

International Council on Mining and Metals

Response to the Draft MMSD Report

16 April 2002

INTERNATIONAL COUNCIL ON MINING AND METALS
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An Association under Canadian Law

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ICMM

INTERNATIONAL COUNCIL ON MINING AND METALS

16 April 2002

Mr Luke Danielson
Program Director
MMSD Project
1A Doughty Street
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Dear Luke,

The International Council on Mining and Metals (ICMM) is pleased to have this opportunity to review the 4 March 2002 draft of the Mining, Minerals and Sustainable Development (MMSD) Report. As the result of an intensive and independent process of analysis—one that involved literally thousands of individuals worldwide—the draft MMSD Report represents a singularly notable and unprecedented level of achievement for this sector. On behalf of ICMM, I would like to express our sincere appreciation for the work undertaken by the entire MMSD team, including the key role played by the Assurance Group. We also acknowledge with gratitude the important support provided throughout this process by the International Institute on Environment and Development, and the World Business Council on Sustainable Development.

ICMM's comments on the draft MMSD Report are attached to this letter. They reflect an extensive internal review process involving ICMM members and staff and have been organized into the following three categories:

- General Observations
- Policy Oriented Comments
- Technical and Editorial Comments

While the attached comments reflect a strong commonality of views of ICMM members they do not necessarily represent overall concurrence. This reflects the manner in which individual input was submitted to the ICMM Secretariat. The attached ICMM comments were designed to provide the MMSD Work Team with a wide array of constructive suggestions for improving the final MMSD Report. Also, please note that some ICMM members elected to submit comments directly to MMSD where they identified company-specific issues they wanted to be certain were addressed during the public comment period.

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To provide an overall context for ICMM's response to the draft MMSD Report—as well as identifying key areas our members hope will be addressed before the final document is published—we emphasize the following additional points:

- **Multi-Sectoral Engagement:** While the MMSD process represents a significant undertaking, there were, as you have acknowledged, a number of shortcomings in the draft Report. From ICMM's perspective the lack of meaningful engagement with some key governmental and civil society interests represents a significant deficiency in the MMSD process. We recognize this situation was, at least in part, beyond MMSD's control. We feel it has, however, resulted in important limitations regarding certain aspects of the draft Report. Among others, this includes the lack of case studies demonstrating how to effectively and actively engage the wide range of interests who need to be thoughtfully involved in relevant engagement processes in the future. It would be quite helpful if the MMSD Work Group would consider and provide insights on these important matters in the final document.
- **Transparency:** The draft MMSD Report describes accurately a number of valid issues that must be addressed in order to enhance the mining, minerals and metals sector's contribution to sustainable development. It elaborates on the business case for sustainable development and stresses the importance of all parties taking a transparent and integrated approach to decision-making. We support those views and encourage MMSD to emphasize that all parties who are committed to making meaningful progress must do so in a reasoned, responsible and transparent manner. Little will be accomplished by the continuation of the negative and divisive tactics that have characterized much of the debate involving this sector in the past.
- **Recommendation Priorities:** The lack of specificity in how various recommendations were developed, their substantive basis, and/or their relative importance for future actions, was another significant shortcoming of the draft Report. Clearly, not all recommendations are of the equal importance, or can be taken on board concurrently. Priorities must be established. The failure of the draft Report to develop particular issue themes from analysis, to discussion, to suggested remedies makes it quite difficult to rank and establish such priorities for future actions. ICMM will, of course, have future program priorities that may not have been identified by MMSD. It would be quite beneficial, however, if all parties had a clearer sense of relevant priorities—and their substantive basis and/or sources of origin—that have been identified by the MMSD process. Thus, we hope that major issues and recommendations identified by the MMSD Work Group will be rank ordered in an appropriate manner in the final document.
- **Metals:** The treatment of the metals portion of the overall minerals cycle, and its fundamental contribution to sustainable development, was inadequate. In the attached comments we have made a number of suggestions for priority topics that should be addressed in the future. We think that it is very important they be included in the final version of the MMSD Report.

- **Role Differentiation:** There is a clear need for the final MMSD Report to differentiate between the respective proper roles and responsibilities of industry, government and civil society. There is seemingly an imbalance in requiring much more responsibility from industry (and we agree ICMM members have significant responsibilities for providing performance-based leadership), than from other relevant sectors. We believe it is inappropriate for industry or civil society to assume the role of government, as suggested in many parts of the draft MMSD Report. We also believe that there needs to be much more emphasis on capacity building, transparency and accountability for all parties—including governmental and non-governmental organizations—at all levels of society.
- **Positive Progress:** While there is little disagreement that much remains to be done to improve performance in the mining, minerals and metals sector, significant progress has been made in recent years to improve environmental protection, social responsibility (including local community engagement) and industry's worldwide contributions to economic progress. We acknowledge that specific examples of poor performance can and have been identified in various places in the draft Report, but many more examples of good, improving and improved performance exist which have not been mentioned. Failure to provide appropriate examples of the positive progress the industry has made in developing and implementing best practices in a number of areas detracts from the overall quality of the draft Report. It also understates the contribution this sector can make to sustainable development. We encourage you to address these matters before the Report is published in final form.
- **New Institutions:** Previous independent evaluations of complex issues involving natural resources management and economic development have often concluded that new global institutions are required to address various challenges. The draft MMSD Report is no exception—it suggests the establishment of several global institutional and/or related “global governance” types of processes. While no one argues that certain global institutional structures are necessary, it is ICMM's view that no “new institutions” should be created at this time to address the relevant issues and/or recommendations contained in the draft MMSD Report. We believe far more progress can be made—and made more effectively and efficiently—by developing the necessary capacities within existing organizational structures at the relevant local, national and international levels. Further, we support the notion of active and informed local participation in the development of sustainable development programs, as well as appropriate governmental regulation and oversight (much of which is in place and effective in countries where significant mining occurs), and encourage MMSD to emphasize these matters in the final Report.
- **Governance:** While there are a number of critical governance related issues that need to be addressed (from both economically developed and developing societies), the draft MMSD Report has an unnecessarily negative tone towards the capacities and competence of the governmental sector. This tone, along with the fact that a number of the recommendations appear to challenge directly the sovereignty of national governments, may well impede the

effective engagement of the governmental sector as active and effective partners in the future, particularly on those recommendations within their areas of jurisdictional responsibility. Governments play absolutely key roles in the environmental, social, economic, and governance aspects essential to sustainable development. Therefore, we encourage MMSD to recognize in their final report that these key responsibilities must be pursued with competence and integrity by governmental entities—as well as others—in as positive and supportive a manner as possible.

- **Global Standards:** The draft Report provides a strong emphasis on independent certification of industry performance to demonstrate compliance with as yet unidentified global standards. While this may be laudable in concept, the value of such efforts could easily be lost in the maze of differing regulations, community expectations, and project specific circumstances. Further, the value of independent certification schemes in terms of their costs and benefits, or in achieving actual meaningful, on-the-ground progress, has not yet been demonstrated for any public or private sector activity anywhere in the world. Common sense dictates that this concept requires additional professional analysis and substantial informed deliberations before serious and thoughtful actions can proceed.

ICMM members are committed to improving performance and transparency and expect to move forward with those activities that are prudent, high priority for the industry, and will produce meaningful results. In this respect, ICMM has initiated a review of its existing Sustainable Development Charter with the aim of establishing a more comprehensive framework that contains global principles, performance indicators, third party verification mechanisms and public reporting requirements. We believe that those initiatives that focus on project-specific input—particularly involving active local input—will be much more productive and cost effective than those that emphasize prescriptive global norms that may have little applicability in dealing with actual situations at specific sites of operation. Further, we think the global focus should be on developing capacity building processes and a strong science-based information network for local interests to access and apply to their particular situations. We hope the relevance and importance of such considerations can be highlighted in the final MMSD Report.

- **Terminology:** The draft MMSD Report emphasizes the importance of “vocabulary” and how different groups view different concepts. Rather than overcoming this situation by helping to develop a common and acceptable “vocabulary,” the Report could well make this situation even more difficult. Indeed, key terms such as “stakeholder” and “prior informed consent,” are not well defined. For example, there is in some places an implied notion that all stakeholders are equal in terms of the decision making process associated with mine development. This is simply not the case. Impacts of mining are the most significant at or around the communities where such development activities occur. Accordingly, those communities should have a stronger and more active participatory role in the decision-making process than those not impacted directly by a particular situation.

Further, this lack of definitional clarity has implications for discussions related to, among others, multi-stakeholder engagement processes, the decision-making authority of various parties, and potential compensation negotiations. As we have noted in the attached comments, this could well lead to unrealistic expectations that cannot be met by any of the parties involved. We encourage your further clarification of the definition of terms (and their respective boundary conditions), such as “stakeholders,” “shareholders,” “interested parties,” “constituencies,” “communities of interest,” and “prior informed consent.”

- **Analytical/Technical Competence**: Sound science, meaningful social and economic analysis and solid technical competence are the basis for both responsible public regulatory policy and appropriate private management actions. The final MMSD Report should make the point with absolute clarity that all interests will be served best if the actions of all parties who are committed to making responsible progress to improve the performance of the mining, minerals and metals sector and its contribution to sustainable development are grounded in these basic principles.

Conclusion

In closing, it is important to emphasize that ICMM acknowledges that the draft MMSD Report has identified numerous issues that require serious consideration and positive future actions on the part of ICMM members, the rest of the industry, governmental bodies and civil society organizations.

This draft Report and the process on which it has been based, represents an invaluable contribution to better informing the substantive deliberations of all interested parties. We look forward to discussing these important matters at the May 12-15, 2002 GMI Conference in Toronto. Upon the close of that event, the ICMM Governing Council will meet to discuss and establish guidance for taking our priorities forward. It is anticipated a policy-level statement of intent will be adopted and serve as the basis for guiding the development of our sustainable development work program for consideration by the ICMM Council at its annual meeting in London in early October 2002.

Finally, the MMSD process, from its inception, has been about providing independent and professional analysis of the key issues and opportunities for improving the performance for all who are associated with the mining minerals and metals industrial sector. This has been a daunting task. Fundamentally, the challenge has been, and continues to be, about providing leadership. ICMM’s Governing Council has established a very clear sustainable development mandate for providing inspired, positive leadership that enhances this sector’s transparency, performance and contributions to sustainable development worldwide.

Now, the common goal for all parties must be to establish a meaningful framework around which constructive engagement and real progress can occur in the future. To that end we are confident that with clarity of purpose, hard work and dedicated leadership we can—and will—move forward in a progressive and forthright manner, and in ways that put in proper context the positive and essential contributions this sector makes to the achievement of human progress and global sustainability.

Thank you and best wishes.

Sincerely,

Jay D. Hair
Secretary General

Copy: Richard Sandbrook, Project Co-ordinator, MMSD Project
ICMM Members

Part I: General Observations

This ICMM document has resulted from a review process that included the efforts of numerous individuals and member organizations. Within the limits of time, ICMM's comments have been provided on a chapter-by-chapter basis. This has yielded a broad overview of the draft MMSD Report. However, to recognise several cross-cutting issues the following general observations are provided:

- The final MMSD Report should attempt to frame the debate for the major issues such as performance standards, abandoned sites, a technical facility, prior informed consent, improving government capacity, 'go - no go zones', life cycle analysis, etc. One needs to see the polarity of possible perspectives around each of these issues, the implications of one course of action versus another, the vested interests of different actors, etc. It would be quite beneficial if the MMSD Report could frame the debate for the major issues at the end of every chapter, as well as Chapter 16.
- The MMSD Report should provide a clear indication of the respective priority issues and recommendations. For example, using defined criteria such as risk management, sustainability, transparency and governance, participation, and so forth. How should industry and the other actors sort through the possible action items to decide which will deliver the most cost effective contribution to advancing mining and sustainable development? Does the MMSD group have any suggestions as to the factors that would enter into a prioritisation process?
- The MMSD Report would be improved substantially by elaborating upon the general sources for the recommendations contained in the Report and the degree to which the MMSD Work Group supports them (i.e., was a particular recommendation some individuals view or, was it the result of the outcomes of particular multi-party engagement process?).
- The Report alludes to, but gives no guidance or even analysis of, the trade-offs that may need to be made to achieve the best Sustainable Development (SD) outcomes. Some examples might include:
 - recognising the 'rights' of artisanal and small-scale miners (ASMs) versus the national interest in the optimal mining of an ore body;
 - local participatory democracy versus national laws, administration and sovereignty;
 - good environmental outcomes (e.g. a commitment to avoid riverine disposal of tailings) versus local community preferences and development¹.

The MMSD Report often portrays a simplistic view of otherwise complex issues. For example, the Report conveys the view that the industry has many negative effects; that measures to rectify these effects will in themselves not have any negative effects; negative effects should all be rectified simultaneously (no prioritisation is provided), under the watchful eye of international supervisory

¹ E.g., OK Tedi is continuing mining to the advantage of local people and the PNG government, but at the expense of the ecology of the Fly River system.

bodies. In practice, trade-offs exist at every level and decisions need to be made between mutually desirable, but exclusive, objectives.

- The examples of industry practice used in the Report are often negative and out-of-date. Apart from giving an unbalanced account of the industry, there is no learning or guidance provided for ways in which the performance of poorer performers might be improved. It would have been far more positive if good practices were recognised as making a contribution to SD.
- Little or no practical guidance is given to the industry of ways to put the recommendations contained in the Report into best effect. For example:
 - how to gauge community preferences;
 - how to deal with minority opposition to a project;
 - how to avoid ‘involuntary’ resettlement;
 - whether those without legal title to land should be treated in the same way as those with legal title.
- The weight of recommendations is placed at industry’s door, with no analysis of the consequences of attempting to meet them (e.g., costs, feasibility of projects, effects on government, desirability of company social provision). No advice is given for the determination of appropriate boundaries between company and government responsibilities.
- From experience in multi-stakeholder processes, it should be noted that the MMSD activity has a number of shortcomings and these should be acknowledged:
 - Governments as owners of the resource have a primary interest and responsibility in their development. They were not adequately drawn into the MMSD process.
 - Since civil society interests, particularly some within the environmental community who have aggressively sought improvements in industry performance, chose not to participate in the MMSD process. The reasons for this are well documented.
 - Industry, subject to the varied pressures for improved performance, made the process arms-length for purpose of credibility. Unfortunately, the process was so arms-length that some workshops and sessions were not well-informed from an industry perspective (either the representation was too limited and/or the representation was not at the right level).
- The end result is a draft Report which has much value but the value must be tempered by the above process shortcomings which manifested themselves in the following content limitations:
 - Lack of balance between coverage of ‘metals’ issues and ‘mining’ issues.
 - Content which overly reflects input from an academic/consultant perspective rather than experienced industry professionals.
 - A Report where it is difficult to follow the thread from issue to analysis to discussion to suggested remedy. This also makes the necessary step of

ranking/priority setting of the options presented that much more difficult.

- There is a view among some ICMM members that the implications of mining for indigenous groups cannot be dealt with effectively at a global level because of the diverse nature and needs of indigenous groups. The overwhelming majority of Africa's peoples can be regarded as indigenous. In Africa, most tribal groups would consider it more dignifying if all their needs were addressed by laws applicable to all citizens. The sensitivities are such that special provisions, within certain countries such as South Africa, would be regarded negatively.
- The MMSD Report does not sufficiently emphasise the role of mining as a 'foundation' industry – one which provides the critical materials on which all worldwide development and human progress is based.
- The MMSD Report overplays the impact of "*Dutch Disease*" on mineral dependant economies in terms of the currency appreciation impacting on traditional export industries. This may not be true of most developing countries where no traditional industries exist and where mining can galvanise development and industrialisation. This should be clarified in the final MMSD Report
- The Report should recognise the dichotomy of the industry. Mining-related issues are inherently local requiring engagement of the principal stakeholders at this level. On the other hand, the downstream use of mined products is a global issue because of the global nature of their use.
- Multiple recommendations are presented without ideas for implementation, the cost of implementation, the responsibility for bearing that cost, or methods for assuring the accuracy of information to be included in the international databases.
- Additional general observations:
 - A general tone of pessimism with respect to globalization, free trade, free markets, etc.
 - Key concepts or terms such as "*stakeholders*" and "*prior informed consent*" are not well defined. This lack of clarity has implications for discussions related to, among others, multi-stakeholder engagement processes, decision-making authority of various parties and compensation negotiations.
 - A generally negative view of governments, in terms of their capacities and competence that will make it difficult to engage their support.
 - A number of proposals challenge the sovereign rights of national governments.
 - A lack of clarity in terms of the source of many opinions and proposals that are put forth throughout the Report.
 - There is a need to stress the use of sound science and socio-economic analysis as the basis for establishing appropriate policies and regulatory frameworks.

Part II: Policy Oriented Comments

Chapter 1: The Minerals Sector and Sustainable Development

- MMSD needs to rethink its use of the term “*stakeholders.*” There is the implied notion (despite the five categories of stakeholders noted in Figure 14-1, page 14-23), that all stakeholders are ‘equal’ in terms of the decision making process. It would be helpful if MMSD would adopt language that recognized the differences between such terms as, “*stakeholders,*” “*shareholders*” “*interested parties,*” “*constituencies,*” (i.e., primary, secondary, etc. for which the basis of being a constituency is based on a mutually recognized exchange of value) and/or “*communities of interest.*”
- Likewise, the concept of “*prior informed consent*” (page 1-15, first bullet, last section) will lead to the same problem of raised, and unfulfilled expectations unless it is given a thorough analysis to develop a formulation that is fair and reasonable and can be accepted by most stakeholders. What does it really mean? On the surface it suggests that before any mining activity could proceed all of the stakeholders would have to ‘be informed’ and ‘give consent’ to the action. Common sense dictates that would be totally unrealistic proposition.
- It is surprising to check the Bibliography for the entire MMSD draft document and to note the obvious lack of reference (i.e., only two were listed) to major, peer-reviewed publications produced by the commodity associations and by the International Council on Metals and the Environment (ICME).

For example, one would have thought that at the appropriate places in the document the MMSD staff would have cited and referenced the following ICME Reports:

- a. A World of Metals
- b. Mining and Indigenous Peoples
- c. The Management of Cyanide in Gold Extraction
- d. Eco-Efficiency and Materials
- e. Tailings Management
- f. Recycling of Non-Ferrous Metals
- g. Hazard and Risk Assessment Methodologies

To not reference such obvious and relevant documents to the mining and metals industry casts doubt on the extent to which the MMSD Report objectively covered the respective topics.

- The Report’s first use of the term “*consumption*” of scarce resources—appears to be based on a layman’s view of the so-called—and largely dismissed—“*Limits to Growth*” premise that resources are scarce and non-renewable. Metals by the very elemental nature are not consumable but are used and then can be recycled infinitely without loss of their original properties. This distinction must become common understanding if informed, science-based regulations regarding the use of industry’s products are to be developed in a responsible manner in the future. See 1-3, Para 4 and 1-9, Box 1.1, Para 2.

- The term “*dissipation*” first occurs within a comment on 1-18, “*uses that dissipate minerals should be phased out*”. The term “*dissipation*” is not defined or used elsewhere in the Report. Neither is this remark substantiated in the Report. It appears here as a statement or credo which is both unfounded and unsound. Later chapters correctly acknowledge that it is not always environmentally desirable to recycle everything. It follows that 100% recycling will not be possible for any material - so all uses will be to some extent “*dissipative*”. Linked to this is the broader issue of dispersed/ dispersive/dissipative uses. The Report mixes these up. There needs to be more precision in the language and definition of what is meant by “*dispersive use*” and “*dispersed use*”. These are really two very distinct forms of use with very different implications in the context of sustainable development. The terms however are not inconsistent with sustainable development. The qualifier for dispersive use is whether the benefits outweigh the long-term loss of access to the resource whereas the qualifier for dispersed uses is collection, sorting and treatment of consumer/mixed waste.

