

# Financial Assurance for Mine Closure and Reclamation

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# Summary Report

# Financial Assurance for Mine Closure and Reclamation

A study prepared for the  
International Council on Mining and Metals

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The full version of this report is available from the ICMM website at [www.icmm.com](http://www.icmm.com) or by contacting ICMM at [info@icmm.com](mailto:info@icmm.com) or 19 Stratford Place, London, W1C 1BQ, UK.

The photographs on the front cover of the report are (from top left to bottom right): Part of the Huntly Mine in south western Australia in 1980 (Alcoa); Community development programme at the Wetlands Langford Quarry – Tarmac Industrial Minerals (Anglo American); Reclamation of the indigenous vegetation with the aid of a shade cloth to protect young plants against the wind at Namakwa Sands (Anglo American); Reclamation of newly mined dunes at Richards Bay Minerals, KwaZulu Natal province, South Africa. The biodegradable windbreaks protect the young casuarina trees (Rio Tinto); Reclamation of an exploration drill site (Anglo American); The same view of the Huntly Mine in 2001 (Alcoa).

<b>Foreword</b>	<b>2</b>
<b>Preface</b>	<b>3</b>
<b>Executive Summary</b>	<b>4</b>
<b>1. Introduction</b>	<b>8</b>
<b>2. Issues and Policies in the Use of Financial Assurance</b>	<b>8</b>
Issues to be considered in EFA design	8
Optimizing financial assurance policies	10
<b>3. Surveys of Current Practice</b>	<b>15</b>
<b>Individual mine case studies</b>	<b>15</b>
Industry and other views on financial assurance issues	15
Financial, government and insurance/surety specialists	20
<b>4. Conclusions and a Look to the Future</b>	<b>22</b>
Emerging issues, challenges and trends	22
Enduring issues	24
<b>Credits</b>	<b>26</b>
<b>Tables</b>	
Table 1: Guidelines for framework policies	10
Table 2: Guidelines for specific negotiations	12

A key measure of the mining and metals industry's ability to contribute meaningfully to sustainable development is its long-term environmental performance. This requires timely and comprehensive planning for closure and beyond. An important component of this planning is consideration of how closure measures will be funded.

The International Council on Mining and Metals' sixth sustainable development principle, to "seek continual improvement of our environmental performance", includes a commitment to the design and planning of all operations so that adequate resources are available to meet mine closure requirements. Environmental financial assurance measures help provide a guarantee to governments and communities that these resources will be available.

The need for financial assurance is clear. Yet choosing the best form of assurance requires careful consideration. Policies that meet environmental objectives can and should also be compatible with a healthy investment climate and financially efficient. Governments and industry both have a strong interest in ensuring that financial assurance policies meet these criteria.

This study presents a broad overview of the current status of financial assurance as applied to mine closure and reclamation in important mining jurisdictions around the globe. It is intended to aid governments and companies in their discussions on the application of effective policies in this area. A related study on metals operations is also currently being prepared.

By working together, stakeholders can help ensure that the right financial assurance tools are used and, ultimately, that the long-term environmental performance of mining and metals operations is enhanced. It is our hope that this report is another step in this direction.

Paul Mitchell  
Secretary General  
International Council on Mining and Metals

In recent years, government agencies in a number of jurisdictions have adopted policies of requiring mining companies to provide environmental financial assurance (EFA) to guarantee the costs of reclaiming lands affected by mining in order to prevent or repair environmental damage at the end of a mine's life.

This study was commissioned by the International Council on Mining and Metals to clarify the degree to which EFA measures are currently used by mining jurisdictions, to reveal the range and extent of actual policies and practices in use and to discuss the issues that arise in the application of EFA policies.

The study is an update of the analysis put forth in a 1998 report by the same author for the International Council on Metals and the Environment. Much has changed in the intervening years, particularly in attitudes about EFA. The mining industry has embraced the concept of sustainable development and is generally supportive of providing financial assurance. Governments have also tended to impose stricter requirements on industry.

The assistance of ICMM member companies and of a number of other individuals who have provided information during this study is gratefully acknowledged.

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Ottawa

Environmental financial assurance (EFA) measures are important tools to pursue environmental objectives. Today, their most common use is to ensure that funds will be available to guarantee effective mine closure and reclamation<sup>1</sup> so that ongoing environmental problems are avoided. Also, effective EFA policies have the potential to reduce the scope for public criticism of industry practices. This report considers issues and policies in the use of financial assurance; analyses trends revealed through a survey of industry, governments and financial institutions; and speculates on future developments.

## Issues and Policies in the Use of Financial Assurance

Governments and mining companies both have an interest in agreeing on realistic forms and amounts of EFA. It is generally accepted that these need to be effective in terms of environmental protection but should not unduly depress capital availability or damage the investment climate. This entails agreeing on the appropriate financial instruments and the expected standards of reclamation before a major mining project is committed. Indeed, these provisions should form part of the agreement under which mine development proceeds. Although the amount of assurance may need to be adjusted later, the process of adjustment should be well understood and also agreed in advance.

Financial assurance instruments may be chosen from a large number of options. Different instruments may be appropriate depending on the financial strength of the mining company, the amount of the potential environmental liability, the time frame over which the liability is to be extinguished and so on. For an individual operation, the EFA instrument used should meet two tests: it should be effective in assuring the government that the operator can take all necessary and reasonable measures to protect the environment (or that another party is enabled to do so if the operator fails) and it should be the least costly of all the effective instruments available.

It follows that the same financial assurance requirements will not suit all mining companies. It may be appropriate for a large, diversified, profitable company to have less demanding requirements than a smaller, less financially robust company.

The standards of reclamation required of operators will clearly affect the cost of the work and the amount of financial assurance required. A requirement to return the land to its pre-disturbance condition, or to a condition permitting resumption of its earlier use, is often unrealistic or even undesirable. Therefore, policy-makers are advised to develop other practical criteria for assessing the adequacy of reclamation efforts. In addition, there is a role for generally agreed industry standards of performance in designing and implementing closure plans and procedures in order to achieve reclamation goals.

