

Draft Report Comments
MMSD
1a Doughty Street
London WC1N 2PH
UK

April 17, 2002

FAXED & COURIERED

Dear Sirs:

The Prospectors and Developers Association of Canada (“PDAC”) appreciates having the opportunity to comment on the Draft Report of the MMSD dated March 4, 2002. We are pleased to submit herewith our comments.

The PDAC is recognized as the world’s leading industry organization representing the exploration and development sector of the mining industry. The PDAC has more than 4000 individual and corporate members. These are primarily in Canada, but we also have members located in over 70 countries. These members represent all facets of the global exploration community, consisting of individual explorationists, junior companies, mid-size producers, multi-national producers (MNC’s), and the exploration service and supply sector.

The PDAC is fully supportive of the initiative that led to the MMSD. The MMSD is a serious project, and has the potential to improve the future of the mining industry and all those who are affected directly and indirectly by this industry. However, as explained below, the PDAC cannot support the Draft Report in its present form.

The PDAC set up an ad hoc committee (Committee) of its Board of Directors to assess the Draft Report. The comments herein are attributable to the members of the Committee. The Appendix attached hereto sets out selected comments of the Committee members in order to provide a sense of the flavour of our views, and for purposes of specific reference.

It is the view of the Committee that the PDAC cannot endorse the Draft Report, and that the PDAC Board would likely reject the Report if it was published as drafted. The reasons for this view are summarized below.

The Draft Report contains serious deficiencies insofar as the mineral exploration sector is concerned. As indicated in the Appendix to this letter:

1. In certain important respects, the Draft Report ignores the role of the exploration sector;
and
2. Where the exploration sector is mentioned, there are many instances where the role of the exploration sector is described inaccurately.

As a general observation, we submit that the Draft Report is “MNC-centric” and “developing country-centric”. Overall, the Draft Report fails to adequately take into account the role of explorationists other than MNC’s. Individual explorationists, junior companies, and mid-size companies are important players in the exploration sector, and take their responsibilities as seriously as MNC’s. These explorationists are often the first in contact with other stakeholders

in the area to be studied or explored. Further, the Draft Report appears to be written with a heavy leaning towards developing countries with respect to information and viewpoint, at the expense of developed countries. In short, the Draft Report is not balanced in describing the global mining industry.

In addition, we submit that the Draft Report fails to adequately credit the mining industry with the progress that has been made, and the successes that have been achieved, over the past decades with respect to sustainable development. All sectors of the industry, including the exploration sector, continuously improve their performance relating to sustainable development through both industry-wide and individual company initiatives. Through misleading extrapolation, selective reference to isolated examples, and partly and completely inaccurate statements¹, the Draft Report gives a sense that the track record of the industry is almost totally blemished. In this regard, the Draft Report is seriously negative, out of balance, and out of date.

In specific circumstances, the Draft Report states that companies smaller than the largest ones are, firstly, more lax with regards to environmental and social/community issues, and, secondly, more likely to engage in corrupt practices. We would challenge the authors of such statements to prove or remove them. Smaller companies take their environmental, social, and ethical issues as seriously as larger companies, and we can provide evidence of this.

The Draft Report would be much improved if it described better, at the beginning, the make-up of the industry, possibly with reference to a three dimensional matrix. These three dimensions are:

1. The stages of the life cycle of a mineral deposit
 - a. Exploration and discovery
 - b. Feasibility and development
 - c. Production and recycling
 - d. Closure;
2. The players in the industry
 - a. The formal sector
 - 1) Individual explorationists (prospectors, for example)
 - 2) Junior exploration companies (non-producing companies, for the most part)
 - 3) Mid-size producers (companies with one mine, for example); and
 - 4) Multi-national producers
 - b. The informal sector (artisanal and small-scale mining); and
3. Where the players perform
 - a. Developed countries
 - b. Developing countries.

References in the Draft Report to the industry's life cycle commonly fail to include exploration (Dimension 1(a) above). The Draft Report does not adequately describe the role of individual

¹ Please refer to the Appendix attached to this letter.

explorationists, junior companies, and mid-size producers (Dimension 2(a)(1 to 3) above), and does not present a balance between the viewpoints and current realities of developed countries and developing countries.

Also, the Draft Report would be much improved if it described better, at the beginning, the unique characteristics of the industry as compared to other industries. These characteristics of the industry are particularly relevant to assessing the ability of the industry to attract investment. Briefly, the unique characteristics of the mining industry have generally been identified to include:

1. High risk.
 - ❑ Exploration in particular is a high risk business in terms of an investment in exploration resulting in a discovery.
 - ❑ At other stages, too, including development and production, the industry faces business risks that are not encountered in other industries. Metal prices, for example, are highly cyclical and unpredictable.
2. Price-taker
 - ❑ Metal prices are established by a relatively pure inter-action of supply and demand in the global marketplace. No producer or group of producers can control the price of a metal commodity.
 - ❑ Consequently, incremental costs incurred by a mining operation must be borne by the operation – these costs cannot be passed on to customers or other stakeholders – thus impacting the return on investment.
3. Capital intensive
 - ❑ The mining industry is capital intensive. A typical new base metal mine can cost in the range of \$2 billion to bring into production.
 - ❑ It is important that a regulatory regime recognizes the need to attract significant sums of capital.
4. Finite life
 - ❑ A mine has a finite life. The decision to invest in a mining project is based on the understanding that there is a specific quantity of ore to be mined.
 - ❑ It is important, therefore, that the regulatory regime be stable over the life of the mine.
5. Remote locations
 - ❑ Mineral deposits are usually found in remote locations
 - ❑ As a result, the mining enterprise makes significant investments in infrastructure, and often needs to pay higher wages in order to attract workers to the remote site.

A description of these unique characteristics of the industry would help a reader of the Draft Report to understand the mindset of the mining industry in the decision-making process.

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The PDAC is anxious to make a meaningful contribution to the MMSD, and is fully supportive of this project. We would be pleased to respond to any questions that are raised in connection with this submission.