Chapter 2: Producing and Selling Minerals

- 2-10: We caution against the use of the word “*consumption*” and its derivatives. Consumption occurs when a material is changed irretrievably to something else. The term consumption of metals should be replaced by ‘demand for metals’. To apply the term consumption to all minerals and metals as this chapter does is often incorrect. To illustrate the point: a concentration in nature (a deposit) may be ‘consumed’ to produce metal ore, and the ore ‘consumed’ to make a concentrate, etc. But it is the deposit that is being exhausted, the ore that is being transformed. The metal is constant. It is an element. It cannot be created. It cannot be destroyed. It cannot be ‘consumed’. It can always be recovered as metal again (although in some instances environmental and economic costs may argue strongly against such an action). Specific examples where the word can be misleading and therefore inappropriate can be found in paragraph 3; “*Nickel, for example, is largely **consumed** in stainless steel....*” should be replaced by ‘Nickel is **used** in stainless steel’ (and can, should one wish, be recovered as nickel again). A word search will reveal numerous other examples. Speaking of consumption as this chapter does allows misconceptions to persist regarding security of supply and the ability to meet the needs of future generations.

Chapter 3: A Profile of the Minerals Sector

- There is a need to underline that although the industry’s products are essential for society to function, the user has not had to pay for the increasing costs of improved performance on environmental, health and social issues. The returns as stated in the last sentence on page 3-3 are an important point –the industry has not been able to generate a competitive rate of return on capital investment and this is not sustainable.

- Consumers Section: It is implied that increased co-ordination between metal producers and their key consumers is required to enhance sustainability. What kind of pressure could be brought to bear on the actors to facilitate such co-ordination?

Chapter 4: The Need For and Availability of Metals

- The role of all minerals in enabling economic development needs to be stressed. It is virtually absent from the Report. Development is impossible without minerals, and especially metals.
- The discussion on availability seeks balance in defining both the ‘pessimistic’ and ‘optimistic’ views regarding limits. In so doing, the discussion underplays the importance of technological innovation and improvement and the role of consumer demand in the ‘market’ in determining production.
- The discussion of ‘need’ vs. ‘demand’ is superfluous unless one of the objectives of the Report is to enlist support for the prohibition of certain types of consumption, based not on risk assessments of specific mineral products, but the effect on global sustainability.
- Whilst the various positions and factors affecting the assessment of long term availability are discussed in the Report, the presentation of the information in tables 4-1 and 4-2 is open to misinterpretation. A clear explanation of the terms reserves; resources and resource base should be inserted within these tables.
- 4-5, Para 4: First sentence: It is important to distinguish between ‘resource renewability’ and ‘material renewability’. For example, while it is correct that metals come from a non-renewable resource, metals are in fact ‘**renewable materials**’. This is because metals are elements and their properties can be fully restored when recycled. Recognition of the specific characteristics of metals in government policies and product design/material management strategies can have a major impact on the availability of minerals. This point should also be reflected in the discussion on p. 4-11, *Assessing Long-term Availability*.²
- The chapter should provide greater focus on minimising externalities, and where this is not possible, making those patterns of consumption pay for the externalities that cannot be internalised. The concept of user pays is vital to minimising economic distortions, and should be a strong theme in all this work.

² See ‘Eco-efficiency and Materials’, Five Winds International, April 2001 and ‘The Mining and Metals Industries: Progress in Contributing to Sustainable Development’, Working Paper, ICMM, February 2002.

Chapter 5: Case Studies on Minerals

- The chapter fails to acknowledge or recognize the full contribution to livelihoods made by the mining industry and use of minerals products. The chapter gives only a very cursory look into the uses that make metals so important. There is an opportunity in this chapter to highlight some of the important roles that metals play in society and how integral they are in every day life.
- Case studies are provided for some minerals and metals but not others. There would be value in better clarifying the reason for each case study and what it is attempting to achieve, including a clear and specific conclusion for each.
- An overview of industrial minerals would be useful in illustrating more ubiquitous uses and high-tech applications in modern life, and more direct consumer linkages.
- The word “*consumed*” is misused when talking about metals and also some minerals. Gasoline is consumed; copper on the other hand is used, remelted, recycled and reused ad infinitum. The distinction needs to be made that metals have an important competitive attribute, which is that they are reusable due to the fact that they are elements that are indestructible. This will become increasingly important as the evaluation of life cycle becomes more prominent.
- 5-12, Para 3: The introductory sentence “*Poor enforcement of regulations hinders the collection and recycling of scrap*” does not seem to be supported by the statements that follow on non-compliant recyclers driving compliant smelters out of business. The following discussion illustrates some difficulties encountered by the industry to fully develop the recycling of metals and thereby further contribute to sustainable development. It could be included as a box discussion to amplify upon the subject of this paragraph.

Obstacles to Development of Recycling

The metals industry has been recycling for centuries. Production processes are designed for primary or secondary non-ferrous metal production or for a combination of both. The technology developed has been based on the experience acquired throughout centuries of metals production. The long held association between primary production and recycling within the non-ferrous metals industry determines today that one cannot exist without the other.

Because of the commodity nature of metals, the non-ferrous metals industry has always been exposed to, and operating in, an international environment – this is especially so in Europe where the wealth of local ore resources is extremely limited and makes the industry structurally dependent on external sources of raw materials supplies. In response the production of non-ferrous metals from secondary sources (scraps and other so-called secondary raw materials) has progressively intensified. Development and promotion of recycling is an increasingly dominant factor of product related policies in the EU and is seen by many as a positive driver towards sustainable development.

The operation of the international and EU market for recycling, and the accessibility of raw materials, are a key factor in the development of recycling in the non-ferrous metals industry. It is essential to avoid that, while promoting recycling on the one hand, trade and effective access to recyclable materials is penalised by inappropriate application of a waste legislation to high added-value raw materials for the non-ferrous metals industry.

The points listed below illustrate a number of existing obstacles to the effective development of the recycling of metals:

Definition

In drawing a line between waste and raw material, reference has to be made to the existing definition of waste in particular the notion of “discarded material”. According to international and EU legislation, a waste is a material that is produced involuntarily and therefore does not meet demand or concrete specifications for demand. The use of a material as feedstock in a production process, for example the production of new metals, should not be associated with the notion of discarding. The non-ferrous metals industry attempts to maximize the uses of recyclable materials to produce new non-ferrous metals. These recyclable materials are not discarded.

In the case of precious metals, the extremely high value of these materials determines that the industry has never had an interest in discarding materials as waste. Considerable efforts are made to conserve and maintain ownership of the precious metals at all times, regardless of their physical form. Economic requirements have led to the development of increasingly complex and expensive processes with the aim of constantly improving speed of recovery and recovery rates of precious metals from both primary and secondary sources.

The best management tool for metals is recycling, in order for them to remain available for future generation and to keep them out of the waste stream for final disposal.

Market distortions arising from waste legislation in the European Union

In line with the requirements of the Basel Convention, the EU Council Regulation 259/93 establishes specific provisions for the monitoring and control of transboundary movements of waste, including valuable materials such as non-ferrous and precious metal scrap and residues. Regional differences in the interpretation of the classification of materials, varying financial guarantees and notification fees, administrative harassment and the resulting time delays in shipments, all amount to competitive trade distortions. For example the costs incurred by the European non-ferrous metals industry as a result of the implementation of Council Regulation EC 259/93 are seen in terms of loss of business and distortion of trade flows, additional financing costs arising from abnormal delays in shipments due to lengthy administrative procedures, administrative costs incurred both internally and externally in terms of the time devoted by companies to the administrative follow-up of the procedures and of actual fees and guarantees charged to the companies. Experience has shown that EU Council Regulation 259/93 makes scrap metal, the major domestic source of non-ferrous raw materials, more costly and more difficult for the industry to access which in turn discourages the recycling of secondary raw materials, an activity that is both environmentally and economically justifiable.

VAT on scrap is an endemic source of fraud, in view of the fact that the complex structure of the recovery sector and its large number of operators and intermediaries make it practically impossible to trace back secondary raw materials. For these reasons, a number of EU Member States have opted for derogation regimes, however these have not been implemented in a consistent manner across the EU leading to further distortions in competitiveness. Fraud cannot be eradicated and considerably distorts scrap trade - it may result in significant tonnages of scrap being exported when they could have been domestically refined.

- 5-14, Para 3: States “*Legislation directing producers to take responsibility for recycling their products at the end of their lives could increase the rate of recycling...*” The reader is quite incorrectly guided towards the conclusion that primary copper producers can and should be legislated to take responsibility for re-processing all types of copper scrap. It is incorrect to infer that the primary copper producing industry should be accountable to manage the recovery of copper from even uneconomically processable scrap materials. The market is the most efficient mechanism to decide if the copper in scrap is economically recoverable.
- 5-21, Para 1: Stating that the policy followed by central banks will be the dominant determinant of future gold price is a simplification that overlooks the influence of interest rates, U.S. dollar strength, inflation, political uncertainty, and the performance of the equities markets.

Chapter 6: Viability of the Minerals Industry

- The chapter does not fully address the ‘financial viability’ of the minerals industry. There is a lack of information about historical performance or likely future trends. Issues going to the heart of viability such as return to shareholders, the incidence of bankruptcy, the incidence of loan defaults, the longevity of players (e.g., turnover of junior miners) and the declining real value of products are not discussed, or mentioned only in passing.
- The chapter’s focus on major metals and minerals companies is a drawback. The chapter’s title refers to the minerals industry. However, the discussion within the chapter is limited to the analysis of major minerals and metals companies only. A study of the performance of smaller companies, artisanal and small-scale miners (ASMs) and state-run mineral enterprises would be more representative. Typically, the larger global companies are the most financially successful and resource-rich, and have the ability to respond to the SD challenge, compared with the smaller local and/or less profitable players.
- The chapter does not include any discussion on the significant issues associated with the Chinese and former Soviet Union industry’s performance or viability. These countries represent a significant proportion of the world’s minerals industry and are undergoing considerable change.

- The chapter does not refer to the problem of substitution or replacement of minerals for other kind of materials, perhaps one of the most important issues that this industry must currently face and that is deeply linked with the price of metals.
- Price of minerals – lower prices are treated as very bad news for the business case for sustainable development and for the industry as a whole. However, such decreases are definitely good news for the consumer. Could this, in turn, result in good news for the industry? The issue is not addressed at all.
- The section on the business case for sustainable development and similarly the notion that “*There is little room in this sector to make dramatic gestures from retained earnings or profits*” (page 6-3) is a good one – a concept not yet embraced by all of the industry, governments and the financial community.
- The approach in outlining the business case for sustainable development is heading in the right direction. While there is currently wide diversity in the industry with regards to implementation of sustainable development initiatives, Box 6-1 provides an excellent listing of the many initiatives that leading companies are taking to move in that direction.
- Stressing the need to continue efforts to improve worker health and safety in mining activity is an important issue that needs advancing around the globe.
- 6-16: Human resources management decisions are usually linked to local conditions, locations of operations, etc. Therefore, they should be left in the sphere of local management and negotiations and agreements with relevant parties. General or global proposals aimed at influencing human resource management decisions within companies are not the best approach.
- 6-18: Regarding ILO, every company has to comply with the agreements in terms of labour practices contained in the various ILO Conventions that governments have subscribed. Addressing labour-related issues are key ones for any business. However, it seems ill advised to give ILO—or other comparable entities—any special or additional roles relative to compliance with global codes or norms that might be developed for this sector in the future.
- 6-28: Technological improvements are essential for the continued viability of the mining and metals industry—as well as its contributions to the achievement of sustainable development. What is required is to develop a flexible work force and support to communities that can adequately cope with the impact of technological changes. In such circumstances, restrictions on technological advances that may affect employment stability or other similar issues would not be appropriate.

Chapter 7: The Control, Use and Management of Land

- The chapter describes valid issues relating to land tenure, royalties, indigenous peoples and resettlement issues. As noted in the Report, developing and operating mines in poorly defined or contentious governance systems has caused

considerable difficulties for the industry. The discussion on protected areas is balanced, providing good arguments on both sides of the issue as well as the challenges that will need to be addressed in moving forward. There is a great overlap of interests that exists between conservationists and responsible mining companies.

- Examples to back up what is being said should be included wherever possible. Although many aspects of issues are described in a plausible way, they are often couched in less than assertive language—“*may*”, “*might*” etc. This makes it sound as though there is no evidence for what is being said and the views are just the authors’ opinions and even prejudices.
- The interpretation and application of the term “*prior informed consent*” needs to be clarified. In Australia, prior informed consent means the power of veto, that is; the right to stop development and if necessary override the interests of other parties with an interest in the outcome. A number of questions need to be asked of the draft MMSD Report: Is this the definition intended and is it to be applied to all situations? With respect to application, how is prior informed consent to be obtained? Is a majority vote or a full consensus of the community required? In the case of indigenous communities, is it to be decided by traditional customs and practices? What if several or more people object to a community decision? In Australia with relatively advanced legislative frameworks governing indigenous rights, veto powers have only been provided in a limited number of Acts (that came into effect in the late 1970’s and early 1980’s) and apply only to aboriginal land in the Northern Territory and South Australia. Even the more recent Native Title Act doesn’t accord veto powers to native title holders.
- Boundaries with respect to the use of the term “*stakeholders*” need to be more clearly defined. As presently used in the MMSD Report, the term seems to include anybody who claims to have a relationship with land from which they derive benefits, even if they do not have land rights that are recognized by the State. The lack of clarity regarding the geographic boundaries of an operation’s area of influence/impact also makes it difficult to determine the people or groups that should be given stakeholder status. If the term is defined and applied too broadly, it will be difficult for companies to identify who are the legitimate stakeholders and to negotiate agreements that provide full and fair compensation to all of them, as repeatedly demanded throughout the Report.
- 7-13, Para 3: The statement “*For example, in many countries substantial numbers of people have no legal right to occupy any land. A focus on compensation to legal landowners leaves millions of people out completely*” requires further consideration. Regarding legal rights to compensation, it is important that distinction be made between those who have legal property rights, those who have traditional claims to land recognised by law and those with no legal rights (e.g., squatters, itinerant dwellers, etc.).
- 7-35: The proposal to establish an international body of indigenous peoples raises important issues with respect to international governance and national sovereignty. Indigenous peoples’ groups and their capacity to engage on issues differ the world over. This raises important questions regarding the practicality

and effectiveness of such a new international body. The costs and benefits of this proposal need to be more carefully studied.

- The chapter does not properly address the influence of secondary development as a complicating factor in land issues. This phenomenon can be a socially destructive consequence of mining development. The MMSD process represents an opportunity to use the many examples of bad experience to suggest a way forward for the sector in addressing this issue.
- This chapter has a highly critical tone of governments in terms of their capacities and competencies. A number of topics/recommendations raise important sovereignty issues for national governments that could influence their interest in further engagement.

Chapter 8: Minerals and Economic Development

- The central theme of this chapter is supported – namely, that mining can be a powerful motor for sustainable development but that too often in the past it has not fulfilled its potential.
- The chapter tends towards over-generalisation in relation to the reasons why mining has not fulfilled its potential in promoting sustainable development. Further, it over generalises in relation to the association of corruption and human rights abuses with mining. These are clearly important matters. However, they are not specific to mining but common to most forms of underdevelopment.
- The chapter correctly identifies that the full development potential of mining will not be realised without government integrity and without appropriate legal and fiscal frameworks. As stated in the Report, (p8-9), “...whether [minerals] turn out to be a blessing or a curse will depend ultimately on governments – on the quality of their institutions, on their capacity to manage these resources well and use them to catalyse development, and on their interactions with companies, civil society, and other actors.” While there is much that companies can do to assist this process and to support governments in their efforts to extract the full development potential from mining investment (as listed in the Report), there are, however, also limits to what companies can do in this area. This point should be more fully recognised.
- The anti-mining tone of this chapter is not constructive. While the chapter does address the pitfalls and responsibilities of individual governments, the mining industry is presented as strictly opportunistic and lacking in any motivation to operate in a responsible manner. That is simply unfair and not true.
- Speculations on the correlation between mining and corruption, abusive behaviours, disease, and indeed numerous undesirable social ills are presented as fact with no supporting evidence. Even where a ‘correlation’ between mining and social dysfunctions exists, this is not to say that mining ‘causes’ the problem.

Pursuing discussion of these speculations perpetuates a bias against the mining industry based solely on opinion.

- The ideas presented on managing and distributing mineral wealth provide insight into a number of situations and possible strategies, however the complexity of factors influencing any nation's economic policies extend well beyond the simplified realm of this Report.
- The direction of encouraging responsible management and distribution of mineral wealth is acceptable, as is combating corruption and protecting human rights. However, to imply that mining entities can exert any significant control of a nation's culture of corruption, human rights abuses, or armed conflicts is unreasonable and misleading, and of questionable usefulness.
- Government is essential in economic development and in the success or failure of managing mineral wealth. However, in this chapter there is an inadequate identification and discussion of the role of the government.
- Investor's risks are underplayed. Too much emphasis is given to wealth sharing with no reference to associated risks. Risks must be equitably shared.
- There is insufficient reference to the other economic benefits that mining projects can bring to a developing country such as technological transfer, infrastructure development, formation and training of human capital, local business development.
- Regarding capacity building and the role of companies and third parties, it is not the exclusive responsibility of companies. Governments must play their role.
- Corruption – the issue is corruption, not mining. Corruption and transparency go together and the latter is one tool to combat corruption. Its success lies with the conduct and ethics of all stakeholders. Within industry, there is growing support for codes of ethics.
- 8-14, Para 2: Certain statements such as “. . . *industrial-country governments could assist mineral economies to do more processing themselves by reducing the tariffs imposed on the import of manufactures goods*” are political and, therefore, require more analysis.
- This chapter lacks a rigorous understanding and treatment of economic concepts (e.g. issues on tariff barriers in developed countries and impoverishment).
- 8-16, Para 3: Statements such as “*In some countries with unitary legal systems, local government has little or no independent power of taxation, so this step would require fundamental constitutional change*” are not adequate. This subject is far more complex than presented and requires a more detailed level of analysis.

Chapter 9: Local Communities and Mines

- A basic point that really is not addressed in this chapter is the fact that, to a greater or lesser extent, a mine will result in social change in the local community. Much of this change will be positive. However, to go beyond this and regard mining companies as instruments of social engineering for the forwarding of a particular agenda is inappropriate and might increase business risks.
- There seems to be an encouragement of vetoing powers for indigenous communities rather than encouraging prior informed decisions and processes of engagement. In the final analysis these are issues of sovereignty and the distribution of power.
- This chapter suffers somewhat from a first world view, which views local communities in developing nations primarily as recipients/victims of mining rather than participants with an obligation to play an active, responsible role in determining local initiatives and solutions.
- One of the weaknesses of the MMSD draft Report is a view of what governments need to do without providing any discussion on the mechanisms by which to engage them, i.e. the recommendations are good but there are no practical ideas to suggest how they are going to be implemented.
- This chapter speaks of the rights of communities but without addressing real issues such as how best to structure dialogues and identify relevant constituencies. It does not address issues such as the rights of national governments vis-à-vis communities and related issues of legitimacy. Specific examples of dysfunctional relationships, which would be a lesson to us all, should be given.
- Defining the effective role of communities in decision-making and outlining the boundaries of responsibility for companies, governments and civil society is complex. This is understandable, but examples of successful practices should be provided.
- The draft gives recommendations to companies that seem more appropriate for governments. For instance, in the case of health, the suggestion is to develop an industry policy and best practice guidelines to implement community health policies and programs. This includes building hospital infrastructure and establishing extensive objectives and priorities for individual diseases, covering treatment, prevention, control, and eradication both of occupational and public health problems. This is hardly the role of mining companies, even if local health authorities are willing to tolerate such a degree of intervention.
- The chapter should include discussion and analysis of Land Use Agreements or Impact Benefit Agreements (IBAs). These forms of agreements are a significant formalized inclusive mechanism that should be acknowledged in the chapter. In this regard, the Australian regional MMSD process prepared a significant and rigorous report on agreements that does not appear to have been included.