It is reasonable that when operators have successfully completed reclamation and returned the site to the desired condition, they should be relieved of any further liability for that site. However, there is a quantitative difference between sites that can

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<sup>1</sup> In this study, "closure" means the act or the moment of ceasing operations at a mine site. It does not imply any particular level of site clean-up after operations cease. "Reclamation" has been used to mean post-closure improvement of the site to a desired standard. It does not necessarily mean returning the site to the state in which it existed prior to mining. It is understood to be synonymous with "rehabilitation" and "restoration".

be successfully reclaimed at the end of the mine life and those that require long-term care. The latter require sufficient financial assurance to fund the costs of ongoing site care. The amounts can be substantial. In this case, legislation should provide that the operator can obtain an exit ticket by financing the site management activities for the required period.

Forecasting mine site reclamation costs is inexact, particularly when long-term care is required. There are many sources of uncertainty, including unexpected site conditions, the presence of acid drainage and actual rather than estimated costs of labour and equipment. Because of this, governments tend to build a safety factor into the amounts of EFA required. It is suggested that governments have a general policy of requiring EFA that is prudent in light of all reasonably foreseeable risks, but that they should not insist on protection against highly unlikely events.

The impacts of financial assurance requirements on existing operations also need to be considered. Governments should apply these requirements in such a way that they contribute to the goal of environmental protection but do not hobble existing operators and result in premature closure. The timing and nature of new requirements, as well as transition provisions, should be set accordingly.

Taxation arrangements should also be taken into account. A financial assurance requirement may be more or less onerous depending on the taxation arrangements between the operator and the government. At a minimum, the operator will expect to deduct from profits all the costs associated with the financial security. Some jurisdictions may be prepared to offer a net fiscal incentive in order to gain relief from environmental liability.

Finally, authorities should consider whether there are non-financial policy instruments that could be used to support environmental protection. The consideration of the track record of a company is an option. Accreditation or certification on either a voluntary or compulsory basis is another possibility. Accredited companies would expect from governments privileges not enjoyed by companies without accreditation.

## **Surveys of Current Practice**

A survey of current practices on EFA has revealed trends and developments that could have an impact on the future of the global mining industry.

First, several jurisdictions have strengthened their legislation in recent years, including Botswana, Canada (the Yukon), Chile, Ghana, India, Peru, South Africa, Sweden, and the United States. This trend will undoubtedly continue.

Furthermore, a number of state or provincial governments (such as Nevada, Ontario and New South Wales) are requiring a high amount of financial assurance on the assumption that independent contractors will be called in if there is a default.

In addition, the virtual collapse of the U.S. surety market has disrupted pre-existing financial assurance arrangements. The availability of conventional sureties in this country will likely continue to be curtailed for the foreseeable future.

Finally, the standards of reclamation and the forms and amounts of financial assurance required vary among jurisdictions but are tending to cluster at the higher end. At one extreme, certain countries appear to require no financial guarantee (as in Guinea), while in Sweden hard forms of security are required (such as letter of credit,

cash bonds or trust funds) and it appears virtually impossible to surrender mining lands under any practicable circumstances.

## **Conclusions and a Look to the Future**

At the supra-national level, processes are in place to reinforce the trend towards higher standards of environmental management, including EFA, in mining. The European Community is developing an extractive industry waste directive that will require some European countries to amend existing requirements for mine reclamation and associated EFA. Another example is the Equator Principles, through which signatory international banks undertake not to finance any project over US\$ 50 million unless it meets World Bank and International Finance Corporation environmental policies, standards and guidelines, which include a requirement for closure funding.

In light of this, industry and international associations should encourage research and innovation in the use of new tools to supplement or replace conventional EFA instruments. One possible area of research is the classification of EFA instruments into distinct groups and the development of policy guidelines for applying these EFA groups to the different risks encountered in individual cases.

In addition, industry and international associations should promote consistency and coherence among governments. The development of transparent systems of accreditation and certification to reinforce existing industry codes should be strongly supported. In parallel, governments should hold themselves open to suggestions for using new techniques and instruments of risk management.

In summary, financial assurance mechanisms are here to stay. The debate needs to be about making framework policies, and their application to specific EFAs and companies, as efficient as possible.



# 1. Introduction

In recent years governments have increasingly required financial assurance to guarantee effective mine closure and reclamation. They have also applied different forms or instruments of financial assurance.

Today, the most common use of environmental financial assurance instruments (EFAs) is to ensure that funds will be available for mine site reclamation so that ongoing environmental problems are avoided. The concept applies to any instances of land disturbance.

Site abandonment creates issues for government(s), communities and the industry. There could be several causes: the company may fail outright; a fall in commodity prices may cause premature closure; or the company may have no financial reserves at the time of closure.

Governments and industry both have a strong interest in understanding the issues related to financial assurance for reclamation and site maintenance after closure. This study is meant to assist industry and governments in arriving at the most suitable arrangements when financial assurance instruments for mine closure and reclamation are required by regulatory authorities.

## 2. Issues and Policies in the Use of Financial Assurance

### Issues to be considered in EFA design

Several issues arise in the use of EFA instruments.

*Required standard of reclamation.* The standards of reclamation required of operators will clearly affect the cost of the work and the amount of financial assurance required. A requirement to return the land to its pre-disturbance condition, or to a condition permitting resumption of its earlier use (e.g., farming), is often unrealistic or even undesirable (for example if the land was degraded). Therefore, policy makers are advised to develop other practical criteria for assessing the adequacy of reclamation efforts, such as those offered by the Whitehorse Mining Initiative (returning mine sites and affected areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities).

*Required standard of certainty.* Forecasting mine site reclamation costs several years in the future is an inexact science. There are many sources of uncertainty, including unexpected site conditions, the presence of acid drainage, and actual costs of labour and equipment which are different from those estimated. Because of this, governments tend to build a safety factor into the amounts of EFA demanded. It is suggested that governments have a general policy of requiring EFA which is prudent in light of all reasonably foreseeable risks, but should not insist on protection against highly unlikely events.

