Support of CSOs on advocacy on the Mines and Minerals Amendment Bill:

Common Practices on Mine Rehabilitation Financing

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Common Practices on Mine Rehabilitation Financing

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1. BACKGROUND

In many mining jurisdictions the land area that mining companies have not rehabilitated is large giving rise to an increasing contingent liability for the government to meet if mining operations cease. As a result, many governments encourage progressive rehabilitation of mining sites whereby a miner rehabilitates affected environment concurrently with mining operations. However, some of the damage from mining operations occur in the long-term, long after the mining operations have ceased, thus leaving the responsibility of environmental rehabilitation with the government. In some cases, a mine may close prematurely leaving the government with the responsibility to mitigate the adverse environmental impacts of mining operations. Thus, there is a risk that the government might be required to rehabilitate the environment after a mine closes prematurely or to remedy long-term environmental impacts that occur after a mine has closed. In response to this risk, governments require a financial assurance/surety/guarantee which is provided by a mining company to guarantee that the money for rehabilitation will be available and the government will not be compelled to meet the miners' obligation of environmental rehabilitation.

In Zimbabwe, the current regime of financing mine rehabilitation requires that mining companies undertake progressive rehabilitation of their mining sites. There are no resources that are currently collected by the Environmental Management Agency (EMA) from mining companies for environmental rehabilitation. EMA monitors mining companies to ensure that they rehabilitate the mining site continuously. The strength of this system is that: (i) it ensures that the mine site is rehabilitated while the mine is still operational, and (ii) it is cheaper for companies as they are not requested to contribute to some fund which would constitute tied up capital. However, the current practice has its own pitfalls: (i) it does not provide for financial assurance that the mine would be rehabilitated in the event that the mine closes pre-maturely thus leaving the government with a burden to rehabilitate the environment, (ii) it focuses on short-term environmental damage at the exclusion of long-term environmental damage appearing long after a mine's initial remediation has been completed, (iii) it does not provide for the financing of post-closure management of the latent or residual environmental impacts of mining, and (iv) it does not offer the government money to rehabilitate abandoned mining sites.

In the Mines and Minerals Amendment Bill, Section 257E, the government has proposed to introduce the Safety, Health and Rehabilitation Fund which shall be used for rehabilitation of the environment with regard to environmental degradation associated with mining. The proposed section focuses on the following environmental degradation issues associated with mining: (a) mine fires and explosions; (b) entrapments and inundations; (c) ground subsidence; (d) tailing and waste dump breaches and contamination; (e) chemical spillage or acid mine drainage; and (f) closed mine risks (chemical leaks, water contamination and

collapse). The Fund will be financed by annual contributions made by every miner at rates specified by the minister responsible for mining.

However, miners have raised several concerns over the introduction of the Safety, Health and Rehabilitation Fund (SHRF). They argue that it is a duplication of the Environment Fund to which they contribute through an environmental levy of 2% charged at the point of sale. However, according to EMA, currently the mining industry is not contributing to the Environment Fund as the fund was not being enforced by government following a request by the mining companies considering the harsh macroeconomic environment. Thus, currently the environmental levy is not being enforced.

There are also concerns as to the appropriate institution under which the Fund should fall. The proposed SHRF will be administered through the Ministry of Mines and Mining Development. It is felt that if government were to collect the funds, there is risk that government might not use the Fund for the intended purpose of rehabilitating the environment after mine closure.

On the other hand, there are concerns by the government and other stakeholders that the provisions that miners make for mine closure and rehabilitation are eventually not used to rehabilitate the environment after the mine closes. EMA is also concerned that miners are not following their mine closure plans and decommission plans. By and large, most mining areas are left un-rehabilitated by the responsible mining companies. A study conducted by EMA in 2011[1] noted that there are about 22 large scale mines decommissioned over the last 20 years. The study revealed that the cumulative rehabilitation cost for four large decommissioned mines was US$32 million, with an average rehabilitation cost of US$8 million per mine.

During the study, the research team managed to visit some mining sites in the Midlands Province for registered small scale mines and artisanal mines. Registered miners acknowledged that while the introduction of the SHRF was noble, they were already contributing a lot towards environment rehabilitation and they were of the opinion that the money that they contribute in the form of licence fees for use of chemicals and explosives and penalties should be used as their contribution to the SHRF. They also noted that most of the environmental damage was being caused by artisanal miners and it would be difficult to ensure that they contribute to the SHRF because they are not regulated and their operations have no fixed abode. It was therefore noted that formalizing the operations of artisanal miners would be imperative in enforcing environmental rehabilitation on artisanal miners.

[1]Environmental Management Agency (2011). A survey of decommissioned mines


One of the sites visited where an artisanal miner is mining chrome in Shurugwi (left) and some of the open ditches which have not been rehabilitated after mining (right).


Some of the sites visited where artisanal miners in chrome are leaving big ditches on the ground which have not been rehabilitated (left). Trees are being destroyed also (right).

1.1 Purpose of the study

This study seeks to establish practices in mine rehabilitation financing in other jurisdictions in order to inform the dialogue of all concerned stakeholders with regard to the issues relating to the introduction of the SHRF. Therefore the study will provide evidence-based information to help the government to make informed decisions that ensure that the concerns raised by mining companies over the SHRF are addressed while at the same time ensuring that obligations of environmental rehabilitation are met when the mine closes. The study therefore seeks to:

- Review literature on the current practice in Zimbabwe on mine closure and rehabilitation;
- Review literature on how other mining jurisdictions finance mine closure and rehabilitation; and
- Highlight options that are available for Zimbabwe in financing mine closure and rehabilitation.