Yours truly,

A handwritten signature in black ink, appearing to be 'Bill Mercer', with a long horizontal flourish extending to the right.

Bill Mercer
President

APPENDIX

PDAC RESPONSE TO MMSD REPORT

Comments By Chapter

Executive Summary

1. Generally speaking, the Executive Summary is a summary of the essential points of each of the individual chapters. Therefore, our comments on individual chapters could require mention in the Executive Summary.
2. The penultimate paragraph on page 13 refers to “an adequate share of rents”. It would be important to note that the high risks that are inherent in the minerals sector mean that investors require a “share” of rents that is higher than other industries such as the manufacturing and service industries. These risks should be identified as including exploration risk, production risk, price risk, and political risk.
3. The third paragraph on page 26 implies that the life cycle begins with production. It should be noted that the life cycle begins with exploration, and then proceeds to development before production begins.
4. On page 32, under the heading *Industry Codes and Charters*, it would be appropriate to mention the Prospectors and Developers Association of Canada’s “E3” initiative.

Introduction

1. The last paragraph on page 3 refers to “the sector as a whole”. It would be appropriate to define the “sector” at this point in the Report. This definition should include the exploration component of the sector.
2. The first paragraph on page 4 refers to “the whole life cycle”. It would be appropriate to describe very briefly the whole life cycle at this point. (For example, see Figure 2.1.)

Chapter 1: The Minerals Sector and Sustainable Development

1. The first paragraph under the heading *The Control, Use, and Management of Land* on page 15 should refer to “exploration and development” not just “development”.
2. The last paragraph on page 15 should refer to the decision “to explore”, not “to mine”.
3. The first sentence under the heading *Environmental Management* on page 17 should include reference to exploration in addition to the references to mining and processing.

Chapter 2: Producing and Selling Minerals

1. The last paragraph on page 5 identifies some factors that have affected the level of exploration spending in the US, the Pacific, and Southeast Asia. These factors are not important, and these references should be deleted. The main factor contributing to lower exploration spending is weak metal prices.
2. The penultimate paragraph on page 12 refers to “miners and smelter workers”. This reference should include explorationists.

Chapter 3: A Profile of the Minerals Sector

1. Good overview of the mining industry which “tells it like it is”, and does include exploration.
2. The discussion on *The Large Multinationals* and *Medium-Sized and National Players* should include mention of their roles in exploration. Also, how the dynamics of the industry in respect to exploration has dramatically changed in the last few years, with much less exploration by most majors, more strategic alliances with juniors, but juniors have difficulty raising money for exploration, so significant drop in exploration overall from approx \$5B worldwide to present approx. US\$2B. (Minerals Economics Group is a good source for the amount this has dropped and the relative percentage that majors/mid-size/juniors spend on exploration.)
3. Page 3-8, first paragraph, suggest modifying the sentence as follows: “There is unquestionably a small group of companies that appear to be responsible for a substantial part of the bad practice and shoddy performance of a small minority of the mining sector.” Senior, producing companies have also been guilty of bad practices, in fact some examples have been included in this report. There is no rationale to discriminate against the junior sector in this regard.

Chapter 4: The Need For and Availability of Minerals

No recommendations for changes to this chapter.

Chapter 5: Case Studies on Minerals

Specific recommendations

1. For most of the metals that are discussed, the chapter does not present case studies, but instead focuses on re-recycling. This does not present an objective and balanced view of the economics of the particular metals.

2. For the commodities reviewed, there should be an analysis of historical supply and demand issues and with some forward looking projections. Recycling should be analyzed as a component of the supply side.
3. The impact and importance of the gold mining industry is only discussed in context of developing nations. There is no consideration of the role of gold mining in developed economies.
4. There is no consideration of the requirement of exploration to replenish depleted reserves or to find new resources of metals in response to changing market demands.
5. There are a number of suggestions for regulatory controls on issues related to metals usage, metals supply, and on distribution of wealth created from mining ventures. In a market economy, these suggestions could place unusual and unfair demands on the mining industry. It is important that an economically and politically balanced viewpoint be presented in the area of regulatory controls.

Chapter 6: Viability of the Minerals Industry

1. This chapter largely looks at trying to transform the industry from one whose culture is centered on **costs**, to one centered on **value**. How to create more value to all stakeholders – owners, managers, employees, countries, environment, etc. They rightly recognize that social and environmental costs are now largely being internalized by the industry, but the benefits of the internalization are largely reaped by consumers, not producers. And, because of the price volatility and undifferentiated world market, we cannot pass costs to our customers.
2. There are references to the life-cycle planning for the industry, but largely leave the exploration component out of the equation. They need to tie the “conception” of the life-cycle to its true beginning – exploration and discovery. Somehow there is a treatment of in-mine exploration and discovery with the (logical) expansion of mine life, but a failure to consider the discovery of a new deposit.
3. Sustainable Development issues that include: health and safety, risk management, emergency preparedness, environmental management, community relations, relations with indigenous peoples, etc. need to be evaluated from the perspective of the exploration stage for this document to be complete (Box 6-1 on p. 9). There should be a set of performance indicators if we are to be held to this standard.
4. There is a long treatment of (Destruction of...) Shareholder Value where ‘cost culture’ vs ‘value culture’ is described. This is where there is a lack of recognition that low operating costs most often correlate to high grade deposit, not large, economies of scale activities.
5. **HOWEVER**, the biggest affront to exploration shows up on page 14 of this chapter (last paragraph). This paragraph states rather bluntly that many companies explore **“for the sake of exploration or explore based on an ideological belief that a certain percentage of cash**

flow should, under normal circumstances, be reinvested in this activity.” They suggest that a shareholder “value” approach should/would discourage exploration. This paragraph should be rewritten to indicate that companies use sound business rationale to determine where and how much to invest in exploration.