*One-time reclamation vs. long-term care.* There is a qualitative difference between those sites which can be successfully reclaimed at the end of the mine life, and others which require long-term care. The latter require sufficient financial assurance to be lodged to fund the costs of ongoing site care. The amounts can be substantial.

*The need for and extent of financial assurance.* Both governments and industry see value in financial assurance instruments for enhancing or guaranteeing environmental protection following the closure of a mine or the completion of an exploration program. However, it must be appreciated that the amount of capital tied up in EFA represents a significant burden in that it can reduce the credit rating and borrowing ability of the firm.

*The growing use of financial assurance instruments.* Several governments have in recent years introduced new financial assurance policies. Brief descriptions of the legislation and policies of 25 jurisdictions are given and analysed in Chapter 3.

*The choice of financial assurance instrument.* Financial assurance instruments may be, and are, chosen from a large number of options. Each type of instrument may be appropriate in a given situation or set of circumstances, depending on the financial strength of the mining company, the amount of the potential environmental liability, the time frame over which the liability is to be extinguished, etc. Insurance vehicles seem to offer potential for reducing the costs and risks associated with environmental financial assurance, but that potential has only recently been realized with the development of an insurance-based vehicle in the USA. Tables 1 and 2 offer policy guidelines for the consideration of industry and government as to the optimum use of EFAs in future.

*The timing of a requirement for financial assurance.* Ideally, any requirement for financial assurance will be established early in the life cycle of a mine, and before any substantial investment is incurred. It is of the utmost importance that the

## 2. Issues and Policies in the Use of Financial Assurance

government and the operator reach agreement on the expected standards of reclamation and the amount of financial assurance before a major mining project is committed. These provisions should form part of the agreement or permit under which the mine development proceeds. The amount of assurance may be adjusted later as circumstances require, but the process of adjustment must be well understood and agreed in advance so there will be no surprises.

*Small companies vs. large companies.* Not all mining companies are affected in the same way by financial assurance requirements. It may be appropriate for a large, diversified, profitable company to have less demanding requirements than smaller, less financially robust companies. This particularly applies where an established company operates a number of mines within one jurisdiction and has a good performance track record. In such cases it may be appropriate for the government to only require a “corporate guarantee” which might include access to parent company assets in the event of a failure, rather than a large number of individual bonds for each mine site. An incentive of this sort would encourage companies to establish strong records of good practice.

*Application to existing operations: transition provisions.* When a jurisdiction decides to apply a requirement for substantial financial assurance, it must consider how it will affect both new operations and existing operations. The impact will be very different. Governments should apply financial assurance requirements to existing operations in such a way that they contribute to the goal of environmental protection but do not hobble existing operators and result in premature closure. The timing and nature of new requirements should be adjusted accordingly.

*Government supervision and oversight.* In some cases, the government may have the capacity to review and approve the company’s reclamation plan. In others, the government may lack that capacity, depending instead on the advice of the operator or of an independent expert. Some jurisdictions minimize government involvement, emphasizing individual company accountability and public scrutiny. In any case, there is a clear role for generally-agreed industry standards of performance in designing and implementing closure plans and procedures.

*Taxation arrangements.* A financial assurance requirement may be more or less onerous, depending on the taxation arrangements between the operator and the government. At a minimum, the operator will expect to deduct from profits all the costs associated with the financial security. Some jurisdictions may be prepared to offer a net fiscal incentive in order to gain relief from environmental liability.

*Extinguishment of liability: the exit ticket.* It is reasonable that when operators have successfully completed reclamation and returned the site to the desired condition, they should be relieved of any further liability for the site. For long-term acid drainage, and in the absence of financial sureties, the operator could be held responsible for the site’s management for many years or decades. In this case, legislation should provide that the operator can obtain an exit ticket by financing the site management activities for the required period.

*Alternatives to financial security.* Authorities should consider whether there are non-financial policy instruments which could be employed to support environmental protection. An organized effort to develop further options might yield worthwhile benefits. Accreditation or certification is one possibility: accredited companies would expect privileges from governments not enjoyed by companies which lack accreditation. Another option would be to consider the track record of the company.

## 2. Issues and Policies in the Use of Financial Assurance

A company could gain preferential treatment by demonstrating its competence and a history of good environmental performance.

### Optimizing financial assurance policies

It is appropriate for all countries to maintain high standards of policy, legislation and regulation, and for all companies to use good environmental practice. However, it must be recognized that a country can pursue high standards of environmental protection through a wide range of policies.

Those policies which are effective in meeting environmental objectives and are at the same time compatible with a healthy investment climate can be termed efficient policies. In this sense, inefficient policies can impede mineral investment with little or no gain to the environment, or vice versa.

Two types of policy are associated with financial assurance for environmental purposes. First, there are framework policies which define the general rules relating to the use of environmental sureties. Second, there are decision rules governing the choice of specific assurance arrangements to be applied to individual companies and projects.

In the interests of efficiency as we have defined it, government and the operator should work together to choose an EFA instrument that meets two tests: it is effective in assuring the government that the operator can and will take all necessary and reasonable measures to protect the environment (or that another party is enabled to do so if the operator fails); and it is the least costly of all the effective instruments available.

Tables 1 and 2 present suggested policy guidelines relating to financial assurance for environmental purposes.

**Table 1: Guidelines for framework policies**

Owner pays	Legislation should provide that the owner or operator is responsible for execution and completion of successful reclamation activities to an appropriate technical standard. Where long-term care is involved, the operator is responsible to provide it until relieved of liability.
Standard of reclamation	Reclamation should return the site to a safe and stable condition, free of safety hazards (such as unsafe buildings, equipment, open holes, etc.); return the mine site to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities. There should be measures to address and prevent ongoing pollution from the site. There should not be a blanket requirement to return the site to its original condition or to a condition permitting particular land uses.