- The chapter could be improved by providing a definition of ‘community’. Communities, whether from rich or poor countries, all seem to be the same in the draft Report. There are ways of classifying communities and these should have been used.
- The legitimacy of foreign NGO involvement in community issues has not been discussed. What defines a stakeholder? What are the considerations regarding international NGOs involving themselves in the affairs of distant communities without either any evidence to show that they have understood those communities or gained their permission to represent them? As far as community relations are concerned local people are the most important stakeholder.
- The community chapter contains very few positive examples of what mining companies are trying to do with their community relations. The examples are, for the most part, negative and somewhat too narrowly focused on NGO and consultant experience in PNG or Canada. The chapter appears out of touch – or out of sympathy - with the positive developments that have been occurring in mining company community relations.
- The chapter does not discuss the value or contribution of ‘traditional knowledge’ in relation to environment. Traditional knowledge has been a Canadian Government requirement. Many societies, both traditional and modern, will judge sustainability in terms of its ability to satisfy higher values and those values will not always be related to conservation. These issues do not seem to be covered in the draft chapter.
- The coverage and analysis of mining company community foundations and/or trusts is not complete. The Rossing Foundation is mentioned, but few others. Issues associated with the limitations of relying on foundations for community relations are not covered.
- The draft seems to pay insufficient attention to population issues. It is suggested that some empirical data is included. Rich countries have achieved a demographic transition. However, the rates of population increase faced by communities where mining takes place are often of the order of 4 % or more.
- Practical advice regarding achieving “*participation*” is limited. This is not always a matter of town meetings, focus groups or energetic NGOs spreading the word. In the Philippines mining companies have been told that 100% community approval is necessary. How do mining companies determine who can and should decide? How should mining companies best deal with broad-ranging societal and cultural beliefs?

The work done by Norman Uphoff and his associates on participation under Title XII of the US Foreign Assistance Act should be referenced. In many of the countries where mining companies operate, the UN ideals that relate to women and their participation, are not yet accepted.

- The draft contains limited discussion on performance measurement other than making a few supportive remarks about the Global Reporting Initiative. The

whole issue of evaluation, monitoring, and measurement has a long history and one needs to see where the mining industry stands in relation to international best practice.

In this regard, it was suggested at one of the MMSD meetings that a community level resource inventory could be very useful. Most mining companies do not have good demographic data, data on land carrying capacity, water availability or even firewood. Without this information it is and will continue to be difficult to alert or warn our neighbours about the unanticipated consequences of change. It is unfortunate that this type of practical advice has not been included in the draft chapter.

Chapter 10: Mining, Minerals and Environment

- The chapter shows evidence of serious attempts to deal fairly with what are polarised views of the industry's position with regard to environmental impacts.
- This chapter considers seven principal areas pertaining to the environment. They are large volume waste, mine closure planning, mining legacy issues, environmental management, energy use, managing metals in the environment, and threats to biological diversity. It is recognised that to fully understand the complexity of these issues and how they best be addressed is beyond the capacity of the MMSD project with its limitations of time and resources. Generally, there is no appreciable comment on the chemistry, biology and physical issues and this should be acknowledged by a statement about the need for further analysis and understanding. Including a list of suggested reading and additional technical references could clearly offset this lack of technical rigour.
- If a principal objective of the Report is to promote dialog and engagement then gratuitous and sweeping phrases such as "*often abysmal*"; "*drift down to the lowest common denominator*"; "*willing to take short cuts*" (p10-24) should be removed where they cannot be substantiated. In turn there are many examples of best practices of environmental management that could be included for the benefit of all stakeholders, including industry.
- In the sections on the management of large-volume wastes, there is imprecision in the use of technical jargon. The authors correctly identify the use of jargon as a major barrier to greater involvement in decisions on waste management, and then, perhaps unintentionally, proceed to demonstrate why accurate technical language is after all essential. A technical edit would help.
- 10-6, Para 2: Clearly there is a governance issue that needs to be stated – it isn't exclusively a company's right and responsibility to develop, operate and close a mine without respecting the authority of government.
- Some descriptions of bad practice are given without supporting examples or references. An example is the assertion in the closure section that private

companies are subsidised by governments through the relaxation of regulation even though they may be uneconomic (p10-18).

- The use of the term “*best practice*” at several points in the chapter requires more discussion. Despite the expectations of many outside the mining industry, codifying best practice techniques and methods in an unambiguous and universal way will in many instances, not be possible. However, it should be possible to set out a process that, in any given case, will lead to a best practice for those conditions being agreed.
- There is a general failure to recognise the substantial best practices documentation that is already in existence and practice (e.g. tailings guidelines, acid drainage guidelines of ICME/UNEP, Mining Association of Canada, Australian Minerals and Energy Environment Foundation, Chamber of Mines of South Africa, among others). A best practice framework should be outlined that is based upon this vast wealth of information.
- The core issue of this chapter is the development of thorough and meaningful environmental impact assessments (EIA) and supporting studies. If a thorough EIA is undertaken on all phases of a mine’s operations this will form the basis of all the management actions that are called for in this chapter from management of large volume of wastes through to the protection of biological diversity.
- A good EIA must be coupled to a management system where the commitments given in the EIA can be audited, firstly to ensure that they are being implemented and secondly to ensure that they are effective. These audits should be made available to whoever wishes to see them and would motivate mine managers to correctly implement the management actions given in the EIA.
- There’s a strong emphasis on the how and what the company should do. However, there’s little mention on the role of the other players, in particular the role of NGOs, academia and governments. The role of governance and regulation isn’t acknowledged.
- Without a more exact definition of the word “*stakeholder*”, it is hard to accept that all stakeholder views should be solicited for the development of codes for large volume wastes (p. 10-27), which is mainly a technical task. Large volume waste ‘best practice guidelines’ should recognize existing work (especially EU, ICME/UNEP, etc.)
- Report states that “*Before a mine proposal is accepted, all concerned – especially the local community – should be consulted on the proposed development*” (p. 10-27): Should this be in all cases? With which communities? How does one determine legitimate claims of those affected? Who represents them? All these issues have to be given careful and reasoned consideration before agreeing to a consultation.
- The discussion on large volume waste impacts to the environment addresses the widespread belief that mining is a permanent commitment of land. What needs to follow is a reasonable discussion on practical reclamation of mined land. It is not

practical to expect that a mine site can or should always be returned to its pre-mining condition, nor necessarily to its pre-mining land use. An open pit will alter the landscape. Tailing piles can be reclaimed on the surface and create some valid future land uses such as wildlife habitat or grazing. Frequently, the industry does return agricultural land back to the same land use and in some instances with enhanced productivity. There are also examples of returning pine plantations back to native vegetation. It should be noted that the amount of land committed to mining in relation to the total landmass of the globe is extremely insignificant.

- There is only passing recognition that riverine and ocean disposal of tailings tend to be used only when other methods are technically flawed. In fact, these routes of disposal are used usually as a last resort. The implications of ruling them out need to be properly considered.
- 10-22: If governments have benefited over the years from tax payments made by the mining industry, and if customers (generally in developed countries) have benefited from products (commodities) priced too low (because of oversupply - by developing countries - in relation to demand) to recover the 'full cost' of mining (e.g., the environmental / social costs), should those governments / customers bear some part of the burden when the full legacy costs are ultimately recognised?
- There is an excessive discussion on abandoned mines that is misplaced partly by reference to data that has never been validated but taken as fact (i.e., an unsubstantiated estimate of 500,000 abandoned mines in the United States). The focus should be on what are the best practices to promote improvements in the industry to address issues of concern.
- Missing information on 'science' and 'specificities' of metals: During the last 10 years, the non-ferrous metals industry has expended great efforts to develop basic science on metals, on metal-specific methodologies to assess, e.g. hazards and risk, and on methods to assess the environmental fate of metals. A number of commodity and research organisations have largely contributed and ICME has played a vital co-ordinating role. This is clearly demonstrated by the long list of ICME-publications. Peer-reviewed material on metals issues can be found elsewhere. This is especially the case for the databases of commodity – associations and research-organisations such as ICA, IZA, ILZRO, NiPERA, CDI; among others.
- The section on energy use in the mining industry is fairly superficial and adds little of value. It avoids some significant contradictions, such as the sustainable development benefit of mining low-grade ores versus the relative energy intensity of this activity per unit of valuable product.
- 10-47: As discussed further in the comments on the *Agenda for Change*, Ch.16, the scope and function of the contemplated sustainable development facility is not apparent. Rather than establishing a new institution such a facility should be built on programs of existing institutions, with a strong focus on capacity building. Leadership on this initiative should rest with government and inter-governmental organizations, not industry.

- The absence of the regulatory issue: Over the last few years, the mining and metal industry has suffered numerous regulatory challenges that have affected operational costs and may have long-term effects on its markets. Often such regulations have not been based on sound scientific principles, but rather on precautionary approaches that have overlooked some critical and pertinent scientific information. In some instances, a precautionary approach has been advocated where the required scientific information was not sought. Very conservative regulations do not necessarily protect more and may lead to higher costs, premature mine closures, and may needlessly stop mining projects before they start.
- Regulators need greater capacity for various tasks (p. 10-44 and 10-47): While a call for increased education, training, and professional capacity in regulatory agencies is a legitimate one to ask of governments, the responsibility should not be transferred to the private sector or NGOs. In some cases, individual companies may find that providing such technical assistance, in a transparent and agreed upon manner, is the best way forward and there may be opportunities for partnership collaboration with governments. But this should be a case-by-case decision depending on local laws and accepted practices.

Chapter 11: A Life-Cycle Approach to Using Minerals

- This is a very weak chapter on metals, metal products and market issues. It is proposed that the chapter be re-cast and strengthened. In its new version, chapter 11 should stress issues such as the use of sound science and socio-economic analysis as the basis for establishing appropriate policies and regulatory frameworks.
- The importance of unbiased and scientifically supported regulation of end-uses is treated very lightly, relying almost completely on the industry's capacity to generate scientific information. The Report should indicate that governments also have a responsibility for stimulating and financing scientific research required for well-informed, science- based regulatory processes.
- On page 11-3, a brief statement is made as to the role of minerals: "*Minerals play an important role in meeting basic human needs and in enabling modern society to function effectively....*" However, this important role and the benefits to society emerging from it are not given sufficient coverage. As a result, the draft Report fosters the impression that the potential negative aspects of mineral production and use far outweigh the positive contribution that they make to society.

- It would have been interesting if the MMSD Report had looked at the mining, minerals and metals industry from two different perspectives: ‘Right to produce minerals/metals’ and ‘Right to market and use minerals/metals’.

- ‘Right to produce’ issues include for example:

• Access to land	• Artisanal and small scale mining
• Capital transfer	• Tailings management and disposal
• Participation of local communities	• Environmental stewardship
• Community development	• Environmental sound production
• Safeguarding of cultural systems	• Biodiversity
• Governance issues	• End-of-life management of mines

- ‘Right to market and use’ issues include for example:

• Eco-efficiency	• Harmonised testing on hazards
• Product stewardship	• Appropriate risk assessment methodologies
• Life cycle management	• Appropriate evaluation of metals in the massive and alloy form
• Resource management including energy	• Environmental fate of metals
• Design for sustainability	• Environmental impact of all production stages
• End-of-life management including recycling	• Environmental impact of uses especially dispersive uses

- The draft MMSD Report tries to consider most of the above issues in an integrated way. But it is clear that the treatment of the ‘Right to Produce’ issues is both deeper and better researched than that of the ‘Right to Market and Use’ issues. Important issues with respect to smelting and refining not addressed in the Report include, among others: the historical legacy of production sites; workplace health and safety; and community relations around production facilities in urban locations. Leaving so many of these ‘Right to Market and Use’ issues unclear and unresolved may set the scene for future conflict rather than encouraging engagement.
- There is limited evidence of the engagement of end users’ views and concerns in the overall analysis and formulation of the recommendations advanced in Chapter 11. The weaknesses in the Report’s consideration of issues relating to downstream use and risk management of metals and other mineral products suggest the need for a process of additional analysis. Based on the framework/principles advanced in Chapter 1, it is suggested that the following topics for future analysis be captured in the Report:

Economic Sphere:

- Develop the business case relating to production, use and recycling of metals/minerals.

- Consider the process of sustainable development within the metals/minerals industry from the macro and micro-economic perspective.
- Examine ways of developing added value not only at the metals production stage but also on the product side. This means innovation in development of products that are ahead of their time.

Social Sphere:

- Address ways of enhancing community engagement at both the site level and the market domain.
- Develop ways of describing the contribution of metals to quality of life and in a manner that is understandable by a broad range of stakeholders.
- Assess the impact of the minerals industry's procurement policies on small and medium size businesses (SMEs) and sustainability of local supply networks.

Environmental Sphere:

- Assess internal and external drivers for an integrated approach to materials management and the relevance of existing management frameworks and tools.
- Examine the extent and impact of legacy issues, both production site and product on the metals/minerals industry and mechanisms for alleviation of concern.
- Review the current and future responsibilities for the metals/minerals industry towards the characterisation of hazard and risk and the communication of assessments.

Governance Sphere:

- Examine the net impact of international regulatory and voluntary initiatives on the sustainable development of the metals/minerals industry.
- Consider the implications of product stewardship programmes with respect to existing and future liabilities.
- Review governance issues in the case of disperse uses of metals/minerals.

Chapter 12: Access to Information

- This chapter tackles a fundamental issue of the industry's objective to maintain its 'license to operate'. An important issue that warrants further consideration is how to involve communities in the process of determining what information needs to be shared. This raises the question of how to assure that the community has the capacity to know what is required and how to interpret the requested information. Third party verification will also enhance the information's credibility.
- In "The Way Forward" section, the following comments should be considered:
 - Governments should play a role. However, their financial and technical capacity needs to be considered, particularly in developing nations.
 - In the creation of codes, industry should have a key role while at the same time involving other interested parties and possible contributors.

- Who will control the information database referred to in the International and Multilateral Actions section? The creation of another supranational bureaucracy should be avoided.
- While ideal, what is the likelihood of NGO's agreeing to having the same degree of transparency that they demand of industry?
- How will verification be achieved? Trust and credibility of information requires that it be representative, complete and accurate. Is there a suggested model to build upon for future verification processes?
- How can the value of reporting and data be established? Is the act of reporting more valuable than the actual data? Uniformity of guidelines for reporting is a challenge that needs some work in order to be acceptable worldwide by all stakeholders.
- More needs to be done to highlight the business case for effective reporting so that it's not just the larger companies that do it.
- More needs to be done to get other players (particularly Government and NGO's) to act in the area of information access and disclosure. The MMSD draft Report should be strengthened in this area.
- MMSD also needs to expand on what it has learned about transparency and reporting through its dialogue process.

Chapter 13: Artisanal and Small-Scale Mining

- The chapter touches on the important issues relating to property rights and the private ownership of assets. Who do these minerals belong to and who should be entitled to benefit from them? The same question can be asked regarding access to marine resources, access to forests, hunting of wild animals, etc. A good analogy could be made between poaching versus commercial hunting. Poaching is often viewed sympathetically because it is often used as means of survival. However, there is also a great deal of poaching purely for commercial gain. There is often an incentive to poach because it bypasses many of the restrictions (e.g. on numbers and animal species) and fees imposed on regulated commercial hunting. The similarities with artisanal and small-scale mining (ASM) are obvious.
- There is a tendency throughout the Report to see large-scale mining as a potential solution to a host of sometimes unrelated social problems, ASM for example. ASM is largely a result of the failure of more broad-based, labour-intensive industrialisation to take hold in many developing countries. This is an issue concerning national policy and governance rather than one that large-scale mining companies can be expected to resolve.
- A distinction should be made between the use of unscrupulous methods to relocate ASM miners versus legitimate processes, involving resettlement and compensation programs that allow large scale mining to take place. There are

instances where national assets are inefficiently exploited by ASMs that could have otherwise been more efficiently and intensively developed using modern large scale methods. Co-existence of ASM and large-scale mining may not always be feasible. In such circumstances, resettlement and fair compensation programs in accordance with World Bank guidelines, for example, should be recognised as a possible requirement.

- The fact that ASM miners have a strong financial incentive to avoid regulation and participation in the formal sector should be more strongly highlighted as an impediment to transforming the sector. It could take a fairly unique set of circumstances for the benefit of transparency/formalisation to outweigh the consequential costs.
- 13-27; *Recommendations*; Bullet 5 is a recommendation for the mining industry through ICMM to support ASM. The World Bank, governments and NGOs should take the lead in addressing issues related to ASM. An appropriate role for ICMM and its members would be to provide technical support in terms of advice on mining and extraction methods that are environmentally sound and safe for ASM workers and nearby communities.

Chapter 14: Roles, Responsibilities and Instruments for Change

- The text fairly captures the dual role that most states play – regulator and enabler. It is acknowledged that states handle these roles differently according to a host of internal conditions.
- The main theme of the chapter is enhancement of enforceable regulation or guidance and the role of the regulator. Unfortunately, few new ideas are presented. The draft Report appears to offer only concepts currently found in existing governmental models.
- Within this chapter the Report identifies the potential roles of stakeholder groups, but does not define the relative importance of local versus state-level stakeholders. This is an important issue to be resolved if the concept of subsidiarity is to be properly applied.
- The potential role that business schools, executive management and board members can play in developing a sustainable development business ethic is not discussed.
- Only limited treatment of the issues is given with many ideas introduced without sufficient analysis. The implications of the various options should be discussed more thoroughly.
- The Report should consider the implications at the local level when advocating international solutions. A previous chapter refers to subsidiarity but ignores the principle in the recommendations.

- The possible tension between global standards, and regional and site specific circumstances warrants further discussion. For example, how does industry operate globally while maintaining the flexibility and credibility to deal appropriately with issues in ways that respect differing local cultures and values, e.g. gender equality and human rights?
- The international agreements referred to in the chapter have various protocols underlying them. Recognition is required that some of these instruments were developed for governments to implement – not all protocols/principles may be applicable to industry.
- There needs to be some consideration of the application of performance standards for multi-national corporations and domestic companies. How will a level playing field be maintained for all companies operating within the same jurisdiction to ensure fairness and competitiveness?
- Roles and responsibilities of other members of the sector. While the chapter makes the point that all actors have a role to play, the key recommendations fall to industry, other parts of the sector, notably governments, are not listed.
- Any future actions must consider the implications for ASM. In the absence of information sharing and capacity building, ASM view best practice guidelines and codes of ethics as another hurdle to gaining access to markets.

Chapter 15: Regional Perspectives

- Realities and challenges currently being faced by the mining industry vary from one region to another. Although the principles in which sustainable development is based are universal in scope, the specific requirements needed in order to achieve sustainability are determined by the characteristics and necessities of each community, place, country and/or region.
- MMSD should reinforce the importance of the work of its regional partners in identifying the issues of fundamental importance to the sector. At present, there is inadequate coverage of the reports of its different regional partners.

Southern Africa Regional Report

- The draft chapter appears to reflect a negative opinion of the mining industry, particularly regarding environmental degradation, retrenchments and the inequity of the distribution of mineral wealth.

In this regard, the Report does not present the significant contribution made by the mining industry to the development of Southern Africa. For example, the Report regards HIV/AIDS as the most significant threat to sustainable development in the region. However, efforts made by the mining industry, especially the major mining companies, to combat the spread of this disease are not mentioned.

- The Report is very sympathetic to the cause of small-scale mining. MMSD regards small-scale mining as a potential means of poverty alleviation but fails to argue a case for sustainability.