6. Going to the SD concept of cultural sensitivity, they fail to recognize that it is exploration that is commonly the first contact local peoples (indigenous or otherwise) have with a mining company and its own business culture. Some training in cultural sensitivity and diplomacy may be in order for exploration geologists.
7. Table 6-1 on page 19 needs some minor repair. In this table they identify the changing “corporate faces” associated with the evolving project. They need to identify the person leading exploration as “Junior Company exploration manager, not a foreman.
8. Under the discussion of Safety and Mining (p. 21) it is pointed out that mining is responsible for 5% of the fatal accidents, but only 1% of the workforce. We question the validity of this data. Do they pertain to just developing countries or the whole world? Those statistics would not apply to most developed countries. The footnotes do not provide enough information to determine the source effectively.
9. Moving into the discussion of Technology, there is no consideration of applications to exploration and the place in defining/identifying new sources.
10. Into the area of Mining Finance, there is an implication that as the politics of the world have opened up new areas for business (Soviet Union, Eastern Europe, South Africa, Chile, etc), companies have gone to areas with exploration activities having “pristine environments, but weak environmental management, indigenous people with territorial claims that have never been effectively resolved, and local populations with immense development needs but no functioning local government.” Exploration is presented as a bad guy rather than providing the opportunity to resolve such issues (p. 32).
11. Lastly, the final section (p. 35) indicates that SD is a HOLISTIC approach to business ...yet the discussion does not mention exploration as part of the business.

Chapter 7: The Control, Use, and Management of Land

1. Overall, a very good discussion of land use and mining. It is however quite negative, and could use some positive examples. Some sections could also be condensed.
2. Needs to include more references to exploration, especially since the exploration stage is usually the first contact with local communities and aboriginal peoples, the first to conflict with protected areas, aboriginal land claims and other land uses, and covers much larger areas of land than mining.

3. Suggest referring to initiatives to provide guidelines for good exploration practices such as E3 (Environmental Excellence in Exploration).
4. Page 4, second last paragraph, first sentence, suggest adding the word “exploration”, i.e.: “Land use disputes could occur throughout the chain or cycle of exploration, mineral production, processing, and use.”
5. In *Protected Areas* section, it would be relevant to include an example where a protected area strategy has worked. An excellent example is in Manitoba, where over the past four years, a committee with representatives from the mining industry, WWF and provincial government parks and mines branches have reviewed the selection of all new proposed protected areas. The process promotes open discussion, provides adequate maps and sufficient time for review, and strives for win-win results: a) the adequate protection of representative landscapes, and b) keeping areas of mineral potential open for exploration and mining. As a result, since 1990, protected areas have increased from 0.5% to 8.5% of the province and an additional 5.3% has been supported by the mining industry, without compromising any mineral claims or areas of known mineral potential. Forestry, hydro and aboriginal groups are also similarly consulted. The WWF and the mining industry both have cited this process as an excellent model to follow elsewhere. (For more information, contact Ric Syme, Director, Manitoba Geological Survey, at RSyme@gov.mb.ca.)
6. On page 32, the paragraph on Ontario’s Living Legacy tells only the side of the conservation groups. The initial consultation process known as *Lands for Life* was quite well done and generated some good recommendations. Unfortunately, due to a provincial election, the process became highly politicized and the recommendations were undermined by some back-room deals that excluded key stakeholders, including the mining industry. Serious problems were created when new protected areas were located over pre-existing mineral tenure and known area of high mineral potential. In the opinion of the mining industry the whole process alienated the mining industry and other key stakeholders, heightened the conflict among users and left many important issues unresolved. In our opinion this was a very good example of how ***not*** to carry out a process to resolve land use issues.
7. In the recommendations section *The Way Forward*, Protected Areas, there needs to be more focus on exploration issues, due to the high number of conflicts with protected areas at the exploration stage. Highly support the recommendation that mining sector work collaboratively with conservation organizations. Recommend that this collaboration be used during the selection of candidate sites for protected areas to avoid areas of mineral potential wherever possible. This collaboration has been particularly effective in Manitoba (see above).

Chapter 8: Minerals and Economic Development

In general this chapter is well-written, reasonably balanced in its viewpoint and organized in a rationale way. Only in a few places were items found to be missing, subjects presented inaccurately or their was a need for more objectivity. These are summarized below.

Mineral Production and National Economic Development

1. The second paragraph of this section explores, in a general way, what countries should do to attract mineral investment and what they should gain from mineral activity- in the broadest sense, how to translate mineral wealth in the ground to human development of its people.

This and later sections would benefit from discussion as to what is appropriate for the host country to invest in the development of its own mineral industry, which in turn would stimulate investment from outside. This would include, for instance, the development of a geoscience database, appropriate training of its people and provision of access to particular regions of the country where there is evidence of high mineral potential.

Once the host country has succeeded in attracting mineral exploration activity, it would make sense to develop an assessment system, whereby, one of the requirements for gaining a permit to explore, would be the submission by the company to the host government, of geoscience information that it had derived from its exploration activity. This information would then be organized into a central repository and made available to the public. The growing geoscience database will act not only to attract more investment from outside but will also help to facilitate the growth of a home-grown prospecting and exploration community (this point is also applicable to the section entitled “Capturing Mineral Wealth”, immediately prior to the discussion on taxation, where the topic is focusing on what governments should do to maximize their gain from mining companies)

2. Towards the end of this section there is a list of 5 bullets that document the challenges a country might face in developing its mineral potential. The challenges listed should include:
 - Demonstrating mineral potential and attracting exploration and development investment;
 - Establishing an attractive investment climate and progressive mineral policies
 - Developing a domestic mineral sector infrastructure
3. The final paragraph of this section poses the question of why some countries fall short of realizing the economic potential of minerals production and then poses three main schools of thought as a) external market forces- metal price volatility, b) internal economic stresses- emphasizing that the introduction of a minerals sector can be to the detriment of other sectors and c) distorted processes of economic decision-making and corruption caused by “windfall mineral revenues”. The following three sections constitute a more detailed discussion of these three schools of thought.