## 2. Issues and Policies in the Use of Financial Assurance

**Table 1: Guidelines for framework policies**

Standard of certainty	<p>Closely related to the issue of standard of performance is the degree to which the government seeks assurance against all possibility of loss or damage to the environment. Just as unnecessary costs are imposed by a technical standard that is higher than it needs to be, so will unnecessary costs be imposed by a standard of future certainty that is higher than it needs to be. Governments need to be reasonably assured that the operator will carry out its obligations, or that approximately enough funding is available to carry out necessary work if the operator fails. If governments insist on being indemnified against all possible events, excessive costs will be imposed and investment incentive will be drastically reduced.</p> <p>Governments should have a general policy of requiring EFA which is prudent in light of all reasonably foreseeable risks, but they should not insist on protection against extremely unlikely events. Clearly, in negotiating specific arrangements, factors such as the operator's track record and management systems will affect how much financial assurance the government will require to give it a feeling of reasonable certainty.</p>
Timing of financial assurance requirement	<p>Any requirement for EFA, or any change in the required standard of reclamation, should be identified as early as possible in discussions between company and government. Timely notice will allow the operator to plan the development of the site optimally and to assemble the necessary financial resources. Requirements which are imposed late in the mine life can lead to difficulties and disappointment for all parties.</p>
Transition arrangements for existing mines	<p>If it is necessary for a government to alter the required standard of reclamation, or to require a financial assurance instrument where none was required previously, the operator should be given a reasonable time to comply with the requirements. In some cases, particularly where the mine is only marginally profitable or is approaching the end of its life, a creative approach to the design of the EFA may be called for. Rather than requiring a cash deposit (which might hasten mine closure), for example, the government may wish to consider softer forms of EFA such as parent company guarantees or pledge of assets.</p>

## 2. Issues and Policies in the Use of Financial Assurance

**Table 1: Guidelines for framework policies**

Taxation	All requirements for EFA impose some costs on the operator. In particular, hard forms of security (such as letter of credit, cash bonds or trust funds), impose two kinds of cost: direct carrying cost and loss of use of the funds for productive investment (or corresponding reduction in borrowing power). It is appropriate that the tax regime of the country recognize these costs and attempt to minimize their negative effects. It is therefore essential that the direct carrying cost of all EFA instruments be deductible for tax purposes. Moreover, in the case of deposits of cash or securities, the earnings from these funds should be sheltered from tax.
The exit ticket	The mining industry supports the concept of user pay. Member companies of the International Council on Mining and Metals (ICMM) are willing to accept the costs and liability for environmental protection of the site during operations and for reclaimed the site upon closure. Where conditions such as acid mine drainage exist, companies also accept the necessity of funding long-term care and management. However, government legislation should provide explicitly that at a certain moment the company can be relieved of future liabilities for the site. In most cases, this relief would be given as soon as site reclamation has been successfully completed. In the case of acid drainage, it would be given as soon as necessary funding arrangements have been established for long-term care.
Alternatives to financial assurance	To date, few practical alternatives to EFA have been fully developed or implemented. However, it is known that the insurance industry is now in a position to offer certain vehicles to supplement or replace existing EFA instruments. At the same time, international standards for environmental quality management, such as the ISO 14000 series, are becoming more widely practised and accepted. This raises the possibility that a practical certification or accreditation system may ensue, giving governments additional confidence in accredited companies. These and other potentially valuable options will undoubtedly come forward in future. Governments should ensure that they remain fully informed about these developments.

The guidelines in Table 2 suggest factors that should be taken into account by governments in determining the ultimate requirements that will apply to a specific project. Note that in practice the various factors are interrelated. The financial strength and other characteristics of the company, as well as the size and nature of the mining development, will all have a bearing on the appropriate form and amount of the EFA required.

## 2. Issues and Policies in the Use of Financial Assurance

**Table 2: Guidelines for specific negotiations**

History of performance or track record	The government can assess how experienced the company is in developments of the same kind as the one proposed. How has the company managed other mine sites, both during operations and after closure? What is the company's record of compliance with regulations at existing mines? Have there been accidents such as tailings spills or other unforeseen events? A company with a good track record may qualify for a softer form of assurance, or a lower amount, than one with a poor track record.
Environmental management system	Does the company have a fully-developed environmental management system? Does it practice public disclosure of its environmental performance? Does it have regular environmental audits by independent experts? Does it practice risk management techniques? Are managers formally judged on their environmental performance? Does the company subscribe to industry codes of practice? Does the company have ISO 14000 certification? A company with a strong and proven environmental management system is clearly less likely to suffer from unforeseen accidents and may offer a degree of certainty to the government with lower explicit financial assurances.
Financial strength	If the company is financially strong, and if the current project represents a relatively small financial drain, soft instruments such as a corporate guarantee and/or a balance sheet test may suffice. If the particular corporate vehicle is a subsidiary of a larger entity, a parent company guarantee may be appropriate. At the other extreme, if the company is small or if it is not diversified and the project represents a major potential drain, then the government may reasonably ask for hard assurances such as full coverage by letter of credit, bankers' guarantee or cash deposit.
Mine and site characteristics	For a metal mine situated in a geological formation which is prone to acid drainage (AD), or where prediction testing has shown the likelihood of AD generation, the onus would be on the owner to show that AD can be controlled. Even so, larger or more rigorous financial security could be required, possibly extending to post-closure funding. Clearly also, the size and design of the mine (whether underground, open pit or strip mine) will affect the amount of assurance and possibly its form. In addition, the potential environmental effects will depend on site topography, geology, vegetation and climate. All these will affect the potential costs of closure and reclamation and hence the financial assurance requirements. It is suggested that governments and proponents work together to develop a detailed understanding of these factors through an environmental impact assessment and risk assessment as the basis for financial assurance discussions.

## 2. Issues and Policies in the Use of Financial Assurance

**Table 2: Guidelines for specific negotiations**

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Amount and form of financial assurance	The final decision as to the optimum form and amount of security will depend on all the above factors. A company which rates highly in all respects may legitimately expect to provide less in the way of financial security because it is reducing the environmental risks and potential liabilities by other means.
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## 3. Surveys of Current Practice

This chapter summarizes 62 individual industry case studies which reported on EFA requirements applying to specific mines located in 29 jurisdictions within 22 countries. It also discusses the results of two international surveys of industry opinion on financial assurance issues, six years apart. In addition to industry input, the more recent survey also contains comments from outside industry: those of selected representatives of the financial sector, the governmental sector and the insurance/surety sector.