1.2 Objectives of the research paper

The main objective of the paper is to document best practices in mine rehabilitation financing. Specifically the paper seeks to:

- Identify how mine closure and rehabilitation financing is legislated in other mining jurisdictions;
- Determine the instruments that are being used to finance mine closure and rehabilitation in other jurisdictions;
- Determine the institutions that have been used in other jurisdictions to manage and administer the mine closure and rehabilitation fund;
- Find out how instances of multiple contributions towards mine closure and rehabilitation are handled in other jurisdictions; and
- Find out the level of contribution that is made to the mine closure & rehabilitation fund by mining companies in other jurisdictions.

1.3. Approach and Methodology

The study largely utilises a mixed methods approach which includes: key informant interviews, analysis of secondary data, web-search and review of literature on common practices in mine rehabilitation financing; review of policy instruments and legislative frameworks used in Zimbabwe and other mining jurisdictions to finance mine closure and rehabilitation. The choice of mining jurisdictions considered in the study depends on the availability of information in literature on the financing of mine closure and rehabilitation. Case studies of experiences of key mining jurisdictions, for example the Mine Rehabilitation Fund of Western Australia will be considered to draw lessons on innovative approaches being adopted to ensure continuous, sustainable and cost effective financing and rehabilitation closed/abandoned mines. The case of Queensland is also chosen because it is at an advanced stage in the process of introducing a fund that is similar to what Zimbabwe is proposing to introduce.

2. LEGAL REQUIREMENTS FOR FINANCING MINE REHABILITATION

The requirement for a financial surety/assurance is usually found in the mining and environmental laws or sometimes just in the mining law, though these usually do not identify the acceptable mechanisms.[2] Most governments also have regulations, guidelines or codes of practice that specify in more detail the requirements for rehabilitation and the financial surety/assurance mechanisms.

In Western Australia, the Mine Rehabilitation Fund (MRF) has its own stand-alone legislation - the MRF Act – which establishes a MRF, an advisory panel and the process to declare a mine site as being abandoned and, therefore, eligible for MRF moneys to be used for its rehabilitation. It also sets out the mechanism to impose an annual levy on mining title holders regulated under the Mining Act, 1978.[3] The costs of administering the MRF and any funds used to rehabilitate legacy abandoned mine sites comes from interest generated through the MRF. The capital can only be used for new abandoned sites, once all other options to have the site rehabilitated have been exhausted. The mining title holders continues to be responsible for rehabilitation, even after they no longer own the title, unless that responsibility has been passed onto the new tenement holder. If mining impacts are concurrently managed and rehabilitated, the annual levy will decrease.[4]

Like in Western Australia, in Queensland there is a Bill called the Mineral and Energy Resources (Financial Provisioning) Act 2018 introduced in February 2018, which is also in the form of a stand-alone legislation providing a financial provisioning scheme to deal with the environmental impacts of resource activities. The proposed Zimbabwe model is similar to these Australian models, with the exception that the Fund is being introduced through the general mineral legislation and not a stand-alone legislation. Nevertheless, there are legislative frameworks where a rehabilitation fund is integrated in the principal legislation as is the case with the SHRF in the Mines and Mineral Amendment Bill. For example, in Zimbabwe there is an Environment Fund which is integrated in the Environmental Management Act and provides, among other things, for the rehabilitation of the environment. The Environmental Management Act provides for the composition of the Fund, administration of the Fund, books of accounts for the Fund, and uses of the Fund. However, the current legislation of the SHRF in the Bill does not give details on how the Fund would operate. For example, the Bill does not provide for the institutional mechanisms for the operationalisation of the fund. It is not also clear on the use of capital and interest generated from the fund as is the case with a similar fund in Western Australia. It also does not provide for amendments needed for harmonising the SHRF with other Acts. For instance, there would be need for amending the

[2]World Bank (2008). Guidance Notes for the Implementation of Financial Surety for Mine Closure.
[3]Mine Rehabilitation Fund Act 2012. http://classic.austlii.edu.au/cgi-bin/download.cgi/au/legis/wa/consol_act/mrfa2012251
[4]Department of Mines and Petroleum (2016). The Mining Rehabilitation Fund – The First Two Years.

Environmental Management Act so that its Environment Fund does not duplicate what the Mines and Minerals Amendment Bill is proposing on the SHRF. This would specifically entail harmonising the Environment Fund and the SHRF so that the rehabilitation of environmental degradation and clean up of pollution referred to in the Environment Fund does not include the degradation and pollution associated with mining activities.