This paragraph and the following three sections fail to include many additional factors which may cause a country to fail in its efforts to realize its mineral potential. Many of these may be classified as *internal factors* and would include failure to meet the challenges articulated in the bullets immediately preceding this paragraph, including the suggested additions to those bullets referred to above. These factors need to be discussed in a fourth section.

External Market Forces

1. The first paragraph attempts to discuss why world mineral prices have fallen relative to prices of manufactured goods over the past two decades. The discussion fails to clearly

articulate that the mineral industry is a *price-taker not a price-maker*. Also it misses the point that commodity prices have been affected by the discovery of very large deposits (copper is a good example) in this time frame, which have caused periodic situations of oversupply.

2. Generally missing from this section, and the chapter as a whole, is a discussion of the unique risk factors that characterize the mineral industry, a key aspect that has a distinct connection to the general discussion on attracting investment, developing domestic mineral industries and distributing wealth. Risk in the mineral industry is usually discussed in terms of the risk/reward ratio. This includes the long odds of exploration leading to an economic discovery (usually assessed as about 1000:1 against); the capital intensive nature of exploration and development and the uncertainty of continuous reserves being discovered for an operating mine. These kind of factors, taken together with metal price volatility, result in an industry which requires very particular circumstances to counteract the inherently high risks involved in mineral exploration, development and extraction.

Capturing Mineral Wealth

1. As part of the discussion on corporate taxes and royalties, it would be useful to have a table illustrating, by use of examples, the total government take as a percentage of gross revenues and/or profit, of a range of companies in different locations.

Mining and Corruption

Multiplicity of small players: Under this subsection the opinion is expressed that small companies are generally more prone to engaging in corruption in a host country than larger companies due to the fact that the latter have more at stake in terms of their reputations. This opinion is not necessarily true and is most likely supported by anecdotal evidence than by actual fact. There is no evidence to distinguish senior from junior companies when it comes to corruption. In both cases there are those that will resist and those that will play the game. Also, there are many forms of corruption. Some are more subtle than others and therefore easier to hide, whether you are a senior or junior company.

Chapter 9: Local Communities and Mines

This chapter deals with the subject matter in a comprehensive manner and has obviously been well-researched. It is clearly articulated and presented within a logical and readable framework. However, there are a few areas that need attention and these may be summarized as follows.

1. Conspicuous by its absence is a discussion of the unique and important aspects of community engagement which characterize the exploration stage. On page 5 the statement is made that “The exploration phase is of comparatively low social and economic impact, but is critical in forming expectations on all sides.” Following this rather cryptic sentence nothing more is said about the subject in the remaining 34 pages of the chapter. In a very real sense the exploration stage is often the most important stage since this is often where the first encounter happens between community and mining company (or mining industry). The exploration encounter can be sporadic in nature but extend over long periods of time as a

number of different companies try to discover economic mineral deposits in a given area. This is the time when the relationship between community and mining industry is preconditioned and depending on how it is managed, can result in either positive or negative perceptions of the industry by the community for a long period of time, including the later stages of mine development and operation. This is hardly a situation that can simply be written off as “comparatively low social impact”.

The critical nature of appropriate community engagement at the exploration stage and its consequences into the future cannot be overemphasized. As well, the dynamics of community/company interaction at this stage is unique and quite distinct from that which characterizes the later stages of development and mining operation and warrants a section of its own. The paper written on this subject by Ian Thomson and Susan Joyce entitled, *Exploration and the Challenge of Community Relations* (Report on the Quito Conference, Ed McMahon (ed) 1997), should be a useful reference in this respect.

2. Throughout the entirety of the MMSD report, there are many examples of the junior exploration sector being cast as the poor, bad boy of the mineral industry. This chapter is no exception. On page 5 the statement is made “Multinational companies with larger operations, for example, are likely to have more experience to draw on than smaller companies.” While this conclusion may seem logical to the inexperienced, it is not necessarily the case in reality. There are cases where junior companies have developed very sound community relations and there are others where they have done things very poorly. The same can be said for multinational companies and a number of examples of the unsuccessful ones are discussed in this chapter. Junior companies can actually have some advantages over larger companies. For example, the principle decision-makers of a junior company (including the President) are much more likely to spend time at the exploration site and therefore be accessible to the leaders of the community as compared to that of a large multinational company.
3. The negative and sometimes dangerous situations that mining companies and their employees find themselves in with respect to local communities are usually much more than simply conflicts between community and mining company. More-often-than-not they involve a complex interplay among a number of players accompanied by an array of interrelated agendas. A number of examples in this chapter illustrate this quite clearly but seem to have avoided one important element that is often present; that is, the environmental NGO whose cause is to prevent mining. In a number of cases of conflict involving local communities and mining interests, there have been environmental NGO’s (often headquartered in a foreign country) whose primary aim is to contribute to tension in the community through misinformation and fear-mongering. Radical, anti-mining NGO’s are a very real force in many parts of the world and can cause very negative and sometimes dangerous situations. This subject should be addressed, most likely under the section entitled *A Cultural and Political Perspective* or *Conflict and Dispute Resolution*.
4. In a very comprehensive manner, this chapter defines the issues, needs and challenges surrounding local communities and mines. On the whole, however, the tone and presentation tend to lean towards the negative. Very little space, with the exception of a small section dealing with foundations, is given to the efforts various mining companies have put into

improving community relations and the numerous success stories that have resulted. The addition of such information would serve to complete this chapter as a well-rounded treatment of the subject that looks with some hope towards the future. As well, it is important, particularly in a document such as this, that the mining industry be acknowledged for its positive efforts and successes.