Australia Regional Report

- On the whole, the draft chapter includes a fair, albeit limited, representation of the MMSD Australia Report.
- The overview focuses only on how industry could improve performance with no mention of other actors in the minerals sector in particular, the role of government (this is in contrast to Chapter 16 where recommendations were provided for all actors).
- There was also no mention of the lack of NGO input to the Australian Report which was a significant limitation to the process.

Chapter 16: Agenda for Change

- There is no reference to capital or risk in the discussion of the *Agenda for Change*. Nor is there acknowledgement that the industry is a price-taker, i.e. it is unable to pass on the costs associated with making an enhanced contribution to sustainable development.
- While Chapter 1 recognises and discusses the need for trade-offs, this is not carried through to the discussion in Chapter 16.

Minerals Industry

A. Individual Company Level

- Proposals for individual companies to adopt sustainable development policies and to review end-of-life plans at existing operations warrant consideration.
- *Community Sustainable Development Plans* (CSDPs) should not be the sole responsibility of companies. They should be developed in partnership and responsibilities shared with governments, communities, development NGOs and donor agencies. The concept of CSDPs should be raised under the sub-section *Governments*.

B. Joint Commitments – Industry

- *Declaration on Sustainable Development:*
 - i) A first step should be to review ICMM's existing sustainable development charter with the aim of establishing a more comprehensive framework that contains not only high level principles but also performance indicators, independent third party verification mechanisms and public reporting requirements. Best practice guidelines could also be developed over time to address specific issues. Implementation should be at the company level.
 - ii) It is noted that using complex international Conventions as a basis for the Declaration/Charter review process may not be appropriate. This is

- particularly the case for international instruments that have not been signed and/or ratified by a large number of countries.
- iii) Care must be taken not to raise expectations that a Declaration/ Revised Charter on Sustainable Development can be developed before the World Summit on Sustainable Development in Johannesburg, given that this process will need to be informed by key stakeholders and a consensus reached among ICMM members.
 - iv) The term ‘code’ can have a different status and meaning in different countries. In some countries, a code is equivalent to a law or regulation. Terms and how they are interpreted in different legal jurisdictions is always important. Further consideration needs to be given to clarifying these matters.
- *A Complaints and Dispute Resolution Mechanism* – There are significant concerns whether this proposed new global mechanism would be effective and credible – particularly if funded by industry. The proposal also raises important issues with respect to national sovereignty. It is unclear whether the best way forward—if such a concept has merit—would be to focus efforts in helping to develop and implement appropriate mechanisms for complaint and dispute resolution at the respective local, national or global levels. These important matters must be analysed in a more thoughtful and comprehensive manner in the future.
 - *Integrated Materials Management and Product Stewardship*: Many of the recommendations in Chapter 11 should be brought forward and included in Chapter 16. Initiatives to create product certification schemes should be dropped from consideration, given that the industry’s products do not, for the vast percentage of cases, reach the consumer as a final product but are commodities that are used by downstream customers in manufacturing.
 - *Sustainable Development Support Facility* – Further clarification is required regarding its mandate, sources of financing and management before ICMM could provide an informed opinion. If the concept proceeds—and we do not encourage that it does at this point in time—it should build on programs of existing organizations with a strong focus on capacity building, such as the World Bank Group (i.e., it is not necessary to establish a new organization). Leadership on this initiative should rest with government and inter-governmental organizations, not industry.

Labour

- The recommendations put forward warrant consideration.

Governments

- There is a need to differentiate between actions that should be taken by individual governments and those that should be taken collectively.
- The various proposals put forward in the Report will require a significant commitment of both human and financial resources by governments and intergovernmental organizations. Given that governments were not effectively engaged in the MMSD process, there is real concern about the level of future engagement of governments both in developed and developing countries.

- *Financial Surety*: in applying financial surety requirements, consideration needs to be given to the impact that such requirements could have on the economic viability of existing operations.
- *Sustainable Development Support Facility* – (see comments above)
- *Abandoned Mineral Sites Facility* – this concept requires further analysis and discussion. As a first step, a collaborative effort of industry, governments and communities is needed to prioritize and address critical sites requiring remediation. Additional analysis of feasible options to address this issue is necessary. ICMM agrees that the proposed tax on central bank gold sales is not ‘a matured concept’ and therefore it should be removed from the final MMSD Report. To include it trivializes other substantive recommendations.
- The recommendation on integrated land use planning in Chapter 7 (7-35) should be included in Chapter 16.

Specific Initiatives Involving Multiple Actors

- *International Indigenous Organisation*–The proposal to establish an international body of indigenous peoples raises important issues with respect international governance and national sovereignty. The practicality and effectiveness as well as the costs and benefits of this proposal need to be more carefully studied. It is recommended that this proposal be evaluated in light of ongoing activities within the United Nations rather than pursuing efforts to establish yet another international organization.
- *Protected Areas and Mining Initiative* – ICMM supports this recommendation. All “Way Forward” suggestions on Protected Areas in Chapter 7 should be included in Chapter 16.
- *Reporting Guidelines* - the recommendation put forward warrants further consideration

A Vision of What Can Be Achieved

- *Forum on Minerals and Sustainable Development* – In developing a way forward, there is no need to establish new international institutions or mechanisms. A far more productive approach would be to consider how institutional capacity could be enhanced for a wide range of existing institutions, including among others, the International Study Groups’ Non-Ferrous Metals Consultative Forum on Sustainable Development.

Part III - Technical and editorial comments

Chapter 1: The Minerals Sector and Sustainable Development

- 1-3, Para 3, Line 3: *the categories 'of' North...*
- 1-3 Para 3 Line 7: *as in high-income countries (i.e., 5.9 % a year compared to 3.0%, respectively).*
- 1-3 Para 4: has a number of significant statements that are not referenced but should be.
- 1-4, Para 1, Line 1: *Operating in many countries 'is' (strike "and") sometimes hard....*
- 1-4, Para 1, Line 2: second sentence. Restructure: *"People often feel disenfranchised because economic"*
- 1-5, Para 3, Line 3: insert word 'some' between *"hold"* and *"companies"*
- 1-5, Para 4, Bullet 1 & 2: change word *"problems"* to 'challenges'
- 1-6, Para 3, Line 2: *"becoming the cornerstone of the 'United Nations Conference on Environment and Development (UNCED)' (i.e., the Rio Earth Summit), held in Rio de Janeiro in 1992.*
- 1-6, Para 5: first sentence needs to be re-written—the structure seems to be wrong.
- 1-7, Para 3, Line 1: *"sustainable development 'is' to..."*
- 1-9, Para 4, last sentence: should not proceed with *"certain development activities."*
- 1-10, Para 1: (first incomplete paragraph), line 5, insert 'often' between *"but"* and *"they"*.
- 1-10, Para 1, Line 8: delete word *"maximum"*
- 1-10, Para 3, Line 2: *"(i.e., in terms of access....).*
- 1-10, Para 4, Line 3: exchange word *"concrete"* with 'pragmatic.'
- 1-10, Para 4 — and throughout the text: when the terms *"economic, environmental and social"* are listed in reference to the principles of sustainable development, for consistency, it would be better to list them alphabetically.
- 1-11, Para 2, Line 7 change word *"good"* to 'credible.'

- 1-11, Para 4. Action verbs like “*have to*,” “*need to*” etc. should be changed to ‘should.’
- 1-16, Bullet 2: Top of the page: “*Current and future generations must be compensated for any harm that occurs as a result of land use decisions.*” While one could be supportive of the concept of ‘fair and equitable compensation,’ terminology like noted in the draft MMSD Report is neither helpful nor realistic. It will simply, once again, raise expectations that cannot be fulfilled and subject relevant authorities to criticism. This is not to say compensation in some form is not warranted but would MMSD propose to ‘compensate future generations’ for land use decisions made today?
- 1-16, Bullet 2: *National Economic and Social Development*: Which states: “*economic efficiency of mineral production should be optimised*”. There is a misunderstanding here of what economic efficiency means. Economic efficiency is where marginal benefits equal marginal costs to society -- so one does not set out to ‘optimise it’ but rather simply to achieve it. Suggested redraft: ‘to achieve economic efficiency such that the marginal benefits and costs to society are equalised.’
- 1-16 to 1-17, referring to the bullet point under “*Community Development*”: The conceptualisation of ‘democracy’ should be spelt out because the understanding of the term has a significant bearing on the outcome of ‘democratic processes’. In all these issues, factors that excessively result in undermining project economics or excessively raising investment hurdle rates should be carefully considered.
- 1-18, change title to ‘Specific Considerations for Metals and Other Mineral Commodities’ consistent with the comments made on Chapter 11.
- 1-18, Para 1, Line 4 change “*...hazards of using...*” to ‘...risks associated with the use of...’
- 1-18: *The Use of Minerals*, Bullet 1: Starting “*the basic needs of individuals and communities for mineral products should be met.*” The real question here is how? Because access to minerals is related to income levels and ability to pay as well as the availability of minerals in a particular location. This statement is therefore vague.
- 1-18: *The Use of Minerals*, Bullet 2: Starting “*Effort should be made to attain a more equitable distribution of consumption between industrial and developing countries*”, the question here is why? As countries industrialise, their national incomes will grow as will per capita incomes, thus leading to increased demand for minerals. This is already evident in countries like China, Malaysia, India, etc.
- 1-18: *The Use of Minerals*, Last bullet: starting “*in their use of non-mineral resources the present generation needs to consider the needs of future societies,*” a point that is missed in this regard is that the human species is remarkably adaptable and that technological advancements in response to change will also play a considerable role in meeting the needs of future generations.

Chapter 2: Producing and Selling Minerals

- 2-3: To ensure consistency of definition/interpretation (especially with respect to comments on Chapter 11) the term ‘mineral commodities’ is preferred when speaking generally of metals, construction minerals and diamonds etc. For example at the top of the page should read “*The seven principal classes of mineral commodities are....*”
- Page 2-3, Para 5: states “*There has been a gradual migration of minerals production to many developing countries, largely due to the difficulties and longer lead times in getting environmental permits and the higher labour costs for projects in the most industrialised countries and because mineral deposits in these countries have in many cases been mined out.*” The major reason is that the low cost, easy to access resources is mined out in more industrialised countries. While the other comments are contributory, they are minor in magnitude.
- 2-3, Last Para: Following the statement “*Minerals and mineral commodities are supplied in different forms*”, it may benefit the reader if the ICME publication ‘A World of Metals: Finding, Making and Using Metals’ is cited
- 2-4, Figure 2-1: We question the degree to which recycling takes place in the exploration to milling, washing, grading, concentrating stage as expressed in the diagram? Proportionally recycling, post-smelting and refining are likely to be as relevant if not more. In order to avoid over-complicating the diagram the re-use arrow could be extended to point towards “*Fabrication*”, “*Smelting*” and “*Refining*” using additional arrowheads and re-labelled ‘Recycling and Re-use’
- 2-5, Para 2: States “*A number of factors may account for this decline, including recent mergers among the major companies, lower expenditures on exploration by the large multinationals and reduced access to finance for smaller companies. Exploration spending has been more severely affected in the US due to tough environmental laws and in the Pacific and Southeast Asia due to civil unrest, some of which is directly related to anti-mining activities*”. Nothing is presented to support these statements.

The period they are talking about was subject to major drops in commodity prices, following a ‘boom’ in exploration, and a general downturn in business profitability (including the Asian crisis). It is more likely that these factors affected the drop in exploration spending than tough environmental laws, and anti-mining related civil unrest.

- 2-8, Figure 2-5: shows Japan producing between 10 – 100 m tpy iron ore. This figure appears out-of-date, as Japan's production of iron ore has declined from about 230Kt in 1991 to zero in 1998.
- 2-9, Para 5, Line 2: The sentence jumps to the consideration of “*leaching processes*” in the middle of a description of “*pyrometallurgical processes*”. The

two processes are distinct and the leaching process is an example of ‘hydrometallurgical processes’ a term that is introduced towards the end of the paragraph but not defined anywhere.

- 2-9: *Processing and Fabrication*: from a Southern Africa context, the process of adding value to minerals is known as ‘minerals beneficiation.’ A table describing the four stages of the beneficiation process was provided to the MMSD Southern Africa Researchers.
- 2-10: There is a general tone created by the use of the word “can” rather than ‘is’ that relates to the potential for progress to be made when the reality is that a significant activity (e.g. recycling) already exists. In this instance recycling is a reality, an activity rooted in commercial viability and generating considerable employment as well as ensuring a stream of secondary material for which there are well-developed markets and national, regional and international trade flows. Specific examples include the sentence “...the stainless steel and the alloys can themselves be recycled” which could better be expressed, “...the stainless steels and the alloys are themselves largely recycled and the sentence “Demolition scrap...can also be recycled” could better be expressed, ‘Demolition scrap...is heavily recycled.’
- 2-10, Para 4: The sentence, “If a metal is converted into a new chemical form, as in the production of chemicals, recycling is impossible.” is not correct as it is written. Nickel may become nickel chloride for plating purposes and thus available for recycling.
- 2-10, Para 4: The sentence, “It is also impossible to recover metals that are widely dispersed in use” is an emphatic statement of impossibility but incorrect. Dispersed use (batteries, bottle caps, paper clips) is confused with dispersive use (shot, fertilizer additives, vitamins, paints, cathodic protection). The ‘impossibility’ of recovery for dispersed use items is largely economic but can even be modified by individual practices of conservation.
- 2-10: While recycling will be an ever-important facet in the supply of metals, there will be a constant inflow of new virgin metal required in order to meet the demands of the world’s growing population. In other words we cannot recycle our way out of need.
- 2-13, Para 3: Text states that “~120,000 people were employed in Australia (minerals, smelting, refining and petroleum) in 1999/2000.” However, figure 2-7 on the same page shows nearly 400,000 people.
- 2-13, Figure 2.7, entitled “Changes in employment, mining and mineral processing,” the statement that “the data for South Africa is gold specific” is incorrect. The numbers shown in the table relate to employment in the total mining sector.
- 2-14, Para 3: starting “As shown in figure 2 – 7 ...” the statement that in many cases a decrease in employment is not due to a fall in output is not entirely true

because in South Africa's case, gold production is about 40 per cent lower than it was in the early 1990s.

- 2-19, Box 2.2: This and Box 2.3 should be relabelled as there is no Box 2.1.
- 2-21, Table 2.5, Under "Coal", Further common uses such as the production of liquid fuels, plastics and polymers should be included.
- 2-24: Para 2: The discussion prompted by the statement "*Several important factors must be considered when choosing materials in product design*" should also refer to the consideration of human and environmental impacts. The text could include the use of LCA as a comparative tool and could point to Chapter 11 for more detailed considerations.
- 2-24, Box 2.3: The final sentence of paragraph 3 should read "*Biodegradable plastics may increasingly be a competitive form of packaging in the future*".

Chapter 3: A Profile of the Minerals Sector

- 3-3, Last Para: The text says, "*The top 150 international minerals companies had a combined market capitalisation of only US\$320 billion at the end of 1999. This global total is lower than a number of individual companies such as General Electric and Exxon Mobil. (See Figure 3-1).*" However Figure 3-1 shows only the capitalisation of the top 10 mining companies (at US\$92 billion) and shows Exxon Mobil capitalisation at US\$289 billion. The capitalisation value of Exxon Mobil needs to be clarified and corrected.
- 3-4, Figure 3.1: the market capitalisation of the top 10 mining countries in Figure 3.1 does not tie up with figure 3.2 on page 3–6 where the market capitalisation is about US \$ 136 billion. Shouldn't a similar data source be used?
- 3-5, Table 3-2:
The 'ranking' of companies appears incorrect. For example:
 - Under Iron Ore, BHP is ranked 2 with 6.2% market share and Rio Tinto ranked 3 – but with a greater market share (8.8%).
 - Under Coal, BHP is ranked 3 with 4.1% market share and Rio Tinto ranked 4 – but with a greater market share (4.7%).
 - Under Copper, BHP is ranked 4 with 7.0% market share while Rio Tinto is ranked 3 – but with a smaller market share (6.2%).
 - Under Gold, Barrick is ranked 4 with 7.6% market share while Newmont (6.7% market share) and Gold Fields Ltd (4.7% market share) are ranked 2 and 3 respectively.
- 3-5, Box 3-2: Under the "Coal" column, Peabody is listed as Canadian. Please verify the country in which Peabody was incorporated.
- 3-10, Para 2: The data used to support the statement that working conditions in developed countries is still an issue with labour unions is from 1978. Would

something that occurred twenty years ago be considered recent as far as labour relations are concerned?

- 3-10, Para 4: States “*At the national and international levels, trade unions participate in developing global policies that promote sustainable development through active consultation with industry leaders, governments and intergovernmental institutions.*” This statement requires further elaboration.

Chapter 4: The Need For and Availability of Metals

- 4-4, Para 1: starting “*it is hard not to get involved in some highly judgemental calls about how materials are being used...*” the argument around the use of gold and gemstones for decorative purposes as being not needed to meet basic human requirements fails to recognise the complexity of human needs. Jewellery and adornments form part of meeting ‘Maslow’s Hierarchy of Needs.’ They are an integral part of many cultures in the world. The comment arguing against so-called stock piling of gold by central banks to supposedly subsidise large-scale mining is simply unfounded. The build up of gold in central bank vaults was required to back paper currency. In this regard, it was used as a monetary asset and most of the gold was purchased at a price of US\$35 per ounce, which is nearly nine times lower than the current price.
- 4-8: The discussion on the mineralogical barrier and limits to copper recovery (including references to the water requirements that would be necessary to sustain current US copper consumption) tends to lead the reader to believe that there is little hope for the future. Such extreme conditions do not reflect reality. While the economically recoverable ore grade has consistently decreased with new technologies, the amount of water used in these new processes is in fact less than that used in older technologies.
- 4-8, Para 5: The reference to zinc in the final paragraph of the section “*Physical measures*” should be removed. Whilst supporting information for supposed limits to resource availability may be presented for copper, no such supporting information is presented for zinc within the cited reference (Ayers *et al*).
- 4-12: The final sub-chapter entitled ‘*The Sustainable Development Imperative*’ which links availability constraints with sustainable development issues regarding energy/water/land use competition/community tolerance and eco-system limits may be relevant, however the considerations raised are not well supported.

Chapter 5: Case Studies on Minerals

- The title creates the impression that the chapter contains site-specific case studies rather than an overview of a number of key minerals. ‘An Overview of a Number of Key Minerals’ or something to that effect might more accurately describe the content.

- The various minerals are not treated consistently with respect to level of detail, sequencing of information, use of sub-headings and general content. Besides being editorially poor, it also makes side-by-side comparison between the various minerals difficult. It would seem appropriate for the selected metals/minerals in this chapter to appear in order of industrial importance (by volume) – i.e. steel first etc.
- 5-5, Table 5-2: The Purpose of Table 5-2 is not clear. At present this table provides an incomplete and random picture of various applications of metals and the occasions where they compete with each other. It appears to have little purpose and the opportunity is lost to present the contributions that each of the metals make to sustainable development in their use and application.
- 5-5, Table 5-2: “*Density*” is not the criterion that determines the electrical use of aluminium or copper – it is ‘resistivity.’ Hence a copper wire with lower resistivity will allow more electron flow than an aluminium wire of similar cross-section.
- 5-13, Para 2: States “*Secondary smelting uses a process that is similar in principle to primary smelting.*” This is incorrect.
 - Primary smelting is designed to transform low-grade (normally less than 50% copper) concentrated minerals (in their natural mineralogical state) through an exothermic reaction that physically separates sulfur gas and molten liquid phases of blister copper and ferro-silicate slags. Secondary smelting is an endothermic reaction with little gas handling to worry about, and little slag generation. It is completely different in the technology, equipment, etc.
 - While some secondary copper can be processed in some primary smelting equipment, the two are often not completely compatible.
 - The reader is given the impression that because many mining companies operate primary copper smelters the industry is physically and economically capable of processing secondary copper. As a generalisation this is incorrect.
- Page 5-13, Para 2: To provide clarity, the third sentence should be revised as follows – “*High-grade and pure scrap can be refined in an anode furnace and then ‘electrolytically’ refined*”.
- 5-13, Para 3: States “*In many cases, the higher cost smelters can be the most profitable because they buy low grade and complex scrap at cheap prices and are able to extract not only copper but also other metals (such as tin, zinc or precious metals).*” This is incorrect and also misleading.