3. WHAT INSTRUMENTS ARE USED TO FINANCE MINE REHABILITATION?

The commonly used financial instruments in other jurisdictions to finance mine closure and rehabilitation include: Letters of Credit, Surety Bonds, Trusts Funds, Cash Deposit, and Corporate Guarantees.[5] The trend in developing countries is to use Trust Funds as the instrument of choice. In South Africa, the major mining companies use centralized Trust Funds at a corporate level. Most regulatory authorities allow miners to choose an instrument of their choice from a number of admissible instruments; however Victoria State, Australia, only accepts a Letter of Credit (Bank Guarantee).[6] In some jurisdictions, for example, Nevada, miners are allowed to use a combination of financial instruments. This is mainly done in cases where a single instrument cannot raise adequate amount to fully finance rehabilitation. For example, experience in some jurisdictions has shown that Corporate Guarantees do not provide sufficient protection, while in others Surety Bonds have failed to meet their expectations and Unit Levies have left governments with a shortfall when projects have closed prematurely. There are always some advantages and disadvantages with any choice of financial instrument used (Table 1).

TABLE 1: FINANCIAL INSTRUMENTS AND THEIR ADVANTAGES AND DISADVANTAGES

Instrument	Advantages	Disadvantages
Self-bonding or company guarantee	Most advantageous for mining company; does not tie up capital; simple to administrate; public availability of annual reports	Too risky because a company can fail; annual reports and financial accounts are susceptible to manipulation; not very acceptable to the public acceptance
Insurance policy scheme	Low costs also to smaller mining companies No tied-up capital Modest cash outflow from mine operator	Only very few insurance products are currently on the market Reluctance of large insurers to cover environmental liability risks
Letter of credit, bank guarantee	Cheap to set up (provided that company meets the bank's requirements) No tied-up capital Modest cash outflow from mine operator Less administrative requirements The government can reserve the right to approve banks from which they accept an LOC thereby minimizing the risk of failure of weak banks	Surety provider (bank, surety company) may fail Obtaining a LOC may reduce the borrowing power of the mining company Availability of bonds depends on state of surety industry and may be negatively affected by market forces outside the mining industry

[5]Singh (2017). A comparative analysis of financial guarantee instruments for mine closure relating to the interests of medium sized mines. https://repository.up.ac.za/bitstream/handle/2263/60095/Singh_Comparative_2017.pdf?sequence=1&isAllowed=y

[6]World Bank (2008).

Instrument	Advantages	Disadvantages
Surety bond	Generally low costs No tied-up capital	Bond issuer may fail over the long term Rating of the company that determines the cost and it will be substantially higher for small companies, especially those without proven track records
Cash deposit	Cash is readily available for closure and rehabilitation Investment-grade securities (treasuries) can be traded with minimal risk of liquidity High public acceptance (visibility of guarantee) For small and junior mining companies, if they fail to meet the criteria of a bank Can be dissolved only partly in case of need Can be transferred in a pooled fund	Significant capital is tied-up for the duration of the mine life, especially for large mining projects Some governments may be tempted to use the deposited cash for purposes other than securing the mining project Cash is more vulnerable to being lost to fraud or theft
Trust fund	High public acceptance (visibility of trust fund) Trust funds may appreciate in value (but may also lose in value)	Risk of bad management of the fund (loss of value if fund invests in risky assets) Trust fund may not have enough value accumulated through annual payments if mining project ceases prematurely Trust fund management consumes some of the value and income earned

Source: Montec (2007)

4. WHICH INSTITUTION SHOULD ADMINISTER THE MINE CLOSURE AND REHABILITATION FUND?

In the majority of countries the closure plan, rehabilitation and financial surety fall under the jurisdiction of the government department responsible for mining or jointly with the department responsible for the environment.[7] In Queensland, the Department of Mines and Energy (DME) relinquished its responsibility for environmental regulation and rehabilitation program to the Environmental Protection Agency in 1999, but the receipt and management of financial surety remained with DME.

In Ghana, the Minerals Commission and the Environmental Protection Agency (EPA) are jointly responsible for mine closure and the EPA is responsible for the implementation and management of the financial surety.[8] In Botswana, the Department of Mines under the Ministry of Minerals, Energy and Water Resources is responsible for the implementation of mine closure. However, there is no legislation requiring the posting of environmental bonds or similar financial assurance methods to cover the cost of environmental rehabilitation post-mining[9], although in 2008 there was once a proposal to introduce financial surety and that the Department of Mines and the Ministry of Finance and Development be jointly responsible for the implementation and management of the financial surety for mining projects. The Ministry of Finance was to be involved because it was envisaged that it would house the institution that would host the fund.

In South Africa the environmental aspects of the Minerals and Petroleum Resources Development Act (MPRDA) used to be the responsibility of the Minister of Minerals and Energy and administrated by the Department of Minerals and Energy (DME) under MPRDA at both the national and regional level. However, recent amendments to the MPRDA and National Environment Management Act (NEMA), transferred the environmental responsibilities including some closure and financial provisions to the NEMA but the receipt and management of the financial provisions for rehabilitation remain with the Department of Mineral Resources under the Ministry responsible for mining [10, 11].

