, it is likely that such corruption may extend into these trust funds. These trust funds may also be handled internally, similar to a self-guarantee which in itself may also lead to corruption where the company's internal policy or regulations have loopholes allowing for such practices.

Due to the ongoing capital intensive nature of mining operations, these companies may often have the need to gain more funds, and where these instruments have blocked accessibility of such funds, the company may suffer losses or face liquidation far prior to planned closure. The letter of credit and self-guarantee may allow for access of these funds, whereas the insurance scheme and surety bond hold the insurance premiums, which cannot be accessed unless default occurs. The cash trust fund may be made to allow access in extreme circumstances, however such funding is blocked for the main purpose of closure which the trust was intended.

The last interest is very pertinent as it may influence all of the above instruments, however due to the sovereignty of states, host-nations may internally regulated their own tax regimes in this regard.

In this chapter I have analysed the financial guarantee instruments for mine closure against the interests of medium sized mines. I have demonstrated the advantages and disadvantages of each and I have consequently compared these instruments in ascertaining the benefits of each. Finally I have suggested that either a letter of credit, surety bond or tailor made insurance scheme ought to be more preferable to mine companies in order for host nations to promote investment. In my conclusion, I suggest the way forward for host nations and parties to contracts to best select final guarantee instruments opted for.

III Conclusion

In this dissertation, the study was aimed at comparatively analysing various financial guarantee instruments for mine closure based on the interests of medium sized mines in order to ascertain which are more or less beneficial to medium sized mine companies. To begin in chapter 1, I traced the history of mine closure as concept which has developed since the 1870s and I illustrated how the concept of mine closure has taken into consideration technical, social and environmental aspects.¹⁶³ This had reinforced the progression of mine closure, and thus the meticulous costs involved.

These costs give rise to the need to fund mine closure, which I had highlighted in some detail in chapter 2, I introduced the most frequently exploited financial guarantee instruments for mine closure and the most significant interests of medium sized mines in chapters 3 and 4 respectively, which laid a strong foundation in order to analyse and compare the various instruments.

In chapter 5, through my initial analysis, I had taken into consideration the financial guarantee instruments and analysed them based on the interests of medium sized mines, then in the comparison of these instruments I was able to find that the letter of credit, surety bond or tailor made insurance scheme were the most beneficial to medium sized mining companies.

In conclusion, this comparative analysis of the financial interests of medium sized mines has shown that the a beneficial instrument must more holistically meet the interests of the mine company and more so that the letter of credit, surety bond or tailor made insurance scheme have the potential to do so.

Moving forward, if investment and growth of economies were to occur especially in nations which rely on the extractive industries, it is paramount that the host-nation include a regulatory regime which promotes the above mentioned financial

¹⁶³ Brune (note 31 above) at 14.

guarantee instruments.¹⁶⁴ By doing so, the economy can improve and the mine closure obligations can be met. Having taken this first step, development into improving these instruments may thus occur, which will enable further potential benefit for all stakeholders. As a necessary step in mining operations, mine closure can occur if the financial livelihood of the operating company is protected.

A better understanding of mine closure began in the 1870's where litigation involving farmers and mining companies first saw the recognition of the impact of mining operations after mine closure had occurred, due to the effect of the tailings in water.¹⁶⁵ These impacts have since transformed and developed to include environmental and social aspects, and has produced an obligation on mining companies, through the law, to plan and effect mine active mine closure.

These financial, environmental and social impacts are regarded as paramount in mine closure, and even though necessary, has been extremely costly, with the burden placed on the company itself. The example of South Africa above¹⁶⁶ shows that overregulation and uncertainty of legislation and their workings may have a crippling effect on investment and ongoing operations. Whereas the clear and easily understood legislation of Queensland¹⁶⁷, provides for investor confidence where the financial guarantee is well established.

Accordingly, medium sized mining companies take into consideration, among other factors, the form of financial guarantee instrument most beneficial to them whilst still meeting closure obligations. It is therefore an inherent influence to investment into nations where these instruments are prescribed or common practice in contract.

¹⁶⁴ Mota de Lima (note 6 above) at 184.

¹⁶⁵ Which had influenced access to clean water to farmers, and thus food sources of the community.

¹⁶⁶ See (note 110 above).

¹⁶⁷ See (note 118 above).

Perhaps the interests of society and the environment are intrinsically linked to the financial health of investment, and where there is sufficient funding for a necessary cause, there is success. Secondly, it may ensure completion of a mining operation whilst allowing a mine company to uphold its duty towards closure.

The most neglected nations in the world, where mine operations leave both the environment and nearby communities in disarray, can change, not by imposing further costs onto the same companies which invest, but allow such companies to perform their operations with as little financial strain, as to allow for holistic closure to occur.

It is quite evident from the findings of this dissertation in which have demonstrated the more beneficial financial guarantee instruments for medium sized mine companies based on a comparative analysis, that financial guarantee instruments for mine closure influence each and every mine company's decision to begin operations as they greatly influence the mine company and its interests. It is thus vital that the instruments recommended in law or even required by the law of a host nation, be one which is not only meets the interests of these medium sized mines, but one which show legal certainty in supporting the company in fulfilling its mine closure obligations.

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