If they are so profitable, why have all the secondary copper smelters in the U.S. shut down? Examples are Warrenton MO, Gaston SC, Carrollton GA, and East Alton IL. Recycling of the very impure copper scrap materials (generally referred to as #2 copper scrap) containing large amounts of tin, zinc or precious metals is expensive and complex.

- 5-17, Para 4: States “*The alternative raw material is direct reduced iron (DRI), which is used in electric arc furnaces only when the steelmaker has its own source*

of DRI production. All other EAF steelmakers use a charge (raw material feed) that is composed principally or exclusively of scrap.” Depending upon what % you interpret *“Principally”* to mean, this implies that there is little metallic trade, which is incorrect. There is significant trade in DRI, HBI and Pig Iron, all of which are used as iron sources for electric arc furnace (EAF) production and are produced from iron ore. Only few EAF producers use exclusively scrap as the trace metals (Cu, Ni, Cr, Mo levels in particular) build up and they cannot meet the steel specifications. So DRI, HBI and Pig Iron are used to dilute these metals.

- 5-17, Para 5: States *“EAF steelmaking has been growing as a percentage of total steelmaking capacity and is expected to continue, as it has the advantages of lower capital costs and operating costs, compared with the blast furnace and basic oxygen converter route.”* The advantage of operating costs is not always true, as it depends upon several factors, in particular the price of electricity and the scale of the operation. For example, operating costs for EAFs in Japan and South Korea are higher than for the big blast furnace operations.
- Page 5-17, Para 7, Line 7: Replace *“funds”* in *“...smaller funds of obsolete scrap...”* with ‘quantities.’
- 5-15, Para 7: The statement *“Recycling and recovery rates for most materials in developing countries tend to be high”* is made. This might be true in developed countries but not in the developing world.
- 5-18, Para 3, Line 1: It is states that *“gold is seldom used for industrial purposes.”* This is incorrect. It is widely used although sparingly given its cost. Some 15 per cent of gold fabrication demand is used for industrial purposes which is not insignificant. (Source - Gold Fields Minerals Services (GFMS)).
- 5-18, Para 5: It states *“Exploration activities for gold are currently at a relatively low level given the ... abundance of identified resources.”* Today’s lower prices make gold resources less abundant. The distinction between ‘reserves’ and ‘resources’ also needs to be understood. Resources lack sufficient data to be classified as a reserve that may or may not be recoverable in the current economic climate.
- 5-18, Para 4, Line 2: starting *“In 2000 mine production amounted to 2574 tonnes which represented 78 per cent of gold production,”* is factually incorrect. According to GFMS, gold survey 2001, mine production amounted to 65 per cent of total gold consumption. In addition, the statement that *“in the last 6000 years, well over 100 000 tonnes of gold have been mined”* is not correct. According to GFMS some 142 600 tonnes of gold were recorded as being the total above ground stocks of gold as at the end of 2000. Of this, 70 000 tonnes are held in form of jewellery, and some 30 000 tonnes are held in official institutions.
- 5-18 Table 5-4: Doesn’t specify which years the *“gold reserves”* in the 2 columns represent.

- 5-19, Para 1, Line 5: Incorrectly states “... *non-jewellery use of gold has been relatively stagnant over the last 10 years.*” Gold use in electronics grew 39% in the period 1991-2000 while jewellery use grew 35%.³
- 5-20: Para 2; 1st Sentence: “*Individuals in many in*” (remove the extra ‘in’ between “*many*” & “*developing*”).
- 5-21, Para 1: under the heading “*Central Bank Gold Policy*”, the statement that “*central banks which together hold close to a third of the gold still in use*”, does not match the GFMS data set. According to GFMS, central banks hold 21 per cent of above ground gold stocks. While the central bank policy is important to gold markets, it is not the only driving factor of price.
- 5-21, Para 4: starting “*The US holds...*” According to IMF, at current market prices, the international average of gold holdings to total reserves is 11.3 percent as at March 2002 compared to the 16 per cent as stated in the MMSD document.
- 5-21, Para 6: starting “*Net central banks gold sales...*” the numbers are again different to GFMS numbers. According to GFM a net central bank gold sale peaked at 622 tonnes in 1992, declined to 167 tonnes in 1995 and was 471 tonnes in 2000. On average, net central banks over the last ten years was only 340 tonnes per annum, which is nearly half of the average 638 tonnes per annum supply of gold scrap coming into the market. The sales of gold by Belgium, the Netherlands, the Swiss National Bank and the Bank of England are all related to reducing their high levels of gold reserves to norms more in line with European levels. The proposed sale of gold by IMF to fund the heavily indebted poorest countries (HIPC Initiative), was changed to a non-gold market transaction on the realisation by the IMF that such gold sales would harm many gold producing HIPC countries (the very countries they are trying to help).
- 5-22, Para 5, Line 1: the statement that “... *it would take 25 years to eliminate the gold stocks of EMU members ...*” is hypothetical and extremely unlikely given the commitment of European Central Bank members to maintaining gold as a reserve asset. In other words, they are very unlikely to dispose of their gold stocks and the scenario recorded in this paragraph is extremely pessimistic.
- 5-22, Para 5, Line 5: The statement that “*At higher rates of disposal ... the price would again collapse...*” ignores the influence of other factors such as hedging policy, rationalized production or growing consumer demand. How these factors in aggregate would affect the price is much more difficult to foresee.
- Page 5-23, Table 5-5: which shows the output of the top 15 gold-producing companies, should be modified to show the units of gold production for 1999 and 2000 (i.e., tonnes?). Units in the company “\Output” columns are missing.
- 5-24, Para 3: the draft Report states that gold “... *is also the source of a variety of serious environmental problems.*” It then goes on to discuss the land area of impact, water use and energy use for gold recovery relative to the small amount of

³ See *Gold Survey 2001*, Gold Fields Mineral Services, London, Philip Klapwijk, et al.

gold recovered. The same argument could be made for every metal that is mined, especially by open pit methods, as the tonnages moved and land disturbed are quite large relative to the weight or volume of the metal produced. This is part of the overall theme of this section, which is a value judgment as to society's need for gold.

- 5-24, Box 5 – 2: One of the key factors resulting in the decline in gold production in South Africa is the exhaustion of the ore reserve at many older mines. The statement that increased depth of operations automatically leads to high cost is not true. In the last three years South African gold mining companies, through extensive work place re-organisation and consolidation, have kept the lid on rand cost increases and have seen their dollar production costs decline significantly to the point that on a total production cost per ounce basis, South Africa is cheaper than USA, Canada and Australia.
- 5-25, Para 2, Line 1: The statement that “*There are few if any uses of gold that do not have competitive substitutes*” is not correct. In precision electronics, there is no substitute. In certain medical treatments, its benign character is uniquely suitable. Its natural properties as jewellery do not attract competitive substitutes.
- 5-25: Under the heading “*Coal*”, the document does not capture the fact that coal is also used to produce liquid fuels, chemicals, polymers and plastics which are also essential for modern life. In South Africa, the petrochemical company Sasol, produces a low sulphur environmentally friendly diesel, and has been a global leader in this technology. In South Africa's case over 30 per cent of the country's total liquid fuel requirements are produced by Sasol from coal.
- 5-27: under the heading “*Factors affecting future coal use*”, the draft MMSD Report fails to capture the technological advances in producing clean burning, coal fired power stations.

Chapter 6: Viability of the Minerals Industry

- 6-3, Figure 6-1 is titled ‘*Mining and Global Price Indices*’. A definition is required of the indices presented. Does the figure/graph show ‘share price’ or ‘total shareholder return’? If the former, it is not a true reflection of the industry's financial performance as it excludes dividend payments.
- 6-3, Para 3: under “*The Business Case for Sustainable Development*”: The last phrase of this paragraph asks “*Is it in a company's financial interest to strive for good environmental, ‘**economic**’ and social performance?*” No doubt that it is in the company's financial interest to strive for good economic performance. The question should be if it is in a company's financial interest to strive for good environmental and social performance (besides the economic performance).
- 6-4, Bullet 2, “*Lower health costs*”: Health plans are not mentioned. Currently companies invest much more in good and complete health plans for the employees than in social infrastructure such as schools, hospitals, water supplies and so on.

- 6-4, Bullet 3: The statement that “*good environmental practices pay for themselves*” is much too general and certainly not always true.
- 6-5, Para 2: The example of Rio Tinto’s Borax operational improvements in the US hardly illustrates the point of cost savings and environmental improvements going hand-in-hand. No quantifiable benefits are illustrated in the example, only a list of environmental initiatives that purportedly will yield a benefit. Is there a better example that can be illustrated?
- Arguing that the “*only way a company can earn more than it’s competitors and thus improve its valuation is by reducing costs*” doesn’t appear to be accurate. Earnings can certainly be improved by gaining increased market share or acquiring new properties.
- It is stated that the rate of growth in shareholder value is not a function of gross operating margins. This may be somewhat true when dealing with profitable corporations but is patently in error when dealing with companies losing money or very marginally profitable. It may also not be considering the many companies whose shareholder value plummeted due to poor earnings and were acquired by other companies and dismantled or reorganised. This viewpoint also ignores the decreased capacity for company growth, investment in innovation and new technology that is critical to continued superior performance, both from a production and environment standpoint.
- 6-6, Bullet 3: The section on Market Advantage introduces what appears to be a very limited benefit to sustainable development. It should be acknowledged that this probably cannot be applied to many metals traded as commodities like copper, nickel, and zinc.
- 6-7, Para 5: “*When examining the empirical*” The second and third phrases of this paragraph refer to “*environmental performance*”. Should refer to ‘sustainable performance’.
- 6-10, Para 1: This does not apply to all and every situation. MMSD should add the words ‘In most cases...’ or ‘In many cases...’ at the beginning of the phrase that begins with “*Far from contributing positively...*” so it may read: ‘In many cases, far from contributing positively to....’
- 6-11, Para 5: It is not that clear that the producers do not have any control over the prices. They do, at least to some extent. In fact, when the price is too low, producers increase stocks and/or decrease production, actions that do have an impact on prices. Such categorical affirmation seems inadequate. Also, there may be important reasons to maintain low prices, such as the replacement of minerals for other materials.
- 6-12, Bullet 2: The discussion on terminal liabilities tells only part of the story and is definitely slanted against the mining industry. Most major companies do

reserve for closure based upon their knowledge of current closure requirements, and report their terminal liabilities according to approved accounting practices. Without indication to the contrary, stating that these practices are “*highly questionable in this regard*” lacks balance and accuracy. Prudent business management provides for the comprehensive assessment of closure obligations. To include intangible or unnecessary liabilities in these disclosures, or to try to predict requirements that will be in place decades from now, and formally disclose them as liabilities would be poor business practice.

- 6-13: Mining is a mature industry and thus its closure issues shouldn't be compared directly to the closure issues in the nuclear power industry that is still developing. It should be noted that a large portion of the terminal liabilities in the steel industry relate to employee benefits (health insurance, retirement) and not to environmental liabilities.
- 6-15, Para 6: Meaning of the phrase “*Corporate contributions to sustainable development are clearly negotiable*” is not clear. This is a very important issue that is not well explained. The same is applicable to the phrase on 6-16, Para 2, that states “... *rather than recognizing a social cost or obligation and building it into the financial decision making process, the expense can be negotiated down or away altogether.*” This requires clarification.
- 6-16: “*The creation of jobs as a benefit of new mining projects is downplayed because there are fewer jobs provided in newer mines and the local communities also may not benefit from the new jobs.*” While this may be true, what isn't mentioned is the multiplier effect and creation of new jobs and wealth in the local economy from services provided to the mines' employees and contractors?
- 6- 18, Last paragraph: Reference is made to “*Convention ILO 176, on mine safety and health,*” and to “*Convention ILO 169.*” It should be noted that the first one has been ratified by 17 governments (not including the UK or Canada). The second one has been ratified by 14 countries (not including the U.S.A., the UK or Canada). Total adherence of companies to these two ILO conventions, which are not ratified by most of the ILO countries, is highly improbable. There are several reasons why countries have not ratified, which probably are applicable to companies as well.
- 6-20: The discussion on improving worker health and safety could be improved by illustrating the significant improvements in these areas that some companies have produced through cultural change and employee involvement efforts.
- 6- 25, Para 6: The simple statement that “*Convention ILO has been ratified by 17 mining countries*” is not accurate. The countries that have ratified such convention are the following: Armenia, Austria, Botswana, Czech Republic, Finland, Germany, Ireland, Lebanon, Norway, Philippines, Poland, Slovakia, South Africa, Spain, Sweden, United States and Zambia. It is questionable whether mining is a principal economic contributor to ‘all’ these countries.

- 6-28, Para 1, last sentence: Should be re-phrased to state, ‘The International Council on Mining & Metals has a health advisory panel to address this issue.’ The phrase “*put together*” should be deleted.
- Page 6-28, Para 4: should make reference to ‘workers and their representatives’ -- Australian minerals industry employees, for example, are not always represented by unions
- 6- 31, Para 1: “*On the other hand, there is a strongly held view that financial institutions have reinforced the failings of mining companies in their lending practices by focusing solely on a project’s relative cash operating costs.*” Is this accurate? Project finance usually contemplates environmental requirements as a part of its economic evaluation.
- 6-31, Para 3: that begins with “*Another group of public financial institutions, the national export credit agencies (ECAs), are believed to be the “quiet giants” of mining finance, though their activities have largely remained outside the public debate and they are generally unaccountable for the environmental and social consequences of their financing. Unlike most other financial institutions, many of them have failed to date to develop environmental and social guidelines and procedures to guide decision-making.*” Is this accurate? This is a serious charge to quite important institutions. Examples should be provided to validate these statements.

Chapter 7: The Control, Use and Management of Land

- 7-3: Under the heading “*Land and Society*”, the diagram used on ‘page 14-23, Figure 14-1’’, could usefully be inserted to explain the hierarchy of ways in which different actors should be involved in decisions on land.
- 7-4 – 7-5: There is a misleading concept expressed in the “*Land and Society*” section, that mining is incompatible with other land-uses. The error is a question of scale. Mining is perfectly compatible with a pattern of other land-uses at a regional scale, which is where the integrated land-use debate takes place. At the very local scale, of course mining and agriculture cannot simultaneously go ahead on the same hectares of land.
- 7-7 - 7-8: There is a duplicated paragraph on either side of Box 7-1.
- 7-13, Para 1: The paragraph states that revenues from the minerals sector are often dissipated in corruption or mismanagement by the state. This statement needs to be put in context – while there are many cases of corruption and mismanagement to suggest that this is ‘the norm in all minerals development or peculiar to the minerals sector’ is a misrepresentation of fact. This problem tends to be concentrated in countries with weak governance systems and low levels of capital and human resources.

- 7-22, Para 8 refers to: “... *Hammersly Iron Pty* ...” in relation to the Yandi Land Use Agreement. This is incorrectly spelt and should be ‘Hamersley Iron (100% Rio Tinto.)’
- 7-26, Box 7-3 refers to resettlement and human rights issues at Rio Tinto’s PT Kelinan Equitorial Mine in Indonesia. It is misleading to include this report without saying what is being done about the issues raised. The company is diligently pursuing resolution of both land claims and human rights claims and this progress should be included in the Box.
- 7-30: In order to better recognize the importance of technological advances, it is suggested that the paragraph dealing with this subject be rewritten as follows: ‘Industry believes that it is important to recognize that mineral exploration and development technologies and best practices are constantly evolving. For example, modern processes of mine construction and systems of management and pollution control mean that some new mines can now operate as closed systems with minimal impact on the surrounding environment.’
- 7-35: The recommendation on integrated land use planning should be included in Chapter 16.
- 7-36: There is ambiguity in the body of the paper and the recommendations section with respect to the veto rights that needs to be addressed. On 7-36, bullet 7 under “*National Governments should consider:* “, it is recommended that “*national governments should consider negotiating mechanisms that recognize ... the right of the community to say ‘no’ when there is a clear indication of a well-established collective decision-making process that has rejected the project.*” On page 7-37 under the heading “*Resettlement*”, Para 3 it is states that “*it is hard to say that a handful of people should have an absolute veto over the future of a major project anymore than one recalcitrant landowner should be allowed to prevent the building of a rail line or highway.*” Such recommendations or findings appear to be inconsistent with language found in the body of the Report, notably 7-4, Bullet 4; *Right of veto of decision* – Individuals or groups have the right simply to say ‘no’ to some land use decisions.
- 7-37: Regarding the recommendations for industry:
 - ICMM believes that it would be inappropriate that industry associations ‘police’ their members. The responsibility of verifying/auditing compliance should be given to independent organizations.
 - It is also recommended that the phrase “*regardless of the law*” be dropped from the bullet point “*deal with indigenous peoples as if consent to mine were needed, regardless of the law.*”
 - There are concerns with respect to the “*global ombudsman*” concept (see comments on Chapter 16).
- 7-39, Last bullet point: Mining companies should also be encouraged to provide sustainable economic benefits in the communities in which they operate as this could help alleviate exploitive pressures on protected areas.

- All of the recommendations regarding Protected Areas should be carried forward to Chapter 16.

Chapter 8: Minerals and Economic Development

- 8-9, Para 1: Regarding the treatment of the “*Dutch Disease*” debate, the final conclusions should be stronger. The paragraph states: “*much of this is theoretical speculation; the empirical evidence is far from conclusive.*” We would suggest that after this sentence add: ‘Correlation between low levels of economic development and mineral wealth are just that – it should not be translated directly to mean causality.’
- 8-13, Para 4: starting “*although corporate taxes...*” the section should include other hidden taxes and business costs included in the cross-subsidisation in other services in prices charged by parastatals for example.

Chapter 9: Local Communities and Mines

- The chapter understates the level of activity of the engagement process. Examples on engagement from different companies would be beneficial.
- In the chapter the definition of ‘constituencies’ vs. ‘stakeholders’ is not provided.
- The chapter deals with socio-economic issues without considering the environmental issues.
- The chapter brings up several examples of how mining and governments have worked both successfully and unsuccessfully with communities to address their needs. As a result, it serves as a starting point for discussions on what is working and what is not. Because of the vast cultural and governance differences throughout the world, many different approaches are required. The bullet points listed on 9-45 are a common ground that companies can support if adopted in a thoughtful manner that respects the rights of all actors.
- The draft Report recommends that mining operations should have a community plan before, during and after the mine. However it fails to recognise the community plans that already exist, i.e. good examples of community plans being carried out should be provided.
- What is missing in this chapter is the process that must be followed to achieve sustainable development. It would be useful to know what processes were followed in the numerous case studies quoted.
- 9-11, Para 5, Line 8: when mentioning diseases, it is also important to mention ‘HIV/AIDS’ because it is now the disease threatening most mine communities.

- 9-12 – 9-13: Concerns are raised about the role of migrant labour in causing the HIV problem in South Africa and a relatively balanced article from 'Business Day' is cited. If migration were a major factor it would be worth asking why infection rates in construction and transportation are the same or even worse and why the mines in Zambia, for example, have had such a high infection rate when there is little migration there.
- 9-15, Para 3: States, “*an independent inquiry into employees at a Rio Tinto mine in Borneo found ‘numerous cases where local Dayak women and girls had been raped or coerced into having sex’.*” This quote does not provide sufficient context and is misleading. The use of the word “*numerous*” vastly overstates the extent of cases identified.