### Individual mine case studies

Two industry surveys were conducted six years apart among members of the International Council on Mining and the Environment (ICME) and ICMM on their experience of the use of EFA.

Some 22 corporate responses were received in the two surveys, offering 62 individual case studies describing how EFA instruments were used at specific mines or exploration projects. In all, the cases set out the actual requirements of 22 countries and 29 sub-national jurisdictions.

The types of financial assurance instruments in place vary widely, partly because of different requirements in different jurisdictions but also because of the mines' different dates of commencement. Financial assurance requirements have increased dramatically over the past 15 years. They tend to apply immediately to new mines, but for pre-existing mines there may be a phase-in period.

Financial assurance measures can be applied at any stage of the mining cycle. In all cases studied, however, the financial assurance was required, not to regulate ongoing operations, but to guarantee restoration or reclamation of disturbed areas.

The total number of financial assurance instruments reported (74) is greater than the total number of case studies, because in some cases more than one type of financial assurance was required.

### Industry and other views on financial assurance issues

#### ***How effective are financial assurance instruments in promoting or enforcing environmental protection?***

Mining companies accept that the major function of EFA is to protect the government and public in the event a mining company cannot meet its reclamation obligations. While several large companies felt they were capable of fulfilling their environmental obligations without the additional discipline of a financial assurance mechanism, they agreed that a financial assurance instrument does provide more certainty for the protection of the environment. In their view, the terms and conditions of permits and licenses are more important in protecting the environment. If these are set at an appropriately high standard, major companies will respond accordingly.

All companies accept that government needs to demonstrate to the community that it has received sufficient financial protection from the holder of mineral rights to ensure effective reclamation.

### 3. Surveys of Current Practice

Representatives of the financial sector uniformly favoured effective EFA policies. Representatives of government have mixed views: some find current policies effective, but others are concerned that without stronger policies, economic fluctuations can cause problems.

The insurance/surety sector had few comments on this issue – one person found existing policies generally effective.

***Have you found governments' use of financial assurance instruments to be onerous or troublesome?***

The degree to which financial assurance is regarded by industry as onerous varies from company to company and country to country. A few companies considered financial assurance requirements to be troublesome, onerous, time-consuming, and costly. The USA is one country in which financial assurance requirements are considered onerous, particularly if financial strength deteriorates to a point where the company cannot pass a financial test.

Without reference to any particular jurisdiction, companies identified a number of problems: inflated government estimates of reclamation costs associated with using third-party contractors; lack of consistency within and between authorities; few clear guidelines for discounting long term obligations; unwillingness of government to recognize that a "softer" form of assurance may be appropriate in certain circumstances such as an investment-grade company; lack of equitable tax treatment of funds when they are actually set aside; varying technical standards for reclamation which affect the ultimate cost.

At the other extreme, some companies noted that despite delays and costs, no serious problems have occurred in the jurisdictions in which they operate.

It must be noted that the amount of capital tied up is substantial. In 1998, one international company reported that it currently had no fewer than 1056 financial assurance instruments in place in four countries, mainly in Australia. The total contingent liability associated with these sureties was well over A\$20 million (by 2004, the amount reported by this respondent had risen to about A\$60 million). In the 2004 survey, the total liability of reporting projects was US\$350 million (and, of course, reporting projects constitute only a fraction of the totality of projects).

The financial sector believes that strong policies are no bar to development of new projects. In the negotiations for a new project in less developed countries (LDCs), fiscal and royalty issues dominate the negotiations and, in terms of importance to the developer, dwarf reclamation issues.

Government responses generally indicated that the major troublesome aspect was the **lack** of adequately funded or adequately enforced assurance. This situation often arose where mining rights had been awarded under past legislation with weaker EFA provisions. Also, in the USA, there have been cases where developers have walked away from a site, leaving the government to seek redress from bonders. In such cases, negotiated settlements generally resulted in incomplete cost recovery.

Insurance/surety sector representatives noted that sureties are extended with the expectation that they will be returned, not used for reclamation. As recent history shows, trouble arises when a mining company suffers reverses and cannot meet its reclamation obligations. The surety is called, sometimes with serious financial implications for the surety provider.

***Describe recent international trends in requirements for financial assurance by governments and the availability of these instruments in the marketplace. Are new instruments being developed (e.g., insurance?)***

This question was new in the 2004 survey.

Many industry respondents called attention to one notable development which has affected mining companies, particularly in the United States: a dramatic tightening of the traditional surety market. Several identified and reported on new policy initiatives strengthening the requirements for EFA in mining. Not a single jurisdiction was identified in which EFA requirements were relaxed. These two trends, tightening of surety markets and stiffening of legislative requirements, are discussed in Chapter 4 under the title “Emerging issues, challenges and trends”.

Financial sector respondents stressed the growing need for mining companies to have strong balance sheets. Leading banks support the “Equator Principles”, under which funding is conditional on the mining project’s conformance with the World Bank project lending guidelines, including standards of reclamation.

Government respondents stressed the need for strong security. One government respondent noted that “We have done away with personal sureties as they are impossible to call in without legal action.” Another questioned the worth of insurance schemes: “What happens if premiums are defaulted on?”

Representatives of the insurance and surety sector noted that the recent collapse of the surety market affected many mining companies, particularly in the USA, likely irreversibly. It may be that bonds were too freely written in earlier years: “many clients were not pre-qualified. Now surety issuers have become more realistic.” According to the author’s conversations with U.S. surety providers, tight markets are likely to continue indefinitely.

One new development is the availability of an insurance vehicle for mine reclamation financing. It could offer the mining industry a new alternative to existing methods of providing required EFA. According to the author’s best information, this vehicle is offered by only one insurance company, AIG, the American Insurance Group.