The government body in Sweden responsible for mine closure and the financial surety is the Environmental Court. In Victoria, the Department of Primary Industries (DPI) under the Minerals and Petroleum Division is responsible for approving the rehabilitation plan and

[7]World Bank (2008)
[8]Tanoh D. A. (2016). Mandates and Activities of the Environmental Protection Agency. http://www.reportingoilandgas.org/mandates-and-activities-of-the-environmental-protection-agency/
[9]World Bank (2016). Botswana Mining Investment and Governance Review. https://openknowledge.worldbank.org/bitstream/handle/10986/25225/109316.pdf?sequence=8
[10]Scott R. and Swart K. (2016). New financial provision regulations under NEMA. https://www.clydeco.com/insight/article/new-financial-provision-regulations-under-nema
[11]Parker B. (2015). The National Environmental Management Act 107 of 1998- Financial Provisions. http://www.eohlegalservices.co.za/the-national-environmental-management-act-107-of-1998-financial-provisions/

the rehabilitation bond is lodged with the Minister for Resources. In most jurisdictions the department responsible for government finances is involved to some extent in the financial aspects of the implementation of mining legislation.

5. HANDLING OF MULTIPLE CONTRIBUTIONS TOWARDS MINE REHABILITATION FINANCING

It is possible that different government institutions responsible for different subsectors of the environment may require financial guarantees or surety against potential damage to the environment. In Nevada, USA, the Bureau of Land Management (BLM), through various federal codes, outline the financial guarantee requirements for all mining projects on land that cause surface disturbance by more than casual use. The US Forest Service (USFS), through its codes, also requires an operator to file a plan of operations and, when required, lodge a financial surety against forest destruction.[12] However, the BLM and USFS signed a Memorandum of Understanding with the Nevada State Government to ensure effective coordination of the administration and enforcement of land reclamation obligations.[13] To avoid duplication, the Department of Conservation and Natural Resources which falls under the Division of Environmental Protection in the Nevada Bureau of Mining Regulation is responsible for site reclamation and the financial surety.

It is also possible that provisions for the requirement of a financial surety are spelt out in both the environmental and mining legislations, but the surety covering different issues. In Queensland both the Mineral Resources Act 1989 and the Environmental Protection Act 1994 have provisions for a financial surety.[14, 15] The financial surety under the Minerals Resources Act does not cover rehabilitation which is covered under the Environmental Protection Act for larger projects while for smaller projects it is covered by the Codes of Environmental Compliance. However, in Queensland, miners are allowed to lodge a single financial surety to cover the requirements of both the Mineral Resources Act and the Environmental Protection Act. This reduces administrative burden and costs. The DME is responsible for the receipt and management of both the security under the Mineral Resources Act and the financial surety under the Environmental Protection Act.

[12]Patterson L. M. (2015). State and Federal Permits Required in Nevada Before Mining or Milling can Begin. http://minerals.nv.gov/uploadedFiles/mineralsnvgov/content/Programs/Mining/SPL6_StAndFedPermitsRequired_Rev2015.pdf
[13]Bureau of Land Management (2002). BLM Nevada 3809 Reclamation Bonding Guidelines. https://www.blm.gov/sites/blm.gov/files/uploads/NV_3809%20Reclamation%20Bonding%20Guidlines.pdf
[14]Environmental Protection Act 1994. https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-1994-062
[15]Mineral Resources Act 1989. https://www.legislation.qld.gov.au/view/pdf/2017-03-30/act-1989-110

6. WHAT PERCENTAGE CONTRIBUTION IS MADE TO THE MINE REHABILITATION FUND?

The level of financial surety depends on the size, nature and complexity of the mining project. Usually, the amount of financial surety is based on the specific itemized costs of all components included in the mine closure or rehabilitation plan. The amount is commonly based on third party contractors.

In most cases the regulatory authority establishes a list of the components and methods of calculation of the financial surety. For instance, in Queensland the Code of Environmental Compliance for Mining Lease Projects contains a schedule of rehabilitation costs and specifies that rehabilitation administration and monitoring costs should be calculated at 10% of the total rehabilitation costs.

It is common practice for the financial surety to include administrative and management costs, usually established on a percentage basis. In South Africa up to 13% of the total cost of rehabilitation may be added for administrative and management costs and another 10% as contingency. In Nevada the administrative costs should be established at 10-15% of the cost of rehabilitation contract.

Some jurisdictions use rehabilitation cost estimation tools to determine the level of financial surety, e.g. Victoria and New South Wales use the URS/GSSE Rehabilitation Cost Estimate Tool, while South Africa uses the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine.[16] In Nevada they use the Nevada Standardized Reclamation Estimator Model to demonstrate how costs were established.

The level of financial surety can be calculated in a number of different ways which include: (i) Use of a formula based on the type of project, rehabilitation plan and/or track record of the company; (ii) Specified in legislation on standard rates and unit costs; (iii) A percentage of capital costs; (iv) Negotiated based on the feasibility study; and (v) Negotiated on a per tonne basis.

[16]WWF-World Wide Fund for Nature (2012). Financial Provisions for Rehabilitation and Closure in South African Mining: Discussion Document on Challenges and Recommended Improvements (Summary). http://awsassets.wwf.org.za/downloads/summary_mining_report_8aug.pdf

7. CASE STUDIES

This section looks at the case study of Queensland and Western Australia. Queensland is chosen because it is at an advanced stage in the process of introducing a fund that is similar to what Zimbabwe is proposing to introduce. Western Australia is chosen because it was the first mining jurisdiction to introduce a mine rehabilitation fund.

7.1 Queensland

The State of Queensland currently has 220,000 hectares of land disturbance by mining operation, with an estimated rehabilitation cost of $8.7 billion.[17] Of the 220,000 hectares of land disturbance, approximately 18,000 hectares (8%) is classified by the mining industry as progressively rehabilitated. Disturbed land that has been certified as rehabilitated totals 556 hectares, which is 0.25% of the total current disturbance. The State obtains financial assurance (FA) from mining the companies to mitigate the financial risk that the State will bear the cost of rehabilitating the disturbed land.