The chapter does not state the steps taken by Rio Tinto to address these allegations and to deal with them in a just and transparent manner. Rio Tinto has treated these allegations very seriously and has worked with a local NGO and the Indonesian Human Rights Commission (Komnasham) to determine the facts of the matter in an open and genuine forum. Rio Tinto has also engaged Komnasham to help raise awareness of Human Rights issues on site, acting in what it believes to be the manner of a fair and responsible company.

The quote and associated sections also unfairly infer that the mining industry should be accountable for individual and societal behaviour, including:

- Fair treatment within marital partnerships;
 - Infidelity;
 - Prostitution;
 - Sexually transmitted diseases; and
 - Sexual abuse.
- 9-15, Para 4; Line 3: Mention examples of the chores that take up a significant proportion of women’s time in most developing countries like ‘walking long distances in search of potable water or firewood for fuel.’
 - 9-18, Para 3: Examples or an explanation of the “*modern suppression methods*” is advised.
 - 9-20, Para 1: Regarding the discussion on weak and unrepresentative governments: This creates a moral dilemma for mining companies. Who determines that the government is unrepresentative or weak? The only way to overcome this is constructive engagement with all parties but with due sensitivity to the cultural traditions and norms that dominate.
 - 9-20, Para 3: Give examples of the “*new initiatives*” that seek to avoid companies assuming the role and responsibilities of governments...
 - 9-25, Para 3, Bullet 5: It should be noted that the desire for women to be fully involved in decisions concerning mine interaction with the community is relative to where you are located. Generally in developing countries it depends on the women’s traditional roles. In most cases, for them to be involved, men (as heads

of the families/society) should be willing to let them participate, so this exercise might involve sensitising both genders.

- 9-31, Para 3: The Oxfam Ombudsman Scheme is referred to with approval - but do we accept its independence and even-handedness? Much of what it is intended to do seems to encroach upon what national laws and legal systems should govern.
- 9-32: The industry is condemned for doing little to address diseases that affect the wider community - STDs and malaria are specifically cited. Anglo American in South Africa has been doing a lot to treat STDs in areas surrounding their operations hence their Commonwealth Award for the prevention and management strategies in relation to HIV and the KCM anti-malaria programme. These examples should be mentioned by way of balance.
- 9-39, Para 1: The discussion of fly-in, fly-out operations is inadequate and would have benefited from at least a reference to 'Long Distance Labour Commuting in the Canadian Mining Industry' by Keith Storey and Mark Shrimpton, Centre for Resource Studies, Queen's University, Working Paper No. 43.
- 9-41, Box 9-6, Para 3: The industry is not supportive of the creation of new international bodies. Why not use or improve already existing ones?
- 9-42: Table 9-2: Company role: the term "*provide funding*" implies that companies should provide funding for everything. It should be changed to 'contribute funds'. There is a need to emphasise the fact that mines cannot undertake community development on their own. The mine needs to work with the authorities, other businesses, NGOs etc.
- 9-42: The Report's observations on social impact assessment (SIA) are correct (i.e. no standard methodology, no objective social monitoring, no performance objectives for all parties, no mechanism for review of the development or of the SIA, no ownership by host communities, problems with the external imposition of timeframes and SIA agendas by outside agencies). However, there appears little guidance regarding how best to overcome these challenges.

In this regard, the draft suggests social science experts are needed for SIA despite the fact that studies have shown – and this is admitted elsewhere in the text – that experts do not necessarily make better guesses than locals. Why should a community have a plan produced by one or two sociologists? Why should the views of the visiting sociologist be accorded more weight than the opinions of locals? Why is such a narrow range of social science involved? Why not more economists and political scientists or those with knowledge and experience of institution building?

The challenge that the draft Report does not meet in its promotion of SIA is to show how mining companies can balance the articulate, strongly argued, ably presented views of the experts with what local people think and feel.

In Canada, First Nations that have taken charge of their own development have had some notable successes. They have organised themselves to deal with their own social problems. They have done this without it being assumed that consultants have got to do all the heavy mental lifting.

Chapter 10: Mining, Minerals and Environment

- 10-3, Para 5, Line 1: Reference has been made that it is hard to imagine there being some kind of gain that offsets the obvious loss of natural capital in some of the world's largest mining districts. This is an unbalanced comment. Significant gains in natural capital have been made through mining. The statement references one mining district that has experienced cultural and environmental affects but does not address the improvements to the social or economic gains.
- 10-4: Water consumption: It is asserted that at the end of mine life the impact on water resources is no longer an issue. This is not always correct.
- 10-5: *Large Volume Waste* - Recognise the term "*mine waste*" traditionally used to describe overburden, waste rock and tailings might more appropriately be described as 'residual mine material'. The term mine waste does not provide the important distinction between large volume waste and hazardous waste. Overburden is often comprised of topsoil and subsoil, and even waste rock and tailings can represent a resource used for reclamation and other beneficial uses. The ubiquitous use of "*mine waste*" or "*waste*" in this chapter can give the reader a false impression of mining impacts in the absence of fact. In cases where residual mine material does create impacts (e.g. – acid drainage, tailings impoundment failures, etc.), the chapter adequately discusses these specific issues in their own right.
- 10-5, Para 1, Line 5: *Large Volume Waste*; states that "...operations are rarely designed for a beneficial end-use." U.S. federal and state regulations, among others, require that reclamation plans be developed with stated post mining land use.
- 10-6, Para 1, Line 1: The correct annual precipitation for Batu Hijau is in the range of 3 to 4 meters.
- 10-6, Para 5: *Overburden and Waste Rock*; the statement that "*Overburden and waste rock are... usually dumped ... forming slopes at the natural angle of repose.*" implies a brazen disregard for what is correctly stated as the main considerations in dump construction – erosion, stability and infiltration. Numerous examples are available of applied best practices where engineered construction techniques are used to recontour and flatten their slopes to control erosion, promote stability and prevent infiltration.
- 10-6, Para 5: *Overburden and Waste Rock*, second sentence: Reference is made to the desire to prevent infiltration. It is not made clear whether infiltration or

exfiltration is meant. During operations, infiltration will occur requiring engineered drainage to prevent the build-up of water within the structure that could cause a slope failure.

- 10-6, Para 6, Line 3: *Overburden and Waste Rock*; the statement that “...a permanent method of rehabilitation needs to be established.” is misleading in that it suggests that there is currently no permanent rehabilitation taking place at mines, when in fact this is not the case. At many operations, waste dumps that are now permanently closed have been revegetated. At some mines, it is common practice to concurrently reclaim waste dumps during mine operations as this reduces long-term liabilities and promotes stability, erosion control and infiltration reduction.
- 10-8, Para 3: *Heap Leach Spent Ore*; the sentence “A third type of waste deposited on land is the residue of heap leaching” misrepresents the facts about heap leach facilities. First, see General Comments above for discussion on labelling all residual mine material as “waste”. Second, heap leaches are not “deposited on land”, but are placed on engineered HDPE liner systems designed to contain and promote the horizontal flow of process fluids. In addition, heap leach liners are often underlain by compacted clay, as well as leak detection and collection systems.
- 10-8, Para 3: *Heap Leach Spent Ore*, last sentence: Reference is made to recharging effluent with “solvent” for reuse in the leaching cycle. Solvent is not used in gold, silver or copper leaching. Dilute sodium cyanide is used in gold and silver operations and dilute acidic solutions are used in copper operations. The use of the word “solvent”, although technically correct, in this context, suggests a compound from the chlorinated family of solvents. A more appropriate descriptor, and the common one used in the industry, is ‘reagent’.
- 10-8, Para 4: *Heap Leach Spent Ore*; The statement, “... all liners leak...” implies that leaks emanate from holes or tears, when in fact, liners are permeable at rates within engineered specifications. In the case of Nevada, for example, minimum design criteria dictates that heap leach liners have a coefficient of permeability of no greater than 10^{-6} cm/s, unless combined with a system for leak detection, in which case the coefficient can be no greater than 10^{-5} cm/s. In some instances, mine operations go beyond the ‘minimum design criteria’ specified by the regulations and install additional liners, or leak detection systems not required by regulations.
- 10-8, Para 5: *Heap Leach Spent Ore*; heaps are not always rinsed with water. Some heaps are rinsed with hydrogen peroxide, others with a solution containing bioactive substances to promote the immobilization of soluble metals, and others are capped to eliminate or reduce infiltration and long-term water problems.
- 10-8, Figure 10-2: *A Heap Leach Facility*; Compacted clay is typically placed on prepared ground before the synthetic liner is installed. This needs to be added to

the figure and the figure should be labelled gold and not uranium given that gold heap leaching is much more prevalent than uranium heap leaching.

- 10-9, Para 4, Last sentence: stating, “*Some critics argue that the companies reject backfilling without sufficiently serious analysis, and this may at times be true.*” is unsubstantiated. This sentence could just as easily be stated as follows: ‘Some critics argue that the companies reject backfilling without sufficiently serious analysis, however this is not always true.’
- 10-10, Para 1: *Acid Drainage*; the word “*problem*” in the first sentence should be changed to ‘challenge’. If acid drainage is properly anticipated and managed it is not a “*problem*”.
- 10-10, Box 10-3: Change to say, ‘can be used’ and delete “*particularly useful*”. Further discussion about constructing artificial lakes vs. natural lakes would be appropriate and also the distinction between tailing and waste rock issues.
- 10-10: *Acid Drainage*: No distinction is made between acid generation and drainage – proper planning will anticipate generation and enable drainage prevention and treatment.
- 10-11: Rio Tinto, Spain: It is a supposition that the drainage there is caused by historic activity as natural acidic drainage is believed to pre-date mining activity.
- 10-11, Box 10-4: It might be observed that such very strict regulation may result in the end of mining activity whether this was its intention or not.
- 10-11: INAP and MEND: Are industry and joint government/industry initiatives to research the prevention and control of acid drainage. This has not been acknowledged and the following narrative might be included as a useful “Box” discussion:

Overview of MEND and INAP

The Mine Environment Neutral Drainage (MEND) Canadian environmental program focused on research into identifying technology and management practices for the prevention and control of acid rock drainage. It was funded by collaborative efforts between the Canadian mining industry, provincial governments, and the Canadian federal government. The overall budget was approximately 20 million dollars. The program commenced in 1989 and ran through 1997 in its first phase. During the first phase a library of technical information was compiled that is available through the Secretariat web page located at mend2000@gc.ca. MEND continued to operate from 1997 to 2000 with a mandate consisting mainly of technical transfer using reports, conferences, and a web site through networks with industry, government and NGO’s. The newest phase, MEND3, was launched in 2001 to further research efforts to reduce liabilities associated with acid rock drainage.

The International Network for Acid Prevention (INAP) was formed in 1998 by a network of mining companies who have established a collaborative working relationship for conducting research in acid rock drainage. The network presently consists of 12 companies that function internationally with organizational meetings and information sharing workshops held at

various locations around the world. The current strategy consists of joint efforts between mining companies and regional organizations that have common interests in a specific research aspects that will lead to a reduction in liability associated with acidic drainage. Where ever possible research is conducted in the application of technology to an applied field project. Information on INAP sponsored projects can be found through the INAP web site at www.inap.com.au.

Five international conferences on Acid Rock Drainage (ICARD) have been held since 1988 at Roros Norway, Montreal Canada, Pittsburgh USA, Vancouver Canada, and Denver USA. Ongoing conferences will be held to continue a process of sharing of information and technology across the industry for the control of acid rock drainage.

- 10-12, Para 4: *Waste Storage Failures*; the statement, “...but even the threat of failure can cause sever anxiety to the local population.” should be substantiated by reference to a study or survey. If this is a restatement of a study’s conclusion, the study should be cited.
- 10-13, Para 1, First sentence – the statement, “... the location of a large tailings storage facilities (sic) is a land use decision with what are effectively permanent consequences.” is not always true and is too general a statement.
- 10-13, Para 2: *Why Do Tailing Storage Facilities Fail?* 3rd sentence: Reference is made to quality control being more difficult because tailing dams are built over time and not at once like a water storage dam. It is not correct to state that this type of construction makes it more difficult to conduct quality control review of a tailing dam. It does create the need to ensure that proper review of the construction of a tailing dam is conducted over the life of the facility and during the post closure period.
- 10-14; *Best Practice for Tailing Storage Facilities*; It is stated that the first priority should be to ensure all tailing dam designs be based on the highest design standards possible with one option being an international system. An international system for certification of dam designers would duplicate the existing licensing requirements for civil and geotechnical engineers that design structures such as tailing dams. The requirement should be that the engineer designing a facility be properly licensed for the given design.
- 10-14: An example that should be added is reference to the Mining Association of Canada’s Guide for Tailings Management (in three languages), which covers the cycle from design, construction, operation and closure. This will be followed in the very near future with an Operating Manual for tailings facilities, planned for publication this summer. These two documents would / could form the base for a good code of practice on Tailings management.
- 10-14, Para 9: *Marine Disposal*; the statement, “In Canada... deposited tailings... appear to have remained mostly at the intended deposition area” is a poor representation of the performance of these STP systems. There is very good data on where the tailings are deposited.

- 10-15, Para 1, Line 2: the statement “*This involves depositing wastes... on the assumption that the waste will not be re-mobilized in the surface water.*” it is not an ‘assumption’. With proper engineering and construction, upwards mobilization from sub sea tailings deposition can be eliminated.
- 10-15, Para 2: Underwater pipelines may have similar risks of accidents as land-based pipelines, but they are not the same. In fact, a pipeline break near the outfall of the Batu Hijau sub sea tailings line had no material affect whatsoever on the behaviour of the tailings deposition. The tailings continued to flow into the sub sea canyon under a density current without any noticeable, or measurable, difference in water quality, turbidity, or final deposition location. In addition, the solubility of metals are limited in marine environments and therefore do not pose as great a risk of mobilization or bio availability as perhaps a land-based system.

With regard to the tailings pipeline break at Minahasa, tailings were not released “to the surface”, but more accurately were discharged into an unanticipated area. Further, monitoring indicated that there was no deleterious water quality, biotic or habitat effects from the release. In fact, monitoring has indicated that the total fish catch for the area has increased, however, due to an increase in the population of fishermen; fish catches on a per capita basis have dropped. It may have been said that there was a “serious loss of fishing resources and (the tailings release) destroyed some of the surrounding coral reefs”, but there has never been any credible data produced to support this allegation.

- 10-15, Para 3: the sentence, “*Some industry studies suggest that the risks are minimal and that within several years of closure the sea floor can be decolonised by benthic fauna.*” Ellis’ studies were peer-reviewed and as such would not be considered as ‘industry’ studies. Also, the studies do not ‘suggest’ that tailings are decolonised, they prove it based on data. Further, benthic organisms have been found to rapidly decolonise the tailings at the Minahasa project.
- 10-15, Box 10-5, *Marine Disposal*: The Misima operation is not “*young*” it is mature. It is not the case that the research on the effects comes ‘entirely’ from the company and is yet to be verified by independent research. The Misima research has been paid for by Misima Mines Limited but carried out by the Commonwealth Scientific and Industry Research Organization (CSIRO), the Australian Institute of Marine Science (AIMS), James Cook University, the Ocean Science Institute of the University of Sydney, among others. This should be corrected.
- 10-15, Box 10-5, *Marine Disposal*: the sentence “*the current information comes entirely from the companies ...*” is gratuitous and unnecessary.
- 10-15, *Marine Disposal*: The classification of marine disposal of tailings as “*deep*” or “*shallow*” infers a fundamental difference in the behaviour of tailings, the effects on the environment, and the engineering of systems between the two that does not necessarily exist. “*Deep*” or “*shallow*” is not as important as

depositing the material below the maximum depth of the surface mix layer, the euphotic zone and the up welling zone. These depths may vary from quite shallow, as in the case of the Minahasa STP system, to quite deep, as in the case of the Batu Hijau STP system. Nevertheless, both systems function according to the same principles. Consider replacing “deep” and “shallow” with “sub sea” or simply “marine”.

- 10-17: *Mine Closure Planning*: There are no examples of successful mine closure provided and there are many that could be included. There are also many examples of communities that have thrived post-mining (e.g., Park City, Utah; Johannesburg).
- 10-19: These closure factors are based on North American, Australian and European experiences. South Africa should also be included.
- 10-19, Last Para “*A number of obstacles have prevented adoption ... in the developing world*”. What obstacles? This needs elaboration.
- 10-20: Taxation and closure is not considered. This is a very complex issue that deserves elaboration.
- 10-21, Para 6: *Mining Legacies*: As stated in the first sentence, it “*is*” impossible to estimate how many former mining sites exist around the world, so why then does the draft Report place so much emphasis on the 500,000 former mines of the United States? There is a lack of clarity as to what the 500,000 former mines consist of, creating the impression that there is a significant environmental and safety hazard. The type of sites that comprise this figure includes sites that have already been reclaimed or are benign; sites that consist of only landscape disturbances such as small exploration digs created by miners in the 1800s and early 1900s; sites where there are safety hazards such as open shafts; and sites where impacts exist such as acid mine drainage. However, the sites where actual impacts exist are significantly fewer than the implied 500,000 number referenced as part of this overall discussion. The estimate provided appears to be an extrapolation of Colorado’s situation. In relative terms, Colorado will have a high density of abandoned mines considering its past, whereas other states will not, such as Kansas and the Eastern seaboard states.
- 10-21: *Mining Legacies*: The U.S. Superfund is provided as a model – has it achieved its goal?
- The need for a ‘Good Samaritan’ law that would allow for re-mining and rehabilitation of orphaned sites without incurring unreasonable liability for the historic activity should be added to the chapter.
- 10-21: TRAC program - This is one consultant’s program. It should be mentioned that there are others.
- 10-21: Ian Thornton’s research on natural rehabilitation should be referenced.

- 10-22, Para 1: Last sentence states, “*suggests that it will cost US\$50-60 billion to clean up abandoned mine sites in the US alone.*” Has this amount been validated?
- 10-22: *Paying for the Legacy*: Some discussion of tax credit incentives would be useful.
- 10-22: *Paying for the Legacy*: It is unreasonable that currently existing mining companies should assume the responsibility for the bad practices of unrelated mining companies that existed in the past.
- 10-23, Para 2 which starts “*Those who benefited from failure to internalise environmental cost...*” is not entirely true because most of the lower prices paid are due to the oversupply of minerals. It is important to point out that prices for mineral commodities are set on international markets and are not determined on a cost plus basis (comment also applicable to Chapter 11- 11, under the heading, “*Price Seem to Reflect True Costs*”).
- 10-23; *Priorities for Action*; Reference is made that the first global priority must be for the public authorities to identify and register abandoned mines and assess the risk they pose given the scale of the problem. Is this valid when the scale of the problem, as highlighted above, has not been assessed? The first priority should be to focus on addressing impacts from new and future operations and to develop an effective system for the remediation of historic impacts.
- 10-23: Funding alternatives should be discussed in this section as well as Chapter 16.
- 10-25: *Environmental Management Systems* needs further definition. Also, reporting has not been included.
- 10-25, last paragraph: ICME went beyond an Environmental Charter to adopt a Sustainable Development Charter through consultation with its stakeholders.
- 10-26, Para 1: change “*Anglo Base Metals (Ireland)*” to ‘Anglo American.’ The comment regarding people leaving is gratuitous and should be removed.
- 10-26, Para 2: This misses the point. The issue is implementation not the need for higher EIA standards.
- 10-27, Bullet 4: *Riverine Disposal*: The first line should be revised to state, “*A clear commitment by governments and industry to eschew this practice ...*” given that it is currently an authorised method in Papua New Guinea and elsewhere.
- 10-27, Bullet 5: *Consultation*: Requires some language to the effect of the need for capacity building.
- 10-27, Bullet 6: *Capacity Building*: Link with Consultation references the need for communication and meaningful feedback.