***Which instruments best serve the needs of the industry; and the government?***

In 1998, industry had a marked preference for “soft” assurances such as: financial strength; self-funding of the obligation while retaining control of the funds; a financial test which determines the grade of the company; a corporate guarantee based on that grade; self-funding through financial reserves; parent company guarantees and pledge of assets. By contrast, in the 2004 survey the majority of industry respondents recognized that harder methods such as letters of credit, bank guarantees, deposit of securities, and cash trust funds, may best serve the industry, as they are required to satisfy public expectations.

As to which instruments best serve the interests of the government, the 1998 report noted that they would be those that best serve the mutual interests of the government and the company. In the current study, industry respondents suggested that governments’ needs would be best served by cash deposits, any liquid instrument, and bank guarantee. Most respondents referred to appropriate principles rather than specific forms of assurance.

### 3. Surveys of Current Practice

Respondents external to the industry suggested the following instruments as best serving the needs of industry: financial sector suggested performance bond or sinking fund; the government sector bank guarantee or surety bond; the insurance and surety sector insurance.

To best meet the needs of government, financial sector representatives favoured a performance bond; the government sector favoured cash, bank guarantee, letter of credit, or security pool covering several companies; the insurance/surety sector (not surprisingly) favoured insurance.

***Under what circumstances should the various types of EFA instruments be used?***

In the 1998 survey, industry suggested that governments specify an approved selection of financial assurance instruments and discuss with companies which instrument(s) were most appropriate to the specific reclamation situation. In the 2004 survey, one respondent suggested that “Financial assurance should only be used as a provision against non-compliance with statutory requirements”. Others commenting suggested: bank guarantees; deposit of funds (e.g., in trust funds); and that EFA instruments should not apply to smelting or refining.

Financial sector respondents noted that any of the instruments should be used when required by the relevant government and suggested that bankers would be indifferent as to the nature of the financial assurance instrument since lenders simply want to be assured that potential costs are covered. One banker opined that, over time, “the price of metals should incorporate any extra costs”.

Some government officials who responded to this question tended to list the options available in their respective jurisdictions or noted that the choice of instruments is left to the companies, as long as they meet the government requirements. However, one suggested that “As soon as you introduce too many options into the process it is open to manipulation and abuse, as well as making it more difficult to administer”.

Respondents from the insurance/surety sector did not offer opinions on this topic.

***Is it possible or desirable for industry to advocate a single best model of financial assurance? If so, which one?***

For reasons cited earlier, industry recognizes that each reclamation situation is different. In the 1998 study only one, and in the 2004 study, only two respondents, put forward a proposal for a uniform model. One respondent noted in 1998 that this issue has been debated for many years but no “single best” model for all levels of industry and for all site conditions has emerged.

In both surveys, industry tended to favour a range of options that may be suitable to all industry players and a wide variety of local site situations. In other words, a toolkit approach is recommended, rather than a one-size-fits-all policy.

Opinions varied among players in the financial sector. One banker suggested that there is such an ideal instrument – the bank guarantee! Another differed: “The chosen instrument depends on the specific situation and the legislation of the government. It is a fallacy that some forms of security are cheaper than others. Any type [...] requires cash backing”.

Government officials tended to cite their respective legislative requirements as the ideal, though only one jurisdiction limited the choice to a single security: the bank

### 3. Surveys of Current Practice

guarantee. Another preferred the irrevocable letter of credit for its characteristics of security and simplicity. Several stated that there is no single best model.

One insurer (AIG) believes its product is the best solution yet. Another insurance expert, a consultant, believes insurance is effective but it needs to be supplemented by particular skills involving project management and engineering, as well as actuarial and financial analysis.

***Should industry advocate wider use of financial assurance to help avoid future public controversy?***

This question was prompted by the fact that several notorious cases involving abandoned mines have come to public attention in the last decade. The consequent negative publicity has reflected badly on the global mining industry, tainting the reputation of responsible operators and others alike.

Industry respondents to the 1998 survey were not unanimous on this issue, but several common threads ran through their responses. One respondent opposed the use of EFAs, and one gave unqualified approval to their use. All other responses expressed various degrees of conditional approval for their use in particular situations.

In the current survey, the mood in industry is more one of realism. While two respondents believed that good cooperation between operator and authority could obviate the need for EFAs, the majority accepted their inevitability and seemed to prefer to discuss implementation details.

This question was not posed to groups outside industry.

***What other options and better alternatives to the use of financial assurance instruments might be considered?***

In the 1998 study, industry members put forward several interesting options to replace or supplement the use of environmental financial assurance mechanisms. Among others: strong, clear, practical regulatory requirements; some method of identifying companies that would have the capacity and demonstrated ability to manage their own affairs without the need for EFA; a corporation's past performance or track record; use of financial tests and ratios to make this distinction; a system of accreditation.

In 2004, industry suggested a variety of new mechanisms including: a third-party consortium to assume responsibility for mine closure subject to contractual arrangements with the mining company involved; pooled insurance schemes operated by industry segments; improved corporate governance, complementary to the use of financial instruments; stimulation of public/private partnerships for voluntary clean-up of polluted sites; creation of industry sector funds; insurance solutions; the accumulation of monitored internal funds together with transparency in company procedures; joint efforts to improve industry environmental practices; accreditation as a precondition to holding mineral tenure; self or parent company guarantee.

Government respondents made reference to the following options: a system of incentives or regulation that stimulates progressive reclamation; levies to fund reclamation of abandoned mines; unique agreements between mine operator and government, as practiced in Western Australia, under which the government accepts site liability; and finally, certification as a "good company".

## 3. Surveys of Current Practice

Respondents from the financial and insurance and surety sectors did not suggest any new options.

### ***What position should industry take on financial assurance for environmental purposes?***

This question was not posed to groups outside industry. In both 1998 and 2004, industry members made a number of specific suggestions. They ranged across the spectrum from “Accept that financial assurance is a community requirement to guarantee that industries will conduct their activities in a responsible manner and contribute to a sustainable future” to “[Industry should be] negative in general or [insist on] very restrictive and careful use only in cases where other alternatives are not available.”