7.1.1. Legal framework for mine closure, rehabilitation and financial provisions

The Mineral Resources Act 1989 provides the framework for the application and granting of mining titles. The Environmental Protection Act 1994 requires all mining related activities to be issued with an Environmental Authority and for mining projects to produce an Environmental Management Plan, which must include a rehabilitation program. In addition, both laws have provisions for a financial security to be lodged though neither specifically mentions closure plans (World Bank, 2008). The Minerals Resources Act requires that a 'security' is deposited prior to a mining title being issued. This is for non-compliance with the title conditions and 'improvement restoration' but no longer covers rehabilitation. The Environmental Protection Act requires the rehabilitation program to include the proposed amount of the financial surety for larger projects while the Codes of Environmental Compliance require a financial surety for small projects. Under the Environmental Protection Act, the EPA has produced a number of Guidelines and Codes which contain the detail of the environmental management of all mining projects. Of particular relevance is Guideline 17: Financial Assurance for Mining Activities (2003). A financial surety is required for all mining titles, but the miner may lodge a single surety to cover the requirement of both the Mineral Resources Act and the Environmental Protection Act.[18]

[17]Queensland Government (2017). *Queensland Government Consultation Report – Financial Assurance Framework Reform Discussion Paper*

[18]Cheng L. and Skousen J. G. (2017). Comparison of international mine reclamation bonding systems with recommendations for China. https://link.springer.com/content/pdf/10.1007/s40789-017-0164-3.pdf

In February 2018 the Queensland Government introduced a Bill called the Mineral and Energy Resources (Financial Provisioning) Act 2018.[19] The Bill seeks to:

a) to provide for holders of authorities to pay a contribution to the scheme fund, or give a surety, for the authorities; and
b) to provide a way to manage the risk to the State of incurring costs and expenses if the holder of an authority or small scale mining tenure does not comply with the holder's obligations under the authority or tenure; and
c) to provide a source of funds to the State for costs and expenses relating to preventing or minimizing environmental harm, or rehabilitating or restoring the environment, or securing compliance with an authority or small scale mining tenure; and
d) to provide a source of funds to the State for:
    i. rehabilitation activities at land on which an abandoned mine exists; and
    ii. remediation activities in relation to an abandoned operating plant; and
    iii. research that may contribute to the rehabilitation of land on which resource activities have been carried out.[20]

7.1.2. Financial instruments for mine closure and rehabilitation

The current FA system is that for each mining site, an estimate of the likely rehabilitation cost is made and the holder of the environmental authority (EA holder or operator) for that site provides surety usually in the form of a bank guarantee for FA greater than $50,000 and cash for FA less than $50,000. The main advantage of this system is that the FA is provided by regulated third (i.e. banks) with very low risk of default. However, the main disadvantages of the current FA system are that:

- If the FA held is less than the rehabilitation cost, the State has no source of funding for the shortfall. The FA may fall below rehabilitation cost because of: (i) availability of discounts to mining companies based on specific criteria, (ii) underestimation of the rehabilitation cost, and (iii) miners who delay updating their FA.
- Discounts offered to mining companies to encourage progressive rehabilitation have reduced the FA held by $1.2 billion but this reduction is not based on the underlying risk to the State and there is no evidence that this discount is encouraging progressive rehabilitation.
- The underestimation of the rehabilitation liability can arise from: (i) the use of different tools to calculate rehabilitation costs, though all tools are approved by the Department of Environment and Heritage Protection (EHP), and (ii) the use of out-of-date contractor rates or schedules.
- The cost of the bank guarantee system is very onerous for small to mid-sized mining companies, in terms of both bank fees and the balance sheet impact.

[19]Kennerley J. (2018). Mine rehabilitation and financial assurance – the new regime in Queensland. http://www.carternewell.com/icms_docs/281776_Mine_rehabilitation_and_financial_assurance.pdf

[20]Mineral and Energy Resources (Financial Provisioning) Bill 2018. http://www.parliament.qld.gov.au/Documents/TableOffice/TabledPapers/2018/5618T173.pdf.

- The provision of financial assurances by way of bank guarantee prevented the Queensland Government from creating a revenue stream from these amounts, with fees instead being paid to the financial institutions providing the guarantees.
- In summary, the FA system through bank guarantees and cash deposits does not protect the State's financial interests, is expensive for mining companies and does not promote good environmental outcomes.

The State of Queensland has undertaken some other initiatives to manage the risk of assuming rehabilitation obligations on mining companies and these initiatives include:

- Development of the rehabilitation policy by the mining industry,
- Management of sites under care and maintenance through stricter reporting requirements (e.g. reporting conditions triggering a site to go under care and maintenance, reporting to state when site goes under care and maintenance, indicating rehabilitation activities to be taken during care and maintenance, setting of limits on the length of care and maintenance period before progressive and final rehabilitation can be required.
- Establishing an approval process for the sale of a mining asset
- Expansion of the forms of surety accepted by the State
- Improved estimation of rehabilitation costs
- Improved data and analysis by the regulator
- Strong governance framework with clear roles and responsibilities
- Revised FA system for operators with FA of less than $50,000.