Chapter 10: Mining, Minerals and the Environment

1. Overall the chapter is written as if the mining business starts with digging the hole and not with exploration. It needs a refocusing to emphasize the cradle to grave exploration to final restoration, life cycle and the relevance of environmental considerations throughout.
2. The whole chapter is given a very negative tone due to the selection of particular examples. The chapter requires a balance by the inclusion of examples of responsible practice.
3. Environmental Impact Assessments which are given very limited coverage, are introduced late in the chapter and are criticized as being a tool used with the lowest common denominator as the intent. Such is not the case and examples from many parts of the world need to be examined before they are all condemned. Ironically the recommended process of consultation is always a key part of EIAs already.
4. The first half of the chapter describing mine waste issues is all in error in not acknowledging that mine planning and waste disposal are all agreed prior to mine development in a multi stakeholder EIA in most (if not all) jurisdictions now.
5. The whole section on orphan mines requires serious reconsideration as it presents dubious statistics as to the scale of the issue, doesn't define the issue and then draws conclusions which are at odds with, for example, one multi-stakeholder group that has been getting to grips with all the issues, on priorities and solutions. No mention is made of the issues relating to further exploration adjacent to orphan mines.
6. This chapter should include a section which describes exploration and the environmental issues related to it. This way the box describing "E3" would have a meaningful context.

More detailed observations about the chapter follow.

There is a fundamental problem with this chapter which lies in its title :Mining, Minerals and the Environment" With only a tiny number of exceptions the whole chapter is written as a thesis about "Mining" i.e. the act of extracting the mineral commodity from the orebody in the ground! Therefore more than 50% of the chapter length deals exclusively with specifics of mining namely handling aspects of the operation. Dealing with waste occupies close to 25% of the chapter. On page 27 under the heading "Recommendations on Managing the Mining Environment" EIAs are not mentioned and only five bullets down in priority is there a statement that consultation with communities should occur.

Whereas orphan mines is implied to be a small number relative to the burgeoning industry today it ends up being described as an enormous problem! Such comes in part from crude, simplistic extrapolation of a single Colorado derived estimate of 10% of former mines being significant environmental or public hazards and 10% of those being major problems (page 21)(referenced to a single study footnote #42). It then applies this to an estimate of 500,000 mines in the USA with no reference. I question a) whether the 500,000 is mines or mines and exploration sites and b) whether the number of sites for a country with an intense mining history and rich geologic endowment (such as USA, Canada, Australia, South Africa and to a lesser extent Chile, Peru and parts of Russia) is applicable to the rest of the world. The text leaves the impression such worst extrapolation is the reality.

By addressing the “mine waste” issue as the main topic for the first half of the chapter the theme then leads logically into mine closure and the problems of abandoned mines or older mines closures. The text doesn't pause to give a simple description of current cradle to grave planning starting with the EIA process. Several examples highlight the problem of failing to introduce the EIA concept early on.

1. On page 17 it starts talking about mine closure planning and states that “it must be considered from project inception” as if presently it isn't. Only on page 24 is the concept of an EIA introduced in spite of the fact that virtually all new mines are subject to such with cradle to grave planning, community involvement etc.
2. On page 18 there is a statement (again in advance of any EIA discussion) that at mine decommissioning “the community should have been developed to maintain a sustainable existence” Nowhere is there any discussion of the need for a community if none exists or if it an artificial community triggered by exploration activity.
3. On page 21, second paragraph it suggests that community sustainable development agreements might could be part of the project process as if it is a new idea being introduced at that point.
4. Even after the introduction of the EIA concept on page 24 there are indications that the writers do not understand it. On page 26 there is a description of the Lisheen pre-production events (without calling it an EIA process or stating that it was mandated by legislation) and implying that it was a voluntary thing by one company and ends with the statement, referring to the 5 year process “this level of commitment is often due to the personality of one individual and the continuity is broken when that person leaves the project”.

Finally, on page 44, paragraph 2 there are 12 lines of text stating that “one area causing great concern is the weakness of environmental impact assessments” It criticizes almost every aspect of EIAs.

In discussing “Mining Legacies” and the topic of abandoned mines it calls for priorities for action which are firstly to register the sites (I assume this means create a database to find out what is the magnitude of the issue) and secondly “address the most dangerous sites, where clean-up will offer the most benefits” I believe there is very little consensus in informed circles on this

latter priority. There is even public opinion evidence that the multiplicity of small problems may be more of a desired priority by “communities”

Pages 32 through 39 discuss the science of metals and the environment and issues that are part of Kyoto Treaty discussions and other international environmental actions. Whether these are relevant here is questionable and if the report needs to be shortened such could be cut without impacting the central theme.

Interestingly the first mention of exploration is under the heading of “How Mining Affects Biodiversity”. It notes that much exploration is done by junior exploration companies. These companies are secretive, rely on speed of getting in and out of an area and generally employ tactics “not consistent with long and reflective evaluation and permitting processes designed to manage impacts”. As a result “this may be where some of the minerals industries’ **biggest** biodiversity issues may lie”. This allegation is unfounded and we strongly object to it.

Overall suggestions are not so much to add any substantial section on exploration but to re-order the approach in the paragraph to re-examine the approach towards the writers’ understanding of the EIA process and why it shouldn’t be put in context near the beginning.

Chapter 11: A Life-Cycle Approach to Using Minerals

1. This document appears to be a major attempt at economic, social and political “engineering” on a global basis. Many of the overly-broad generalizations verge on mischaracterization of the industry. I view many of the statements in the document as a means to push an agenda that would result in a global economy that is very socialistic, rather than competitive. I feel this is a bad thing.
2. I see the SD argument as a way to “level the global playing field” by requiring all industry and national participants to internalize costs such as reclamation, community, regulatory, etc., that may be unaccounted for (externalities) in less developed parts of the world. This is a good thing.
3. There seems to be a serious lack of appreciation about the fact that all ore deposits are different and therefore their economics differ. It is necessary to explain that profitability is not just because of physical location (infrastructure consideration) or that the country has an easy permitting regime (politico-social environment), but because of grade, tonnes and geometry. These are the prime movers in making a business decision for a mining company.
4. Most of this chapter deals with downstream use of mineral-derived products – recycling, re-use, re-manufacture. There is virtually no connection made between mineral production and the use of minerals by the consuming public. So, most of this impacts very little on mineral exploration ---EXCEPT that it fails to sufficiently recognize that the life-cycle begins with exploration. If recycling cannot get above 40 – 80% of metal, exploration is still essential for mankind in the future

Just as the consumer has lost the connection between the source of materials used in the products purchased, the report seems to have lost the connection in the life-cycle of a mine with its discovery. As such, “product stewardship” would look at that part of the cycle which exploration controls – namely, the land/country that is the subject of the exploration activity.