### **Financial, government and insurance/surety specialists**

The following questions were designed to probe the availability and characteristics of various types of financial assurance mechanisms in different mining countries and their potential suitability to the mining industry.

### ***How is the amount of financial assurance calculated or established? Is the amount demanded by government different from the amount needed as calculated by the company?***

The financial institutions surveyed are heavily involved in arranging financing for new mines rather than providing financial assurance for existing operations. Their responses to the questions are coloured accordingly. They reported the following procedures in determining the type and amount of financial assurance for major new projects:

- Calculated by government on a formulaic basis with regard to type of mining, reclamation plan and track record; specified under legislation;
- Estimated as a percentage of capital cost; negotiated, based on the feasibility study (the amount demanded may be greater or less than the amount indicated in the feasibility study); and
- Established by negotiation between government and mining company.

For large mining projects in developing countries the reclamation requirements and associated financial guarantees are made to order for the project and the circumstances. One interesting comment from the financial sector: “Some governments (mainly the LDCs) do not ask enough.”

Government representatives in selected jurisdictions (sampled from those in which mining is a major industry) described the establishment of EFA amounts in their respective jurisdictions in some detail. In general, the governments sampled for this study relate the amount of assurance to the projected cost of reclamation. A few allow a discount, based on previous environmental performance, while others inflate the operator’s estimate to provide for third-party costs.

One insurance provider offered a detailed account of its method of estimating the amount of security needed.

### ***Describe the market for financial assurance instruments; is it local or primarily international? How does it work? Is there a choice for the borrower, competition among financial institutions? Is insurance an option?***

One financial institution noted that the collapse of the surety market affected mainly U.S. mining companies, because these instruments are less widely used in other developed countries, where other, usually harder, vehicles are used (letters of credit, bank guarantees). These latter instruments are generally available from local banks. Another suggested that for these instruments there is plenty of competition and companies have the option of lodging funds directly with the government. For major new projects in LDCs, financing is often international in nature, involving four to five lead banks. Government-supported export banks may also have a significant role.

Respondents from the government sector confirmed that the most widely-used instruments (bank guarantee, letter of credit, etc.) are freely available in developed countries. One noted that insurance is currently not an option in his jurisdiction and will not be until favourable terms can be developed. No comments were forthcoming from the insurance or surety sectors.

***Describe the availability of insurance vehicles to provide necessary assurance.***

Among financial institutions, one Australian bank reported a disappointing experience with insurance. The US branch of an international bank noted that efforts have been made to develop joint insurance schemes covering several companies or mines.

Within governments, there was little enthusiasm for insurance. Queensland and Western Australia have looked at insurance schemes but could see no overriding advantages. A warning note was sounded by the Ontario government, which pointed out that different insurance companies continue to struggle to find a good instrument which has reasonable premiums. Ontario also questioned what would happen if premiums are defaulted on. Only the State of Nevada reported that several insurance-based assurances are in place, all provided by AIG (already mentioned under an earlier question).

While some respondents said that other insurers were active in the reclamation market, the author was unable to verify these leads.

***Identify leading financial institutions (banks, insurance companies, etc.) which are involved in the market for EFAs.***

This question was asked of all non-industry groups. The names of financial institutions offering some form of financial assurance are too numerous to mention here. It is notable, however, that they are largely confined to developed countries. In countries such as Botswana or Suriname, by contrast, there may effectively be no market for such instruments.

## 4. Conclusions and a Look to the Future

This concluding chapter has two purposes: to identify emerging issues, and to suggest possible next steps for the further evolution of efficient EFA mechanisms and their alternatives.

### Emerging issues, challenges and trends

This survey has revealed a number of new trends and developments that could have an impact on the future of the world mining industry.

#### ***Several jurisdictions have strengthened their legislation in recent years and this trend will undoubtedly continue.***

The study identified a number of jurisdictions in which EFA requirements have been strengthened since the 1998 study, including: **Botswana** (1999); **Chile** (1994); **Ghana** (1999); **India**, (recent amendments to the 1988 Mineral Development rules); **Peru** (2003); **South Africa** (2002); **Sweden** (new Environmental Code of 1999); **USA** (the Bureau of Land Management no longer accepts corporate guarantees); **Yukon** (currently reviewing its mining law). There is every reason to believe that this trend of strengthening financial assurance provisions will continue.

#### ***Some jurisdictions still present exceptions or lag behind the trend, but no one knows how long they will continue to do so.***

Examples include the following: **Suriname and Jamaica** continue to have apparently very permissive codes, imposing much less onerous and less detailed financial assurance requirements than other prominent mining countries. **Quebec** demands less than full financial assurance coverage of potential reclamation liabilities (70%). This is a deliberate policy designed to attract mining capital. While maintaining high environmental standards, Quebec has long been regarded as the most mining-friendly jurisdiction in Canada.

#### ***The standards of reclamation and the forms and amounts of financial assurance required vary among jurisdictions but are tending to cluster at the higher end.***

At one extreme, certain countries appear to require no financial guarantee (e.g., **Guinea**) or a very small amount (**Ghana**). Others leave the standard of reclamation entirely to the discretion of the government (e.g., **Jamaica, Indonesia, Suriname**). At the other extreme, in **Sweden** it appears a virtual impossibility to surrender mining lands under any practicable circumstances. **Chile** allows for voluntary deposit of a security, which enables the developer to proceed with mine development expeditiously. In virtually all the other jurisdictions studied, adequate technical standards of reclamation and some hard form of security are formally required.

An important variable in calculating the amount of security demanded is the issue of "who will do the reclamation work?" A number of governments (e.g., **Nevada, Ontario, New South Wales**) require an inflated amount on the assumption that, in the event of a default caused by business failure, the company will not be in a position to do the work and independent contractors will be called in.