The current FA system has been reviewed and in July 2018 it is expected that the reviewed FA system will be operational. The proposed reviewed FA system is called the Tailored Solution. Under this proposal, resource companies will be assessed individually based on their financial risk profile. Resource companies are then allocated to one of four categories which determine the form of financial assurance that they will provide to the Queensland Government to secure their rehabilitation obligations. A resource company's allocation is not static, and will be monitored to detect changes in financial risk. The FA Framework Reform provide that only after considering all other options, the Queensland Government will claim the financial assurance from the bank, institution or Rehabilitation Fund as a last resort. A potential challenge with the scheme is on how parties to unincorporated joint ventures falling under different categories of the scheme under the same project be dealt with. However, its advantages are:

- It delivers a high level of environmental performance
- It protects the State's financial interest
- It is not a disincentive to the mining industry, and
- It is satisfying community expectations.

The proposed financial assurance framework includes the following:
- The Selected Partner Arrangement category has been removed from the financial

assurance scheme. Significant resource entities meeting the Selected Partner Arrangement description will contribute to the general rehabilitation fund up to the threshold of 5% of Queensland's total estimated rehabilitation cost. Any environmental authority (EA) above the threshold amount will need to be covered by a third party surety. The financial assurance scheme will therefore be comprised of: The rehabilitation fund; and The "Surety Division".

- Establishment of a scheme manager who will report annually on the financial assurance scheme, including providing updates on aggregate revenues and expenditures, aggregate surety arrangements and interest on cash sureties.
- When assessing an EA holder for the purposes of allocation to the appropriate division of the financial assurance scheme, the scheme manager will have regard to overall resource project (including available remaining resources at the site and the extent of required rehabilitation) and not just the financials of the EA holder.
- Operators with estimated rehabilitation costs of less than $100,000 (increased from $50,000) will not be assessed for overall soundness and will continue with their current financial assurance arrangement pending further review.
- The transitional arrangements have been updated so that existing activities will convert to the new regime over a three year period, and individual companies may negotiate the transition for each resource project currently underway. EA holders who move between categories of contribution will additionally be given a 12 month notice period.
- It's expected that the scheme will be implemented in July 2018 and new resource activities will be brought into the new financial assurance framework from this time.
- There will be no ability to opt out of the rehabilitation fund if allocated to that division.

7.1.3. Institutional arrangements for mine closure and rehabilitation funds

The Department of Mines and Energy (DME) is responsible for granting and surrender of all mining titles. The Environmental Protection Agency (EPA) is responsible for granting and surrender of an Environmental Authority. The DME is responsible for the receipt and management of both the security under the Mineral Resources Act and the financial surety under the Environmental Protection Act.

7.1.4. Handling of multiple contributions

The contributions under the Mineral Resources Act are not duplicated under the Environmental Protection Act. To avoid administrative burden the DME is responsible for the receipt and management of both the sureties under the two Acts.

7.1.5. Level of contribution towards mine closure and rehabilitation fund

The level of contributions to the financial instruments depends on the overall resource project (including available remaining resources at the site and the extent of required rehabilitation) and not just the financials of the EA holder. Significant resource entities meeting the Selected Partner Arrangement description will contribute to the general rehabilitation fund up to the threshold of 5% of Queensland's total estimated rehabilitation cost. Any

environmental authority (EA) above the threshold amount will need to be covered by a third party surety. Operators with estimated rehabilitation costs of less than $100,000 (increased from $50,000) will not be assessed for overall soundness and will continue with their current financial assurance arrangement pending further review. The proposed FA scheme (i.e. Tailored Solution) does expose the Government to potential loss in extreme scenarios. The risk is however very low and the exposure is less than the current Status Quo.

Box: Lessons from Queensland

- Bank guarantees and cash deposits are not an effective FA system because they provide insufficient FA for the rehabilitation and increase the risk of government assuming the rehabilitation obligations of mining companies. They are also expensive to mining companies and do not achieve the intended environmental outcomes.
- It is possible that both mining and environmental legislation require a financial surety/ assurance for environmental regulation, but the sureties should not be duplicative and an arrangement should be made for one institution to collect both sureties.
- Incentives to encourage rehabilitation need to be evaluated to verify if they are really achieving their objectives and a decision be made whether or not to scrape them.

7.2. Western Australia

In Western Australia there are over 10,000 abandoned mining sites.[21] Mining securities were first introduced in Western Australia in the late 1980s for mining operations regulated under the Mining Act 1978. The intention of the mining securities system was to provide sufficient security to cover any rehabilitation costs that might otherwise need to be borne by government in the event that a mine site is abandoned.

7.2.1. Legal framework for mine closure, rehabilitation and financial provisions

In 2012 the WA government passed the Mining Rehabilitation Fund Act 2012which establishes the Mining Rehabilitation Fund (MRF), its advisory panel, the process of declaring a mine site as being abandoned and therefore eligible for MRF moneys to be used for its rehabilitation, and the mechanism to impose an annual levy on tenement/title holders regulated under the Mining Act 1978.[22]It is a mandatory requirement under the Mining Rehabilitation Fund Act 2012 for eligible tenement holders to pay the Mining Rehabilitation Fund Levy. The Mining Rehabilitation Fund Act 2012 does not provide any powers to waive the levy payment or its application. The Mining Rehabilitation Fund Regulations 2013 set out the calculation method for the levy payment. There are also Guidelines for Preparing Mine Closure Plans which were prepared by the Department of Mines and Petroleum and the Environmental Protection Authority in 2011 and updated in 2015. The Financial Management Act 2006, Section 16 of the guides the establishment of the MRF as a special purpose vehicle.