5. There is discussion elsewhere of “NO-GO ZONES” for environmental, cultural, or social reasons. In our view, perhaps some areas of high mineral potential should also be set aside as “EXPLORATION AND MINING ECONOMIC ZONES”. In these areas mining activities would need to meet normal environmental standards, but could not be challenged on other grounds. This would fit under the MMSD issue of “LIFE-CYCLE ASSESSMENT” which incorporates value judgments to determine which technologies are “appropriate” for mining in a particular area. This is mechanism for incorporating all stakeholders, proximal and distal to the issue, into a decision-making process that is accepted as correct.

Chapter 12: Access to Information

1. The chapter focuses almost exclusively on environmental and cost data and recommends freedom of access to all company data, including translation into local languages. There is no reference to government responsibility to provide basic geoscience data as information;
2. There is little understanding of the role of information in exploration or of the role of the junior sector or even the mid-tier companies;
3. The exploration process is clearly not understood – company needs for data are described as relying “*heavily on new technologies in satellite imagery and information technology for evaluation of deposits*” The need for bedrock and surficial geology, geochemistry and geophysics and results of work done by other companies in the area of interest is neither recognized nor addressed;
4. The statement is also made that “*Microsoft products... are the default international standard for the format of much information*” and mobile phones and satellite communications make it easier to disseminate information. There is no reference to GIS or Geosoft or other software specifically designed for exploration results.
5. There is an offensive reference to “*leaders and laggards*” in corporate disclosure and, as “*leaders*” are described as having a “*higher profile*”, one must assume that all others including all junior companies are “*laggards*”. This is unreasonable and unfair.
6. There is a suggestion that “*one-size-fits-all systems of public reporting or a global reporting standard would be an extremely difficult initiative to develop*”. Given the recent progress in international reporting standards, I am not sure that is a reasonable statement. We have seen an international movement to standardize reporting methods.

7. The document speaks of “*Expropriation of indigenous peoples’ land....often without their consent or even consultation*” but makes no reference to expropriation of minerals rights again without consent or consultation.
8. The statement is made “*Without question the most complete disclosure on a mining project comes with presentation of an Environmental Impact Statement during the permitting process for new mines*”. To me this demonstrates a particular bias on the part of the authors, who are obviously not mining people. Disclosure is an ongoing process in the mining business particularly in the junior sector. Current standards of disclosure are sufficiently rigorous that all information is generally available in press releases, in Annual and other technical reports in the public domain
9. The final recommendation is for “*Establishment of a base of data on mining and minerals...*” The proposed database will have legal, financial, impact and benefit agreements, EIA guidelines etc but absolutely nothing on mining fundamentals, different types of deposits, metal and mineral markets.

Chapter 13: Artisanal and Small-Scale Mining

1. The chapter heading should really be “Artisanal and Small-Scale Mining in Developing Countries”. About 2/3 of the way down the second page this distinction is made;
2. There are some really broad generalizations in the introduction i.e. only large scale operations are economic and all Artisanal and Small-Scale Mines should eventually be made to disappear. This is not an informed comment. There is a place for Artisanal and Small-Scale Mines.
3. The chapter reports unsubstantiated claims re the Sutton Resources issue in Tanzania and references only Amnesty International in this respect. In other words the authors did not bother to check the other side of the story. While the statement is made “*The matter is controversial and has to be substantiated or repudiated*”, the damage is done and , to my mind reduces the credibility of the chapter.
4. Towards the end of page 25 re improving relationships between Large- and Small-Scale Mining, the authors suggest “*Where possible, NGOs or other local institutions should play the role of independent facilitators*”. There is an inadequate explanation as to why this should be the case. For example, in the case of Sadiola and Las Cristinas, no NGO facilitators were used.

Chapter 14: Roles, Responsibilities, and Instruments for Change

Overall comments:

1. There is an overall negative tone to the chapter that implies that few of the initiatives the industry has taken or is taking are worth anything.

2. Is this document only addressing Less Developed Countries – there is an implication that everything is fine in the developed world, but many of the issues and problems raised are not properly implemented in Canada for example. It refers to the decisions having to be made close to the location of any operation, but the Living Legacy decisions in Ontario were made in southern Ontario and decide the future of the north.
3. Not only does the document not address companies smaller than the largest ones, it also seems to be ignoring service companies (e.g. drilling companies, etc).
4. Page 3/4: should mention that exploration takes place in a context prior to the involvement of organizations such as the World Bank. Also, there are initiatives to improve practice at the exploration stage (E3)
5. Page 5: The text should be changed to say: “A mining act is the principal regulatory instrument governing mineral **exploration and** exploitation activities.”
6. Page 6: Second paragraph: The reason that mining codes do not usually address environmental issues is because they are often addressed by the environmental ministry in any specific country. The writing implies that this is an omission whereas it is merely a matter of which government department has jurisdiction. It should reflect this.
7. Pages 11: This section on Voluntary Codes seems unnecessarily negative. Given the view expressed here why does industry bother? There is no hard evidence given for any of the negative assertions, in fact statements are prefaced by such words as “as the argument goes”. These two paragraphs I think need rethinking and industry should be encouraged to have voluntary codes. This will certainly save governments a lot of money whereas passing more laws and regulations will only require policing.
8. Pages 11/14: Closure on mines. There is not one mention of the additional complexity of the issue around the mineral potential at closed mine sites. First of all, in many cases closed mines have later reopened due to new technology, new exploration ideas or other factors. The issue around the existing environmental concerns is a serious one, and yet a mine reopening could be a significant benefit for a society or community. The company seeking to reopen a mine might have had no involvement in the initial operation. This possible benefit of mineral potential that has not been realized at closed older mines should not be ignored. There are numerous cases in Canada where “new” mines have developed at old sites. This is sustaining the mining – the subject of this report – and also means any disturbance is at a location already disturbed.
9. Pages 18/20: Improving Industry Performance: The first paragraph refers to “many of the major mining companies are committed to the continuous improvement of their social and environmental performance”. Are there **any** major companies that are not committed to this? If not, why does it not say that “All major mining companies...” which I think is closer to the truth. Also, I would suggest that most of the mid size companies and many smaller ones are similarly inclined. So it should really say that “All major, mid size and smaller

companies are now committed to the continuous improvement of their social and environmental performance...”