#### ***The virtual collapse of the U.S. surety market has disrupted pre-existing financial assurance arrangements. The availability of conventional sureties will likely continue to be curtailed for the foreseeable future.***



## 4. Conclusions and a Look to the Future

Because of declining returns over a few years prior to September 2001 and heavy insurance losses following the New York disaster of September 11, 2001, U.S. insurers (including surety providers) undertook reviews of their risk portfolios. During the same time period, one U.S. surety provider failed and its obligations had to be covered by other insurers and reinsurers.

As a result, the surety industry took a hard look at its mining risks and either withdrew from the mining market or demanded liquid back-up security (such as a letter of credit) and at the same time charged much higher premiums. Governments were forced to demand other forms of security to replace the vanished sureties. This increased the cash demand on mining companies, as well as tying up substantial amounts of borrowing power.

The impact of the changes described here has been felt mainly in the USA. This is primarily due to the extensive use of surety bonds in that country. The conditions that caused the collapse of the surety market have not been reversed. Surety providers interviewed in this study gave no indication that they were anxious to build up their mining industry clientele in the near term.

***At the supra-national level, processes are in place to reinforce the trend towards higher standards of environmental management, including EFA, in mining.***

The study draws evidence for this assertion from a number of recent occurrences.

European Community Draft Directive on the Management of Waste from the Extractive Industry: As part of its continuing program of harmonization of regulations, the European Community is developing an extractive industry waste directive. Once the directive is finalized, European countries would be required to amend any existing requirements for mine reclamation and associated financial assurance to agree with its terms. The draft directive was given first reading by the European Parliament at the end of March 2004 and the Council reached political agreement on the proposal in October the same year.

For the future development of mines in European countries it is important that the new directive represents the appropriate degree of integration of environment and economy. There is a need to apply the provisions with the appropriate care in order not to jeopardize the survival of companies and thus avoid the environmental and social problems associated with unanticipated closure.

World Bank / IFC Initiatives: Since 1998, the World Bank has included in its "Pollution Prevention and Abatement Handbook" provisions to ensure that any project financed by the Bank or the related IFC (International Finance Corporation) anywhere in the world includes appropriate standards of mine closure and reclamation, including the nature and amount of financial assurance. These requirements are currently stated in general terms. If a country does not have corresponding requirements, then the World Bank/IFC measures govern the project.

The existing provisions do not in themselves surpass the normal standards of design and operation among ICMM member companies. However, this initiative is offered as an example of one of the mechanisms by which requirements can be progressively raised by the actions of international organizations.

## 4. Conclusions and a Look to the Future

New IFC guidelines for precious metal mining includes a requirement for fully funding a mine's closure plan by appropriate instruments so that the cost of closure can be covered at any stage in the mine life, including premature and unforeseen closure. At first glance the provision seems to be in line with practices already followed in most developed countries. But Table 2 shows that many governments, including a number of those in developed countries, provide a certain amount of discretion in setting the amount and nature of the required financial assurance.

Moreover, the IFC guidelines may eventually apply to mines in developed countries. See below.

Equator Principles: "Equator Principles" provide a framework for financial institutions to manage environmental and social issues in project financing. An international group of banks noted for their involvement in the financing of development projects, including mining, have endorsed the Equator Principles. Adherents to these principles have undertaken not to finance any project anywhere in the world unless the project meets World Bank/IFC environmental guidelines.

One perhaps unforeseen side effect of these undertakings could be to frustrate the deliberate policies of governments. If a state demands less than full coverage of potential reclamation liabilities, as a calculated policy designed to attract mining, bank financing may not be available for projects there. As a result, the government's conscious policy may be nullified. The legislation of many jurisdictions gives the responsible minister some discretion in setting the nature and amount of required financial assurance.

International Cyanide Management Code: Under the auspices of ICME and the United Nations Environment Programme (UNEP) a multi-stakeholder committee has developed a voluntary cyanide management code for application to the gold mining industry. The objective of the Code is to ensure high standards for safety, environmental and quality aspects worldwide in the use of cyanides in gold mining.

Principle 5.2 of the Code reads: "*Establish an assurance mechanism capable of fully funding cyanide-related decommissioning activities*". The purpose of this principle is to ensure that facilities such as heap-leaching pads are reclaimed in such a way as to present no residual threat to human health, wildlife, or the environment.

This information on the Cyanide Code is not presented here as a problem. Rather, it merely reinforces the message that international initiatives can lead to higher standards.

### Enduring issues

This last section of the report identifies outstanding issues and suggests possible next steps for those companies, associations, governments and international institutions wishing to pursue the further evolution of efficient EFA mechanisms.

*The amount of capital sequestered is significant:* It is in the interests of governments and mining companies to agree on realistic forms and amounts of EFA which do not unduly depress capital availability or damage the investment climate.

## 4. Conclusions and a Look to the Future

*The concept of efficiency for environmental financial assurance:* Governments are urged to use policies which are simultaneously effective in terms of environmental protection and efficient in their demands on economic resources.

*Are financial assurance mechanisms necessary?* Financial assurance mechanisms are here to stay, so discussion about the need for them is sterile. The debate should be on making framework policies, and their application to specific EFAs and companies, as efficient as possible.

*EFA practices differ widely: a case for consistency:* It is appropriate for companies, associations, and international institutions to assist countries to work towards the orderly development of efficient and effective EFA policies and practices. The current efforts of the United Nations and the European Community to harmonize requirements could contribute to this goal, provided they subscribe to the principles set out in this report.

*The wide variety of EFA in use; clarification is needed:* Industry and international institutions may wish to consider undertaking research which would classify EFA instruments into distinct groups and develop uniform policy guidelines for applying the different EFA classes to the different risks encountered in individual cases.

*Framework policies are as important as specific financial assurance mechanisms:* Industry and international institutions may wish to promote consistency and coherence among governments in terms of the principles on which their framework policies affecting EFA are based.

*Alternatives and supplements should be pursued:* Industry associations and international institutions should encourage research and innovation in the use of new tools to supplement or replace conventional EFA instruments. In particular, they should strongly support the development of transparent systems of accreditation and certification to reinforce existing industry codes. There is also an argument to be made for using approved independent assessors. Governments should hold themselves open to suggestions for using new techniques and instruments of risk management.

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