- 10-28, Bullet 1: *Legislation*: This could be pulled together under the global umbrella of the need for best practice guidelines and the application of what already exists (e.g., World Bank guidelines). The issue of taxation and its impediment to best practice (e.g., closure) needs to be considered.
- 10-28: *Energy Use in the Minerals Sector*– It's acknowledged that the industry is energy-intensive – What point is being made with the consumption statistics? It should be noted that energy efficiency is inherently driven by the imperative of cost control.
- 10-28: *Energy Use in the Minerals Sector*: Much focus is paid to the use of energy by the mining sector and reference to greenhouse gas emissions. Mining, like all industries, can focus on ways to improve its environmental performance and reduce its energy use. However, mining is not a significant contributor to greenhouse gas emissions.
- 10-32, Para 3: Mention should be made of the contribution to energy efficiency made through the use and application of metals. One example is the use of zinc in increasing the durability of steel through corrosion protection. Another example is the increased energy efficiency of electrical equipment achieved by increasing their mass or volume. The following box discussion would help the understanding of this fact:

The Contribution of Metals towards Sustainable Development

The energy efficiency of electrical equipment is strongly enhanced by increasing the volume or mass of metals such as steel, aluminium and copper. The results are lower heat losses thus energy savings. Energy efficiency is a tool to reduce operating costs at the user level and to lower greenhouse gas emissions from fossil-fuel generation.

It is therefore recognized by governments and NGO's alike that the adequate generation and supply of electrical energy and the rational i.e., efficient use of energy are essential enablers of sustainable development in all its aspects, economic, social and environmental. This is a clear message heard and found in preparatory discussions and documents for the World Summit on Sustainable Development. An example is the electricity sector report prepared by the E7 group at the request of the United Nations Environment Programme (1).

A study for the European Commission published in December 1999 (2) projects that the potential savings through the use of energy-efficient distribution transformers in the utility network are some 22 TWh per year or 3% of the European Union's commitment to reduce carbon emissions in support of climate change mitigation as outlined in the Kyoto protocol. Higher efficiency in transformers requires increased copper content and more and better steels. Similarly, a position paper by the International Energy Agency (3) states that the ultimate savings resulting from a policy to encourage the installation of energy-efficient distribution transformers would amount to 150 TWh per year in OECD countries alone, representing emissions savings of 75 million tonnes of CO₂.

Another example is the policy in China to introduce mandatory minimum efficiency performance standards (MEPS) for electric motors in 2002 and the promotion of higher efficiency beyond MEPS. The State Economic and Trade Commission (SETC) clearly stated

(4) that this policy is a key component towards achieving sustainable development for China, and it will enhance the competitiveness of enterprises facing the challenges of WTO entry and economic globalization. The SETC projects potential savings of 13 TWH per year by replacing older inefficient motors. It should be noted that motors and motor driven systems consume over 50% of all power output in China. Again, improved electrical energy efficiencies are feasible by increasing the size of copper winding wires in the stator, casting copper or more aluminium in the rotor, and adding steel.

- (1) Electricity Sector Report for the World Summit on Sustainable Development, prepared by the E7 and its worldwide partners at the request of the United Nations Environment Programme, submitted January 25, 2002
- (2) The scope for energy savings in the EU through the use of energy-efficient electricity distribution transformers. December 1999, published by the European Copper Institute
- (3) Proposal for an IEA Initiative to Promote Energy-Efficient Distribution Transformers. A position paper prepared by the IEA Secretariat Energy Efficiency Working Party (EEWP), 24-25 September 2001
- (4) Raising Energy Efficiency by Enhanced Management. Mr. Xu Zhiqiang – SETC. Symposium on High Efficiency Transformers and Motors. China Energy Conservation week, November 8, 2001.

For further information: www.copperinfo.com

- 10-32, Para 5: Rather than creating another institution, should encourage companies to look at their energy consumption patterns to improve efficiency and build on existing repositories of data, e.g. Australia and its Greenhouse Gas Challenge.
- 10-32, Para 6: *Managing Metals*: There are fundamental differences between approaches used in the identification and assessment of the hazards for human health and for the environment and its ecosystems. It would therefore be preferred to see Human Health singled out in the title of chapter 10 “*Mining, Minerals, Health and the Environment*”, with a separate sub-section dealing specifically with the health aspects of the mining activities and the use of minerals and another sub-section dealing with their effects on the ecosystems. This can be done through a rearrangement of the current paragraphs.
- 10-32, Last Para, Last sentence: argue that “*the presence of detectable levels of*” metals....
- 10-33, Para 1, First line: to “*their toxic action...*” add ‘and persistence’
- 10-33, Para 3, line 3: health-‘based’ guidelines
- 10-33, Para 3, line 9: contamination ‘that may occur during these processes’
- 10-33, Para 3, line 10: “*associated with*” should be replaced with ‘affecting’

- Suggested main elements of a proposed section dealing with the health aspects:
 - Emphasize that like other chemicals, all metals, including the most hazardous ones (Pb, Cd, Hg...) can be used widely with a high degree of safety, provided the appropriate protective measures have been developed and implemented.
 - The vital role that some essential metals (Co, Cu, Fe, Mg, Mn, Mo, Se and Zn) play in many biological processes in humans and nature needs to be stressed. A large proportion of the world's population is at risk of essential metal deficiency, with even greater numbers at risk in developing countries and among poor populations (deficiencies represent a more serious problem for the health of humans, animals and plants than possible toxicity caused by exposure to excessive amounts). Campaigns of supplementation with some of these essential trace metals have proved to be an effective means of improving the health status of groups at risk.
- On several occasions in the text, it would be preferable to replace “*toxic*” with ‘hazardous’; the ‘hazard’ is the inherent property of an agent capable of having adverse (in the case of biological systems: ‘toxic’) effects on something. The ‘risk’ is the probability of adverse effects under specified circumstances by an agent in an organism, a population or an ecological system.
- The conceptual boundaries of what is regarded as the toxicology of metals continue to broaden. Historically, metal toxicology largely concerned acute or overt effects which could have been easily prevented, such as those observed in the ‘Itai-Itai’ and ‘Minamata’ diseases. These effects are uncommon with present-day occupational and environmental standards.
- 10-33, Para 1: (Itai-Itai disease) – this paragraph is inaccurate and a specific wording change must be recommended as follows:
 - *Many opinions...basin in Japan. ‘One causative factor’ for this was cadmium discharged from a ‘lead/zinc mine.’ This water... was then consumed by ‘local inhabitants with low intakes of calcium and other nutrients’*
- There is growing interest into potential subtle, chronic or long-term effects in which cause and effect relationships are not obvious or may be sub-clinical. Assigning responsibility for such toxicological effects is extremely difficult and sometimes impossible, particularly when the endpoint in question lacks specificity, in that it may be caused by a number of compounds or even a combination of substances, including metals.
- 10-33: “*metals and metalloids are naturally ubiquitous both above and below Earths surface.*” The key attribute, which should be mentioned here, is that ‘metals are natural elements’, inherent constituents of the earth’s crust. As a result of natural processes, (e.g. wind and water erosion, abrasion of rocks, volcanic activity) they are cycled through the biosphere and are as such present at natural (‘background’) concentration in all environmental compartments. ‘Metals are subject to variable background concentrations’ due to local or regional differences in geochemistry, seasonal (e.g. differences in river flow rate over the seasons), and also biological factors (e.g. biomass input in autumn).

- 10-33: A further key factor in understanding and managing metals in the environment is the ‘conditioning of organisms to natural background.’ Due to the ubiquitous presence of metals in the natural environment, organisms have been conditioned to the natural background, which they are living in. This reasoning holds basically for all metals. For the essential trace elements, this conditioning to natural background is even more crucial. Many metals are also essential elements that are required by all organisms to grow and develop. To keep the needs of these elements at required levels, mechanisms have been developed for all organisms, including man. Deficiencies represent a serious problem for the health of humans, animals and plants.
- 10-34, Para 2: The “1998 Aarhus Protocol on Heavy Metals” is an international agreement not solely European, ratified by among others Canada and USA.
- 10-34: There is something called *the Aarhus Protocol on Heavy Metals* - this should be corrected to read the ‘UNECE Long Range Transport of Air Pollutants Protocol on Heavy Metals’. LRTAP is its own convention under the UNECE and has nothing to do with Aarhus.
- 10-34, Para 4: The assertion that “*Landfill sites containing batteries and electronic equipment continue to affect aquifers worldwide*” requires qualification. Landfill sites are known to leach metals of the type found in these products but no credible causative link has been established.
- 10-35, Para 3 - The importance of metals for human health should be illustrated with a specific example. It is proposed to add a “box” covering the role of zinc in human health.

The Essentiality of Metals for Human Nutrition

The importance of essential metals for human health is best illustrated by the growing awareness of the dangers of zinc deficiency. The human body contains around 3g of zinc, but this tiny amount ensures the proper functioning of more than 300 enzymes.

A landmark in understanding was the international conference on Zinc and Human Health held in Stockholm, June 2000. The conference was important in not only highlighting the well documented effects of severe zinc deficiency (growth retardation, impaired reproduction, immune disorders, etc) – but also the vital role zinc supplementation plays in reducing the risk and incidence of common childhood diseases, such as diarrhoea, dysentery, pneumonia and malaria in developing countries. According to WHO these illnesses account for 70% of childhood deaths worldwide.

Recent analysis of diet and nutritional needs have led researchers to estimate that 48% of the world’s population is at risk from zinc deficiency. Even in the United States, one of every two children was found to have zinc intake below recommended levels⁴.

⁴ Cook&Martin. *Differences in Nutrient Adequacy among poor and non-poor children*. Tufts University School of Nutrition, May 1995.

Against this background, the International Zinc Nutrition Consultative Group (IZiNCG)⁵ was formed in 2001. IZiNCG's objective is to help reduce global zinc deficiency particularly amongst vulnerable populations in low-income countries. Several approaches can be taken, including changes to crop agriculture to boost zinc content of cereals, changes to cooking methods and administering zinc supplements. Another option, used for example in Peru, Indonesia and Mexico, is fortification of foods with zinc.

Zinc is also an important micronutrient for crop growth itself. Crop yields can fall by as much as 30% as a result of zinc deficiency in soils. A UN FAO study showed 49% of soils surveyed to be zinc deficient.⁶

Further information: www.zinc-health.org or www.izincg.ucdavis.edu.

- 10-35: *Metals Management*: Identify priority areas of uncertainty – much of this work is now underway.
- 10-35: *Metals Management*: Coordinate database on metals life cycle – much is being done – ICMM can work to fill the gaps.
- 10-44, Para 3: “*The weakness of governments puts the burden for managing biodiversity on NGOs....*” Rather this should be re-phrased as an opportunity for partnership.
- 10-44: It should be noted that there can be positive impact on bio-diversity in the areas that surround mines where access to the public is restricted for safety or rehabilitation work (e.g., no hunting areas).
- 10-44: *Recommendations on Biological Diversity* - There has been a good attempt to condense all the information from the two London workshops. Not all of the paths forward have been captured however. One of the most important is the building of trust between the industry and the various NGO's through various initiatives.

Chapter 11: A Life-Cycle Approach to Using Minerals

- The title is misleading or, alternatively, too narrow, not adequately covering the content of this chapter. It permits confusion between ‘life-cycle assessment’ and ‘life-cycle approach’ especially since the former does not deal with social and economic aspects of sustainability and yet it is claimed that “*a life-cycle approach...includes all dimensions of sustainable development*”. Formal LCA is well understood or at least well recognized but ‘life-cycle approach’ does not have a history as a phrase used in the sustainable development dialogue. Changing the title to ‘*Specific Considerations for Metals and Other Mineral Commodities*’ would be an essential beginning to the process of rectifying this.

⁵ IZiNCG is supported by International Zinc Association, UNICEF, United Nations University, the International Union of Nutrition Scientists and other organisations.

⁶ Sillinpaa, M. *Micronutrient assessment at the country level: an international study*. FAO Soils Bulletin No.63, Food and Agriculture Organisation of the United Nations, Rome 1990.

- 11-3: Inconsistency and lack of definition attached to the use of the terms ‘mineral’, ‘mineral commodities’, ‘mineral products’ and ‘mineral resources’ is fostering confusion throughout the chapter (and Report). Further difficulties arise when attaching certain key attributes e.g. recyclability to these terms. Metals are recyclable, minerals are not, and certain minerals may be re-used. It would be advisable to re-iterate the definitions addressed in Chapter 2. A more consistent use of the term “mineral commodities” may be a compromise solution to embrace both primary construction minerals and metals but these need to be spelt out.
- 11-3: The challenge to adopt a ‘life-cycle approach’ that ‘includes all dimensions of sustainable development’ has been a fundamental and consistent position of the European metals industry in response to the European Commission green paper on Integrated Product Policy and is therefore not just one for the ‘whole minerals sector’ but for all stakeholders.
- 11-3: Reference is made to impacts on those dependent on the extractive industry that could arise from actions to reduce dependency on primary minerals. This is a key debate that is alluded to on other occasions in the Report but not expanded upon. Inclusion of a recommendation to look at the macro and micro economic implications of promoting sustainable development in the primary and secondary metals sector may prove beneficial in this instance.
- 11-4, Para 1: The recommendation, that *“The environmental and health impacts of the use of different mineral products need to be understood”* conflicts with the view held by various stakeholders that significant achievement has already been made in this respect. Reference to the work of ICME and the Commodity Associations in concert with their members and other stakeholders on initiatives like voluntary risk assessments, development of methodologies for hazard and risk assessment and various risk management programmes is missing here and in Chapter 10. As there is much still to be done this recommendation should not be lost but a modification of language to seek ‘the continuation of work towards understanding....’ would bear a truer reflection of the current status of activity in this regard.
- 11-4, Para 1: Advocating the application of the precautionary principle in response to ‘potential risks’ assumes an extreme interpretation of the basic objective of the principle. By this standard, all materials, all products, all uses should be subject to the exercise of the precautionary principle: it becomes ‘all precaution, all the time’. This leaves no room for risk assessment and only enables risk management to the extent that it is mobilized do deal with the ‘potential’ for risk to exist. In addition, it is not clear what is meant by ‘the precautionary principle’, or which version of the precautionary principle the author(s) had in mind. It is suggested that the definition of the precautionary principle expressed in the Rio Declaration and interpreted by the European Union be quoted. ‘In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.’

- 11-4, Para 3-5: *Connecting Production with Use*: The drivers and benefits for improving the link between the production of minerals and the use of mineral commodities are not explored. The role of Commodity Associations in facilitating the exchange of information on good practice, minimisation of human and environmental health impacts and promoting common understanding through environmental affairs and market development activity should be acknowledged. Furthermore, the important role of commodity associations in providing this connect should be recognised – and hence the potential for advancing sustainability at commodity level through a co-operative approach to practical issues such as product stewardship. The relationship between metal miners and end-users has worked effectively in the context of the market development for decades. The shift of these relationships to advance the sustainable development agenda is a significant opportunity and has formed an important part of IZA's approach to sustainable development.

Advancing Sustainable Development For Metals **– The Zinc Industry Approach**

In the late 90s, the world zinc industry recognised its potential importance in advancing sustainable development – in particular the contribution its products make to social and economic progress and resource conservation. In 2000, the industry established a Sustainable Development Strategy, following an external stakeholder analysis (by Institute for Management Development International, Lausanne). This strategy now forms an integral part of International Zinc Association's (IZA)⁷ Business Plan.

Key elements of IZA's long-term strategy are:

- Assessing future trends and developing zinc sustainability indicators.
- Developing and communicating a full understanding of: i) the impact of zinc on the environment, ii) its essential contribution to human health and eco-systems, based on a sound scientific risk assessment appropriate for zinc.
- Ensuring efficient use of resources to produce and recycle zinc.
- Reducing the energy intensity of all processes along the value-chain.
- Controlling emissions of zinc from point and diffuse sources
- Producing with appropriate social and environmental standards worldwide.
- Developing an integrated product policy throughout zinc's life cycle.

Sustainability is now the central focus of the zinc industry's strategy. Member companies adopted the IZA Sustainability Charter in 2001, committing to a vision of long-term sustainability. IZA has also revised its mission statement and is developing specific guiding principles and codes of practice to assist companies in implementing the Charter.

Specific actions are pursued through IZA's 2001-2002 Sustainable Development Action Plan. In particular, IZA has embarked on an extensive customer consultation exercise to further refine its approach and to bring focus to the downstream elements of its product stewardship

⁷ IZA represents the world's miners, producers and recyclers of zinc. IZA has associate members from zinc-using industries around the world.

actions. For example, health & safety training will be integrated into technology transfer activities with the galvanizing and die-casting industries in emerging Asian markets.

The IZA approach to codes combines (i) utilisation of existing codes in areas that are generic to the mining and metals sector (e.g. Minerals Council of Australia Code on Environmental Management) with (ii) development of new codes in areas that are more specific to zinc industry (e.g., management of minor elements, management of iron residues, etc). IZA therefore anticipates close co-operation with ICMM in future development of its approach to codes of practice.

The IZA story illustrates the progress that can be made in the practical application of sustainability principles at commodity level.

Details of IZA's sustainable development work can be viewed at www.zincworld.org.

- 11-4: *Supply Chain Management*: Discussion of supply chain pressures towards improved performance is too narrowly focused on the activity of the mining sector especially in view of the assertion that there is an incongruity between mining and end-use. The examples used to demonstrate these pressures exist in the minerals sector serve only to illustrate that pressures arise from individuals or organisations that are constituents outside the supply chain. Missing from this section is any analysis of the pressures on producers of metals either through the supply chain or via external parties such as regulators and the broader issue of “Market Access”.
 - 11-5, Para 3: The source of information is needed to support the sentence: “*most firms remain more concerned about the environmental performance of their immediate suppliers than the source of the minerals used in their products.*”
 - 11 – 6: Models for modelling the supply chain are being developed for specific commodities and in some instances on a global scale. The work of Yale University, Leiden University and the Wuppertal Institute would be a useful source of reference. The development and refinement of these models are likely to prove essential to the effective management of impacts along the supply chain and resource efficiency, notably at end-of-life. This work should be encouraged.
 - 11-7: *Product Stewardship*: The assertion that “*to date product stewardship initiatives undertaken by companies producing or using mineral commodities have focused mainly on the end of a product's life*” is incorrect. Product stewardship is a vital activity, which is growing in importance within the metals industry. A fuller explanation of the term and its current application is required and in this respect reference to codes or positions advanced by certain Commodity Associations (IZA, NiDI) could assist. Examples outside the minerals sector such as the Product Stewardship initiative of the ICCA (International Council of Chemical Associations) could enhance the recognition of this activity. The following case study of nickel could be included as a box discussion:
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Extended Product Stewardship: The Case of Nickel

The primary nickel industry finds nickel and extracts it for the use of society. Its basic products go out into the world and largely disappear: into alloys (especially stainless steel), coatings, pigments, catalysts and chemicals. These in turn are incorporated into literally hundreds of thousands of products. In such a complex and diverse industry, the concept of exercising extended product stewardship is seriously challenging.

Nevertheless, most of the world's major primary nickel producers, that is the producers who are active mostly at the very beginning of the life cycle, have consciously decided to accept the challenge relating to stewardship of downstream products.

These companies are supporting a variety of activities that add up to a practical form of product stewardship. They are doing this collectively through the actions of the Nickel Development Institute. These activities are underpinned by a consistent investment in and support for science and research on the safe production and use of nickel, mostly undertaken through the Nickel Producers Environmental Research Association (NiPERA). Two examples:

Nickel dermatitis:

Jewellery and body piercing have no direct connections to the primary nickel industry. Moreover, the amount of nickel used in jewellery and body piercing is trivial compared to the overall production of nickel: a fraction of one percent.