[21]Department of Mines and Petroleum, Western Australia (2015). The Mining Rehabilitation Fund – The First Two Years. http://www.dmp.wa.gov.au/Documents/Environment/MRF_The_First_Two_Years.pdf
[22]Ibid

7.2.2. Financial instruments for mine closure and rehabilitation

Western Australia introduced the MRF on 1 July 2013 to replace a system of unconditional performance bonds (UPBs). The majority of mine sites are not required to maintain a UPB, but DMP has the power to impose a UPB in addition to the obligation to make a payment to the MRF in the case where the site poses a high risk of failure.The problems with UPBs were that they were:

- Not providing an adequate level of surety to government in the event of a mine being abandoned prior to rehabilitation. In 1999, it was estimated that, on any particular site, the UPBs represented approximately 80 per cent of the total cost of rehabilitation but by 2008, this had dropped to around 25 per cent (DMP, 2010).
- Imposing considerable set up and maintenance costs for operators (particularly for smaller companies). Companies may be required to provide either cash or asset backing for the full amount of the bond in addition to paying direct costs such as annual fees and legal costs. For smaller operators that were required to provide cash backed bonds, they were required to pay the bond upfront, and then pay the rehabilitation costs, before applying to have their initial bond retired and the cash returned to them. This essentially required the value of the bond to be paid up front twice.
- The bonds were attached to individual tenements rather than applied on a project basis (which often cover multiple tenements). Bonds, when called in by government, could only be used on the tenement(s) to which it/they applied and were not transferable.
- UPBs could not be used to cover any cost other than rehabilitation; they did not take into consideration administrative or transport costs (i.e. the cost to transport staff or vehicles to a tenement to undertake rehabilitation works).

The MRF imposes a non-refundable annual levy to be paid into a mining rehabilitation fund. The levy does not absolve tenement/title holders of the requirement to properly rehabilitate their sites. It provides government with funds to cover rehabilitation costs when required. The interest generated from the fund can be used to rehabilitate legacy abandoned mine sites. However, mine site operators remain responsible for ensuring that they maintain separate finance provisioning to fund their rehabilitation and closure works in accordance with their mine closure plans (Gorey et al, 2014).

7.2.3. Institutional arrangements for mine closure and rehabilitation funds

The MRF is established as a special purpose account which holds money for the purposes of the fund. The fund is administered by the Director General of the DMP. An independent advisory panel is established to provide expert advice to the Director General on matters relating to the administration of the MRF. The panel collectively possess the suitable skills, expertise or knowledge relating to mine rehabilitation, mining industry management, the environment, and financial and legal matters. The DMP is the government agency responsible for carrying out the rehabilitation works (Gorey et al, 2014).

7.2.4. Level of contribution towards mine closure and rehabilitation fund

The MRF levy is based on the average expected cost of rehabilitation of different types of land disturbances, multiplied by the "fund contribution rate", which was set at one percent. Land disturbance types were placed into five separate categories, each with its own unit rate (see Table 1). Tenement holders must report areas of disturbance against these land disturbance types, in hectares, to at least two decimal places. The total rehabilitation liability estimate, formed from the sum of each of these categories, is then multiplied by one percent to determine the amount of levy owed.

Table 2: Land disturbance types and unit rate for the MRF

Item	Description of infrastructure or land	Unit rate/ha
1	Tailings or residue storage facility (class 1) Waste dump or overburden stockpile (class 1) Heap or vat leach facility Evaporation pond Dam – saline water or process liquor	$50,000
2	Tailings or residue storage facility (class 2) Waste dump or overburden stockpile (class 2) Low-grade ore stockpile (class 1) Plant site Fuel storage facility Workshop Mining void (with a depth of at least 5 metres) – below ground water level Landfill site Diversion channel or drain Dam – fresh water	$30,000
3	Low-grade ore stockpile (class 2) Sewage pond Run-of-mine pad Building (other than workshop) or camp site Transport or service infrastructure corridor Airstrip Mining void (with a depth of at least 5 metres) – above ground water level Laydown or hardstand area Core yard Borrow pit or shallow surface excavation (with a depth of less than 5 metres) Borefield Processing equipment or stockpile associated with basic raw material extraction Land (other than land under rehabilitation or rehabilitated land) that is cleared of vegetation and is not otherwise described in this table	$18,000
4	Land (other than land under rehabilitation or rehabilitated land) that has been disturbed by exploration operations	$2,000
5	Land under rehabilitation (other than land that has been disturbed by exploration operations) Topsoil stockpile	$2,000

Source: Mining Rehabilitation Fund Regulations 2013

If the rehabilitation liability estimate comes to $50,000 or less (so that the levy would amount to $500 or less), no levy is payable. Many prospectors and small exploration projects fit into this category so that these tenement holders pay no levy. The MRF annual levy is tied to the that has not been rehabilitated and therefore creates a financial incentive for companies to rehabilitate land as they go and to minimise the amount of disturbance.