10. On page 19 it refers to the Australian Code for Environmental Management and comments that only the largest companies have signed this. What do we know about this and why smaller companies have not signed up? It implies that the smaller companies have been negligent on this matter. Perhaps they were not engaged in the discussion by the parties involved?
11. The Sustainable Development Charter of the ICMM is said to not be supported by any except the few very large companies. Why? Are in fact the large companies treating the smaller ones in a similar manner as communities not being consulted? Have the large companies considered that perhaps reaching out to the smaller ones and signing them up could benefit all? There is no comment as to why only the largest companies have signed up. It is necessary to ask them why.
12. Page 24 – 25: Stakeholder processes: This section misses the whole point that prior to any mine development, explorationists have already interacted with local communities and often set the mood for relations. This needs to be pointed out somewhere. And then there is the issue of a company keeping consistent relations as the project changes hands from exploration through development to production.
13. Page 25: “Effective and trusted fora are required”: this is in the context that implies without it being said, that this is so in the developed world and not elsewhere. Trust works both ways. Companies, NGOs and governments all have to develop relations of trust, both in the developed and the less developed world.

Chapter 15: Regional Perspectives

The submissions from the various areas are very variable, with different approaches and so are not directly comparable. It is very difficult to comment on the chapter overall because of the diversity of views expressed.

1. Southern Africa: The Southern African section fails to address the issue of the relationship of mining title to small-scale mining (often without legal title) and that this can develop after a company has started exploration. There is usually an implication that a company comes in on top of small scale miners, but this is not necessarily so.
2. N America: There is a statement that there are seven fundamental questions that answers a project’s contribution to sustainability. Two of these are commented on below;
 - Environment: There is a statement that a mining project should lead to improvement in the ecosystem over time. Is this really a criterion for a project? Why? Surely as long as it does not significantly degrade the ecosystem why should it have to "improve" it. How do you improve an ecosystem beyond nature? This text should state that “a mining

project should not lead to a significant degrading of the ecosystem, but upon closure, should return it, as close as possible, to its original state.”

- Alternatives and Needs: One of the criteria is:
"have all reasonable alternatives been considered and has the need for the project/operation and the produced commodity been demonstrated, taking into consideration the current and future needs of the local community, indigenous peoples; the regional and national economy; the company and its employees, shareholders, and investors; national security; broader society; and the ecosystem”.

If the commodity is not required then it should not be economic to produce it. Otherwise what criteria are used to define "need" and how subjective are they? This seems a totally untenable way to approach the validity of a mining project. Surely, whether the product is needed or not (in other words "has customers") is the responsibility of the mining company to its shareholders, not to some other entity? If the company produces something that is not needed then no one will buy it and the company goes bankrupt. This question seems so loaded with subjective considerations (or as some call them value judgments) to be almost meaningless and unanswerable in any objective way.

3. Australia Section:

The Australian section is highlighted by having a positive outlook, which is quite refreshing!

Page 14: There are two interesting paragraphs here that refer to exploration. There is a statement that as metal prices drop, and exploration becomes less successful (due to limits on technology and databases) then we are transitioning to a world where reuse, recycling and reprocessing is going to become more important. "This strategy would offer more efficient management of finite minerals resources". Metal prices would only continue to drop from the present drop over the past two decades if either mankind reduces its use of metals or if supply increases. There is not sign in the near future of mankind reducing its use of metals so prices will not drop over the long term due to reduction in use. Without exploration, metal supply will eventually drop, due to exhaustion of existing mines, and thus it seems logical that reducing exploration would eventually increase prices. The only force independent of these two that can reduce metal prices is continued dramatic increases in productivity in mines. Without exploration to develop new resources, this would only exhaust existing mines faster. There is no question that we are transitioning to a world where reuse, recycling and reprocessing are increasingly important, but this does not mean that exploration will be less successful or less needed.

4. Indonesia Section:

Page 21: There is a recommendation here that a "landowner" have the right to reject mining. This is an interesting statement and not as simple as it sounds. What do they mean by "a landowner". Does that mean a mining company with a right to mine from a local or national government could be blocked by one landowner with 0.2 hectares of land? How could this be in the interest of a local community is most want the benefits of the mine – employment and economics – and one farmer opposes it?

The Indonesia section is quite negative in tone.

Philippines and PNG sections are reasonable with no outstanding issues to comment on.

Page 25: I would make a comment here that stakeholders in PNG should be involved in discussions before a plan for development is submitted (top paragraph), not at the late stage implied in the report. Noranda is doing this now with its partner, Highlands Pacific, at Frieda River at an exploration drilling stage.

5. Kyrgystan:

Page 28: There is an emphasis on the waste dumps from closed mines, but nothing on the loss of employment because the fiscal and political regimes do not encourage exploration. The necessity of both cleaning up old mines created during the socialist period and encouraging new ones, to create employment and wealth, needs to be stressed.

Chapter 16: Agenda for Change

1. Pages 2/3: This section appears to be addressing politics of how the mining business operates in relation to profitability, taxation, etc and not directly relating to sustainability. The discussion could be addressed to any industry, and in that sense does not really belong in a discussion of mining, metals and sustainability. For example, it is stated that the cost, benefits and impacts of mining do not fall equally on all. I am not sure what this is driving at, as this could be stated about all sorts of industries, or for that matter many things in life, and as it is so general it is not a very profound statement and does not really advance us very far in the discussion of sustainability.