Yet a significant percentage of consumers (in Europe, between 10-15% of women, 1-2% of men) have acquired an allergy to nickel. This has occurred because some forms of nickel have been used inappropriately, in particular for products that are designed to be used in direct and prolonged contact with the skin. Recent fashions for body piercing and for the use of novelty jewellery have increased the incidence of the problem.

For more than a decade NiDI and NiPERA have worked with European authorities to increase the understanding of why nickel allergy is so prevalent and how the incidence can be reduced in future. The lessons learned are now being taken by the nickel industry to other jurisdictions around the world. For details on the nickel industry policy, see:

www.nidi.org/environment/facts/contactdermatitis/contactdermatitis.

NiDI is confident that these efforts will result in a decrease in incidence of this allergy in future.

End-of-life and Sustainability:

It could be said that recycled nickel competes with primary (virgin) nickel. Indeed only a tiny fraction of all the nickel that is recycled is recycled by the primary nickel industry, mainly because it is more efficient- economically and environmentally - for nickel-containing alloys to be recycled as alloys rather than back through a nickel smelter.

However, the primary nickel industry, through NiDI, is making a major effort to increase understanding of nickel flows in society, where it ends up, and how best it can be recaptured for reuse and recycling. The high value of most nickel-containing products means that a high proportion is collected and recycled through normal market mechanisms. But NiDI is offering as a service to try to help anyone with a nickel-containing EOL product, material or waste find someone able to recycle it. (See www.nidi.org/environment/recycle/index.htm for more on nickel recycling.)

The future:

This essentially practical approach to product stewardship is enabling the nickel industry to learn by doing. It also encourages communication through complex supply chains in a way that raises the awareness and commitment of the industry operating that supply chain. Experience gained will aid the development of more sophisticated stewardship strategies to match the challenges of the future.

From a sustainable development perspective, the challenge is to develop and implement material management strategies that take into account the inherent properties of metals to maximise their service or value to society (social, environmental, economic), while at the same time minimising any adverse impacts. Such strategies could be most effectively and efficiently implemented with a mix of measures, including for example regulations, industry-led stewardship programs and partnerships with product manufacturers and distributors.

- 11-10: *Life Cycle Assessment*: One of the key benefits of an LCA (particularly the LCI component) is transparency this should be stated more clearly.
- 11-10: *Life Cycle Assessment*: The work of the metals industry towards the development and promotion of LCA is more extensive than that suggested in this Chapter. Several metals have already generated cradle to gate LCI's (Pb, Zn, Ni, Cr, Mo) in some cases in response to collaborative initiatives with downstream users undertaking LCI and LCA assessments.
- 11-10: *Life Cycle Assessment*: Mechanisms for the integration of economic and social themes in LCA need further analysis.
- 11-14: *Sufficiency, Efficiency, Equity and Use*: A comparison between the costs and benefits associated with primary production and secondary production along social and economic lines as well as environmental should be advanced here. There is also a cross reference with the statement in the final paragraph of 11-17
- 11-15: A more succinct explanation of what is meant by eco-efficiency has been given by the WBCSD; "Eco-efficiency is reached by the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the earth's estimated carrying capacity". However, the following discussion of the work of Five Winds published by ICME and titled "Eco-Efficiency and Materials" demonstrates that this definition does not apply to the basic material cycle. It is suggested that this be included as a box discussion:

Eco-efficiency and Metals (*)

Different materials (like metals, plastics or wood) are contributing to the sustainable development of society. The useful properties of different materials can be harnessed and combined to make products that society requires to meet its needs. Main element of sustainable development is on availability of these materials. On this aspect environmental thought has traditionally lumped materials in two categories: renewable and non-renewable. And to-day policy frameworks give priority to renewables.

However it may be useful to distinguish between three other categories: a separate resource stock, material stock, and the product cycle. In this logic, materials are distinguished from

resources and products. Materials can be characterised and considered independently of the natural resources from which they are derived, and from the product cycles in which they are used. This concept, combined with aspects of the fundamental structure of the different materials and certain of their related properties such as recyclability, durability and biodegradability, leads to different strategies of eco-efficiency. And each of them has its merits and drawbacks.

Wood (and paper) is cellular in structure. Cells, mostly organised into fibres, make up the structure and largely determine the properties and integrity of the material. Once the structural integrity of the fibres is compromised, they cease to be useful as materials. For wood (and paper) the primary strategy is to maintain the integrity and productivity of the living resource stock. This might be called **resource eco-efficiency**.

Plastics are molecular in structure. Specifically, they are made of chains of carbon-carbon molecules. It is the ability of the single monomers to link together in an almost infinite number of combinations that allows engineering polymers with specific properties. For plastics, the primary strategy is to maximise the benefit of the product. Because much of the material stock is used only once, emphasis is placed on **product eco-efficiency** to make best use of the resource.

Metals are elements. Their elemental nature distinguishes them from other materials and provides their basic material value. Different metals have different physical and chemical properties due to atomic -level characteristics associated with metallic binding. For metals, the primary strategy is to maximize the utility of the metal element. Thanks to the combination of the durability of most applications with the almost infinite recyclability, most metals ever mined are still available for society as materials stock. This points to a metal stewardship strategy, or **materials eco-efficiency** approach, that promotes maximum benefits from the material stock.

The concept here presented leads to alternative thinking around the question “What is renewable?” A distinction can be made between resource renewability and material renewability – they are not interchangeable. Wood fibres come from a renewable resource but, because of degradation, these properties are not retained when recycled, i.e. they are a non-renewable material. On the other hand, metals come from a non-renewable resource. However because they are elements, their properties can be fully restored when recycled. They are a renewable material at the service of Sustainable Development.

(*) Cfr. ICME – publication on Eco-efficiency and Materials by Five Winds (April 2.001).

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- 11-16: The Endnote #27 has no reference at the end of the Chapter.
 - 11-19, Para 1: *Keys to Advances in Recycling*: The UK tax on the production of aggregates has not been implemented.
 - 11-21: *Keys to Advances in Recycling*: A statement towards encouraging product design for recycle or component reuse needs to be included.
 - 11-22, Box 11-7: states that the European Commission “*had no mechanism to assess the risk posed by the introduction of new substances*”, this is incorrect as current regulations concerning the notification of production of new substances contains a process of risk assessment and this scheme in part has been the basis of the new proposals for existing chemicals. The lack of mechanisms to ensure the

assessment of risks posed by the import of products incorporating ‘new’ substances is a concern and driver for the new chemicals policy.

- 11-22, Box 11-7: “*Regulating Chemicals in the European Union*”. It may be worthwhile capturing the idea that industrialised countries are becoming much more innovative in their application of non-tariff barriers to imported products from developing world, this constitutes an increasing barrier to trade and investment in developing countries
- 11-24: *The Way Forward*: It is questionable whether the four pages of conclusions and recommendations are too long. There is some new material, which has not appeared in the preceding text and detracts from the key recommendations. For instance the assertion that the aluminium industry is more advanced in its recycling thinking and practice is redundant and more importantly is unsubstantiated and therefore open to unnecessary criticism from third parties. We suggest it is more important to highlight the recommendations and carry forward the most appropriate ones to Chapter 16 where there is a paucity of recommendations seeking to effect change and response in areas of metals production and use. Accountability and engagement of all the actors towards the recommendations is not clearly established.
- 11-24: *The Way Forward*: Regarding the statement “*producers have a responsibility to ensure that mineral commodities are used in a manner that is efficient*” The term ‘eco-efficiency’ should be used in place of resource efficiency to be consistent with earlier assertions (cf 11-15). Aside from this is it realistic to establish that only “... *producers have a responsibility to ensure that mineral commodities are used in a manner that is...*” How could a producer ensure it? Would not it be a responsibility of the society as a whole?
- 11-26: The recommended product stewardship initiative could be built on work already done by Commodity Associations as well as the Non-Ferrous Metals Consultative Forum on Sustainable Development.
- 11-26: Clarity would be useful in the assertion “*Governments should continue to work with industry associations to develop national strategies for recycling mineral commodities and extending product life, with measurable targets.*” The ideas in this sentence have suffered too much from compression. It suggests there is only one possible partner (industry associations) and only one possible level (national) for actions. That there should be measurable targets for recycling of mineral commodities is not unreasonable as long as it is balanced with practical understandings of (a) when the mineral in question will become available for collection, and (b) the environmental and economic costs associated with collection, sorting, transportation, re-processing.

Chapter 12: Access to Information

- This is not just about information but also about it being understood – could rename the chapter ‘Effective Communications’ to imply understanding.

- 12-3, Para 4: *Information's Key Role*: No mention is given to environmental information. The MMSD Project should include environmental information as part of the examples.
- 12-4, Para 2: Facts are not value-dependent. Facts are facts and value only plays a role in making use or abuse of facts.
- 12-4, Para 4: Last sentence: To verify information is not necessarily a sign of distrust but a scientific principle.
- 12-6, Para 4: It states "... However, the digital divide means that many of these technologies are generally not available to stakeholders in the South." In order to avoid sensitivities it is suggested to avoid the North-South connotation. Not only stakeholders in the 'South' face the digital gap but also in 'Equatorial Regions' and the 'East'.
- 12-9 (and 14-8): The Aarhus Convention is correctly referred to but should also note that it is a United Nations Economic Commission for Europe Convention (limited to the countries of Europe, Russia and the former CIS and US and Canada).
- 12-18, Para 2: Based on experience, the following statement is inaccurate—"Among mine operators, there is wide concern that releasing information on environmental performance, particularly water quality, air emissions, and solid wastes, would provide anti-mining groups with ammunition to use against the company; though this seems to be unfounded." For example, the publication on the Internet of Toxic Release Inventory (TRI) data in the United States has brought widespread criticism because it has been misunderstood and misrepresented by the uninformed public and anti-mining entities.
- 12-23: How is technical information going to be communicated to the local communities? Perhaps a subsection dedicated to this issue should be provided.

Chapter 13: Artisanal and Small-Scale Mining

- The chapter doesn't differentiate between legal title and access to land based on traditional rights. Problems and tensions with ASMs regarding access to land often arise because of this distinction. This is often not recognised by governments in their desire to encourage large-scale miners and the accompanying foreign investment.
- 13-4, Para 4: *Characteristics and Products of ASM*: the term "*garimpeiros*" should be explained (maybe added as a footnote) for those who don't understand Portuguese.
- 13-27: *Recommendations*: Bullet 4: The recommendation that large mining companies should work with ASM and in some cases find them alternative

employment needs further elaboration. In many instances ASMs operate illegally or migrate into the area after the mine has been approved and constructed. Such a recommendation could encourage other illegal ASM activity.

Chapter 14: Roles, Responsibilities and Instruments for Change

- 14-3 and 14-4: The introductory pages present a reasonably adequate global scenario where the actors have, are and could participate to address the governance challenges facing the minerals sector. The local and regional dimensions are not mentioned with the same emphasis.
- 14-4 to 14-7: The general description under the title “*Legislation*”, which includes “*Mining Legislation*” and “*Other Mining Legislation*”, seems balanced and based on a sound and practical approach. It must be recognised that sustainable development concepts are rarely incorporated in most of the historical legislation frameworks given. Some indications of changing that historical reality can be detected in new regulations issued by countries starting in the last 2 or 3 decades regarding environmental protection.
- 14-8; *International Conventions*: Last Para: The author says: “*There is currently no international governance regime or statement of principles for mining or mineral resources, which stands in stark contrast to renewable resources such as agriculture, fisheries, marine resources, and forestry*”. It is not clear what the author’s point is other than the obvious connotation. Should the minerals sector have an international governance regime? How will this international regime affect the sovereignty of each country? The practical applicability of this international governance regime is doubtful. Voluntary guidelines may be considered but with no contradiction of the national, regional or local governance structures.
- 14-11: the Endnotes #7 and # 8 have not included the source of information.
- 14-11: *Terminal Liabilities: A long-term Challenge*: Last Para: The author says “*Closure costs can be significant and may include the expense of relocating workforce, maintaining schools and other infrastructure, environmental remediation, and the long term treatment of acid drainage from the site*”. While the general concept seems adequate, the examples of maintaining schools and other infrastructure go in the opposite direction of sustainable development. The model that has to be implemented must provide the tools to transfer the responsibility of that type of maintenance to the local communities and government, respectively.
- 14-11 to 14-16: *Terminal Liabilities*: This part of the chapter mainly focuses its comments or considerations on future closure activities and very little on abandoned sites or historical liabilities. In addition, there is a good opportunity to incorporate comments and conclusions from the Latin American MMSD Report regarding who has the final responsibility for the cost of treating the social and environmental problems generated by the orphaned sites.

- 14-12, Box 14-1: Ok Tedi and Marcopper may provide examples of the consequences of decisions taken some decades ago but these should not be construed to represent the closure planning processes in place in contemporary, main stream industry.
- 14-13, Box 14-1, Para 5: Says: “*In March 1996, ... releasing an estimated releasing an estimated 1.5-3 million...*” Delete duplication.
- 14-18: Standards related to management processes (e.g. ISO 14001, SA 8000) already exist at a global level. It would be useful for the MMSD Report to describe the applicability of those existing ‘process’ standards to mining and metals and the gaps that could be filled with respect to the specific issues around mining/metals industry.

On the other hand, ‘performance’ standards (measuring results on the ground, e.g. units of metal in effluent) would appear to be very difficult if not impossible to apply globally. Performance standards need to be set with involvement of local, directly affected stakeholders as well as in consideration of the local physical environment and legal environment. If the MMSD Report authors believe that global performance standards can be developed, they should make specific suggestions with respect to how these standards can be implemented.

What appears to be a more realistic possibility is a globally consistent approach to verifying compliance with site-specific standards (i.e. a set of rules for acceptable independent third party sustainability audits). Could the MMSD Report comment on this?

Developing global standards in reporting on sustainable development performance (distinct from the previous point about standards for verification) might be an alternative approach to developing global operational (i.e. management process) standards. The prospect of a mining module for the Global Reporting Initiative appears to present an opportunity for moving towards standardised global reporting. Such reporting could have the effect of disclosing the differences in sustainable development performance of different mines around the world, and would shed light on the desirability and feasibility of developing global operational standards, or perhaps drive convergence without the formal promulgation of standards. Can the MMSD Report comment on the concept of using consistent global reporting as a driver of standardised performance?

- The implications of the voluntary development of global standards need to be examined with respect to:
 - The resultant differentiation between multinational mining companies and domestic mining companies, or between the majors and smaller companies, e.g. in the exploration sector, along with a strategy for closing the gap;
 - The effect on the development of government regulatory capacity in developing countries (i.e. how to make this voluntary initiative a contributor to capacity building, and not a retardant);
 - The possibility that global standards might be invoked as non-tariff barriers to trade, especially in metals; and

- The complications created in certain highly regulated and litigious jurisdictions (e.g. the United States). While time is limited for such additional analysis, can the MMSD Report at least outline the factors to consider in analysing these issues?
- 14-20 to 14-21: *Certification Schemes*: There is a good opportunity to recognise that there are several mining companies already ISO 14001 certified.
- 14-23, Figure 14-1: It is not clear where a mining company would fit, under the 5 groups of stakeholders presented in the Figure.
- 14-24, Para 5: It says “... *The influence of different stakeholders will depend on ..., or their ability to block ‘then’ outcome.*” Review the use of the word “then” in the context of the sentence.
- 14-25 to 14-26: *Overcoming Governance Challenges*: The focus of this section is centred on the global or international scenario and misses the national or local realities. In addition, there are ideas presented without a clear indication on how to address them in practical terms.
- 14-27: *Recommendation, National Policy Framework*: “*Governments should take the lead in setting standards to ensure sustainable development takes place at the national and local level.*” Nevertheless, ‘governments’ economic resources and technical abilities should be taken into consideration when making this recommendation. In addition, a clear recommendation should be made to the government sector to take responsibility for addressing the impacts produced by orphaned and abandoned mining sites.
- 14-27: The MMSD Report outlines the roles and responsibilities for institutional actors acting independently with respect to issues of mining and sustainable development. What is additionally required is a definition of institutional capacity or constraints for acting collaboratively. What are the boundaries of responsibility? For some institutions, this could readily be done. For example, different donor agencies have different mandates and policies with respect to collaborating with the private sector and it would be useful to specify the parameters that currently exist for donor agency engagement with private sector collaboration and constructive changes that might be made in those parameters. For other institutions, particularly NGOs, the delineation of mandates and capacity is much more complicated, but should be recommended as an early stage step in the direction of deepening engagement between companies and NGOs. The same applies for multilateral institutions.
- Voluntary Agreements –Mention should be made of the New Directions Group, in Canada, a multi-stakeholder policy review group that developed a Guide for the implementation of Voluntary agreements. This has been cited by the WBCSD and Canada’s NRTEE.
- The draft MMSD Report should give an enhanced representation of the Australian Minerals Industry Code for Environmental Management that includes recognition of how it is being strengthened and broadened to incorporate the social dimension.

Chapter 15: Regional Perspectives

No comments.

Chapter 16: Agenda for Change

- It appears that some information is missing at the end of the text between pages 16-3 and 16-4.
- 16-8: Because individual sites vary across the globe, the process for establishing verification mechanisms at the site level should be wary of the problem of 'One size fits all'.
- 16-11: The use of "*North*" and "*South*" throughout the document should be replaced by 'developed' and 'developing', which is more appropriate.
- 16-11: Last bullet: amend to 'It would establish rules ...' (or 'could establish') to be consistent.
- 16-11: Last paragraph: It is suggested that the scientific community be added to the list of groups with which the industry should collaborate.
- 16-14, Last Para: Change to '... do not have sufficient capacity to adequately enforce their legal provisions.' The problem in developing countries is not experts, but the number of experts. The text as it currently stands is insulting to developing countries.
- 16-15, Para 1: Add industry associations to the list of groups that want to solve the problem.
- 16-15, second bullet (guarantees based on area) is better than nothing but is scientifically dubious.
- 16-16, Bullet 2: Should be placed first as the environmental and health benefits of cleanup will be longer lasting than temporary employment for a few people.
- 16-16: Community health should be added to poverty alleviation as a major goal of rehabilitating abandoned mines.
- 16-16: *Abandoned Mineral Sites Facility*: The suggestion that a tax or surcharge on mineral products be imposed is not acceptable. Why should companies who pay due cognisance towards environmental and social costs be forced to pay for the inappropriate practices of other mining companies (past and present)? In addition, such taxes tend to be distortionary, reduce recoverable ore reserves and will undermine the national patrimony for many developing countries.

- 16-17: The authors offer a “*trial balloon*” that is qualified as “... *not a mature concept*” described as not a comprehensive analysis of central bank policies towards selling gold and intended to test reaction. The proposal would have the 15 European central banks that have been parties to the Washington Agreement voluntarily contribute some percentage of future gold sales to a fund for dealing with abandoned mine sites. It is suggested that this contribution would stabilize the price of gold because it would be a disincentive to sell gold. However, this was the principal rationale for the Washington Agreement and presumably any extension that might eventuate. Without the benefit of further investigation of its merits through consultation with interested and affected parties, it is questionable what value and credibility this proposal offers the draft MMSD Report. Without its further maturing, it is suggested that it should not be included in the final Report.
- 16-21: The Report should recognise that the World Bank is part of the UN family.
- 16-21: As the UN Foundation is not part of the UN system, there are questions whether it would have the authority to convene a meeting of UN agencies to agree on a joined up UN approach as proposed in the text.
- 16-25, (and 7-35 to 17-36): It is noted that a UN Indigenous Working Group already exists under the auspices of the UNCHR. This working group has been meeting in Geneva annually for fourteen years. A special meeting with mining companies was convened last December.
- 16-27, Table 16-1: The left hand column titled “*A Scenario to Leave Behind*” infers current practice (to be left behind). Responsible mining companies of today do not operate in such a draconian way. Some text should be included to clarify this.