The following principles were used as a guide to decide the level of financial assurance to be paid by mining companies:

- The financial assurance/surety should encourage operators to apply good environmental practice, including progressive rehabilitation and reporting, and to comply with all legal obligations under the Mining Act 1978 for exploration, mining and mine closure;
- The quantum of financial assurance/surety should not unnecessarily deter investment in the mining sector and should ensure that Western Australia remains competitive in attracting investment to the mineral exploration and mining sector; and
- The calculation of the financial assurance/surety should be flexible and commensurate with environmental risk associated with a mining activity (DMP, 2010).

Box: Lessons from Western Australia

- The MRF is established by a separate Act which also establishes it associated institutions.
- The Mining Rehabilitation Fund Act of Western Australia does not provide does not provide any powers to waive the levy payment or its application.
- The MRF levy is tied to the total that has not been rehabilitated and thus incentivizes progressive rehabilitation of mining sites.
- The MRF complements other existing mechanisms for financing progressive rehabilitation.
- The level of financial surety should be commensurate with environmental risk associated with a mining activity and it should not discourage investment.

8. CONCLUSION AND RECOMMENDATIONS

This study has highlighted the different practices of financing mine rehabilitation in different mining jurisdictions. The choice of any practice would depend on the country's own assessment of the pros and cons of the different practices.

In Zimbabwe, the current regime of financing mine rehabilitation requires that mining companies undertake progressive rehabilitation of their mining sites. The Environmental Management Agency (EMA) has the mandate to monitor mining companies to ensure that they rehabilitate the mining site continuously. According to EMA, currently the mining industry is not being charged the Environmental Levy, implying that this provision of the Environment Management Act is not being enforced. This, according to EMA, followed a request by the mining companies to government to consider the harsh macroeconomic environment.

Having EMA making constant follow ups to ensure that mining sites are being rehabilitated, as currently happening, ensures that the mine site is rehabilitated while the mine is still operational. However, the current practice has its own pitfalls: (i) it does not provide for financial assurance that the mine would be rehabilitated in the event that the mine closes pre-maturely thus leaving the government with a burden to rehabilitate the environment, (ii) it focuses on short-term environmental damage at the exclusion of long-term environmental damage appearing long after a mine's initial remediation has been completed, (iii) it does not provide for the financing of post-closure management of the latent or residual environmental impacts of mining, and (iv) it does not offer the government money to rehabilitate abandoned mining sites.

The Parliamentary Portfolio Committee on Mines and Energy has indicated that it supports the position that miners should only contribute to one Fund[23]. Given that currently, there are no resources being collected for mining rehabilitation, adoption of the proposed SHRF appears the only solution to ensuring that environmental degradation and health risks being imposed on mining communities after mining activities have closed are attended to.

The recommendations arising from the study are as follows:

Legislation

The legal requirement for a financial surety/assurance for mine rehabilitation can be set out in the mining legislation or in the environmental legislation or in both legislations. In the case that the requirement is set out in both legislations, there is need to ensure that the surety is not duplicative. In the case of a fund, such as the SHR Fund, there is an advantage in having a stand-alone Act providing for its establishment, conditions for use as well as modalities

[23]Report and Analysis of the Mines and Minerals Amendment Bill, Parliamentary Portfolio Committee on Mines and Energy, 2018

for use rather than being highlighted in the principal mining legislation as in the case of Zimbabwe. However, the relevant modalities for operating the Fund can still be put in place through a relevant statutory instrument. Thus, the introduction of the Fund as currently prescribed by the Amendment is a welcome development which should be encouraged. The current concern only stems from the fact that this Fund is a duplication of the Environmental Fund which is provided for under the Environmental Management Act. Given that the Environmental Fund was not being enforced even though the need for rehabilitation is still glaring, there is need to amend this provision of the Environmental Management Act and exempt mining firms from contributing as they would contribute to the SHRF. The general environmental degradation that can be attributed to mining firms is dire compared to other sectors. Thus, non-mining players can still continue to contribute to the Environmental Levy while the mining firms contribute through the proposed SHRF.

Institutional arrangements

The implementation and administration of the financial instruments for rehabilitation is usually the responsibility of the ministry responsible for mining, or ministry responsible for environment or a joint responsibility of both ministries. In some cases, the ministry responsible for finance is involved. In other countries, the environmental court is responsible for the implementation and administration of the financial instruments for rehabilitation. However, the concern by the mining firms that the proceeds from the Fund can be diverted to other non-rehabilitation activities is real. There is need for developing a system where the use of the Fund can be done in a transparent manner with the involvement of government, the communities around the mining area as well the mining firm (if it is still operational) with the system being made in such a way that if any of the critical parties is not present, the resources cannot be withdrawn. This would also call for the active involvement of financial institution to safeguard the Fund.

Level of contribution made to the mine closure and rehabilitation fund

The level of financial surety should be commensurate with environmental risk associated with a mining activity and it should not discourage investment. It should also incentivize progressive rehabilitation by linking the level of contribution to the amount of land that a mining company has not rehabilitated. Currently, the Amendment does not specify the actual level of the levy. There is need for extensive consultations between the mining firms and government before coming up with the actual level of contribution towards the Fund.

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