There is discussion on trade-offs where industry is not willing to give up being profitable, development advocates do not want the poor worse off, and environmentalists and cultural rights activists may designate no-go areas for mining. These are not equivalent statements or trade offs and that should be made clear.

Industry, given the choice of operating profitably or not, will move its investment if necessary, so it really is a choice of a country whether to encourage investment or not. If a company is not present in a certain jurisdiction, it cannot be said to be affecting the country negatively if the country chooses to not have industry.

On the other hand, environmentalist organizations and cultural rights activists are not the only people who should have a say in how land is designated. The land does not belong to them, but to all the people who are stakeholders - locally, regionally and in the country involved. Note that earlier in the report it makes the comment about people from afar making the decisions for locals - that is what paragraph three on page 16-3 is implying and advocating! It seems to be the situation in the developed world, or Canada at least, that the people in local communities are enthusiastic to have mining and other business activities for the employment and opportunities they create for themselves and their families. On the other hand, it is the distant people, in the larger cities, which in Canada are in the south, that are opposed to development in the north. For example, the World Wildlife Fund is opposed in

general to mining in the Canadian north. The text should state that the people in the northern communities should have more influence over the development of mines in northern Canada than southern based environmental NGOs. However, if environmentalists from the south can designate non-negotiable no-go areas, people who want employment, mines and a decent standard of living should be able to designate "go" areas that are non negotiable and are open to environmentally and socially responsible mining projects. Actually, all of these decisions should be based on good science.

In conclusion this section should state clearly that environmental organizations should not oppose environmentally and socially sound mining projects that enable people living in remote areas to obtain good employment in well paying jobs. These will create a future for their communities which will mean their children will not have to leave the north to seek employment in the southern cities.

2. The chapter there are participants other than major mining companies in the mining and metals business, and then lists everyone (NGOs, governments, state corporations, manufacturing companies, artisanal and small-scale miners) **except:**
 - large, but not truly multinational companies
 - mid size companies (such as Echo Bay, Ivanhoe Minerals, Western Metals, Cambior, Agnico-Eagle, Goldcorp, Aur Resources)
 - junior exploration companies, some of whom might be next year's mid size producers

The smaller companies should also be listed as participants, and not in a spurious negative light.

3. Page 6: There should be a short section, similar to that on Review End Of Like Plans that covers "Review Exploration Programs" and addresses what community engagement is required in exploration programs. Exploration programs normally establish the first contact between the mining company and the community. It is essential, especially if the people are in a less developed area, that this be handled with sensitivity to the people, their culture, their environment, their local livelihood requirements, etc.
4. Declaration on Sustainable Development: Embodying a Commitment to a Sustainable Development Code.
This sounds suspiciously like a code to be developed between the major multinational companies that might not be totally accepted by the smaller operators and exploration companies. If the multinational companies want participation and buy-in from smaller operators then they are going to have to ensure that they are given an opportunity under reasonable conditions to participate in the discussions leading to any code. The text should recommend that the players involved ensure the participation of smaller producers and exploration companies for the good of all. Do "principal constituencies" include the smaller companies or just the largest along with the NGOs, governments, etc? This should be clarified.

The code is projected to require an independent audit by a reputable outside organization - it is not clear who that reputable organization will be.

5. Page 10: It would be good to see the PDAC Environmental Excellence in Exploration (E3) mentioned as well at the end of second last paragraph.
6. Page 12: Sustainable Development Support Facility
Maybe this is a good idea. Certainly "accidents" such as dam failures are a really major issue for the industry as a whole. But this concept seems to be unlikely to be successful. It is difficult enough to get companies to finance research that might have a bearing on exploration success or more profitable operation unless the benefits are quite clear. It seems unlikely that they will be keen to finance this. Also the budget does not really sound realistic at all at "few hundred thousand dollars per year". A single professional's salary with overhead will cost that. Then the person will require travel and other costs, an office, etc. This work of maintaining contacts, building a registry, cooperating with the UNDP etc is going to cost at least US\$1M. The additional duties suggested such as emergency planning, safety inspections, etc. will all cost more. The budget is unrealistic and should be changed to a realistic number.
7. Later at Page 15, it is implied that this facility would be started up by industry but would be independent of it. It is suggested that perhaps the NGOs might finance the "modest amount required" - this does not seem likely. In order for industry to finance NGOs to run the facility, the trust element mentioned previously in Chapter 14 (pages 24/25) will have to be very strong.
8. Page 15: Again there is a reference to major companies, environmental organizations, governments, etc wanting to move forward on the issue of protecting the environment through financial surety and a statement that smaller companies are incapable financially of providing a realistic guarantee. I am not sure what is meant by a realistic guarantee, but a guarantee that is proportional to the scale of the project should not really be an issue. Again, it seems to be implying that smaller companies are not willing to be responsible environmental players. This is unwarranted as mid size companies have to abide by the same rules as the major companies do. Their projects are just smaller and so have proportionally less risk. Interestingly enough the text suggests that artisanal miners and that at the smallest scale cannot be handled this way, but in fact they are the ones usually causing the biggest headaches - e.g. mercury in the Amazon.
9. Page 25: It is suggested that courses covering economic, environmental, social and other issues be included in mining courses for professionals. This is an excellent idea.
10. Page 26: It is disappointing that here and in the bottom of page 27 the concept of exploration/mining being conducted in a manner that preserves ecosystems is not mentioned or considered more strongly. There is an implication in page 27 that the only benefit of mining is to provide money that can be used to preserve ecosystems. It may be unfair here in that it is not clear what - "develop a package of published "better practice" guidance on mining in IUCN protected areas categories V and VI - means. I think this should have been stressed more strongly and perhaps it is in the section on Land Use? This section should be expanded and clarified.