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"Healthy wetlands, healthy people"

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Wetlands and extractive industries: background information

Note from the Secretariat

1. Concerns regarding the increasingly widespread impacts upon wetlands of mining and extractive industries were raised by Ramsar Senior Regional Advisers at the mid-term meeting of the Scientific and Technical Review Panel (STRP) in March 2007. It was noted that Latin American as well as African Contracting Parties were asking for scientific and technical guidance related to the impacts of mining in and around wetlands.

2. Following the STRP mid-term meeting, STRP members and observers have continued the discussion through the STRP Support Service and also requested technical expert Mr Fred Brown to prepare a briefing paper. The briefing paper was intended to provide the STRP with an overview of current and future trends in the mining/extraction sector, in order to understand to some degree the primary economic and technical drivers of investment and activity in that sector and how these might affect wetlands in general, as well as specific Ramsar sites. This was intended to help clarify the manner in which the STRP could potentially best provide scientific and technical support for Parties in addressing this sectoral issue.

3. During and immediately after the STRP mid-term meeting, the discussion centered around oil and gas exploration and exploitation, but it has become clear from the briefing paper that all sectors of the mining industry, including precious metals, base metals, industrial minerals and coal, are expected to continue on rapid growth paths, leading to increasing potential for impacts on wetland ecosystems.

4. The briefing paper was presented at the regional meeting of the African Contracting Parties to the Convention in Yaoundé, Cameroon, November 2007, in order to share some of the initial thinking and discussion within the STRP and to obtain feedback from African Parties on their principal concerns and needs for guidance.

5. At the 36th meeting of the Ramsar Standing Committee (SC36), there was further discussion of mining and extractive industries, and it was agreed that a draft Resolution on this topic should be brought to the next meeting of the Conference of the Parties (COP10). Accordingly, the STRP prepared a draft Resolution DR 26, "Wetlands and extractive industries", for consideration by the COP. The STRP also plans to hold a technical briefing session on the topic at COP10.

6. In addition, the STRP has included a task related to mining and extractive industries in the proposed work programme for the 2009-2012 period (see DR 10, "Future implementation of scientific and technical aspects of the Convention").

7. This information paper is an expanded version of the original briefing paper, with additional detail from the presentation to the Africa meeting added for information and reference purposes. The original briefing paper can be downloaded at http://www.ramsar.org/mtg/mtg_reg_africa2008_mining.pdf. This draft has been prepared by Fred H Brown, MSc CPG Pr Sci Nat, and Heather MacKay, PhD (FHB Consulting Services Inc., PO Box 332 Lynden, Washington 98264, USA), on behalf of the STRP. The views expressed in the paper are those of the authors and do not necessarily represent the views of the Ramsar Convention, its Secretariat, or its Scientific and Technical Review Panel.

Economic trends in the mining sector and implications for the protection and wise use of wetlands

1. Introduction

Background: wise use in the context of mining/extraction activities

1. The Ramsar Convention defines wise use of wetlands as "the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development" (Ramsar Convention Secretariat, 2007) This recognizes that while some wetland development is inevitable and may have important benefits for society, decisions related to development in or near wetlands should be made by seeking an appropriate balance between the potential benefits of development and the costs to society, both quantitative and intangible, of potential loss or reduction of the ecological services and benefits provided by the wetland. In some cases, this may lead to a decision not to allow a particular type of development at all.

2. Ideally, the outcome of a decision-making process related to mining or extraction in or near a wetland should be consistent with the principle of wise use. That is, it should represent an acceptable balance between short- and long-term costs and benefits. This means that the decision-making process itself should be as well-informed as possible with credible, quantitative information. This will help to promote a balanced decision, one that clearly identifies the conditions under which mining may or may not proceed and the responsibilities and requirements for mitigation, minimization, or avoidance of negative environmental impacts at all phases of the project, including post-closure and handover.

3. Managing the impacts of mining/extraction activities on wetlands in the context of wise use requires that three factors be considered and addressed in an integrated way, viz:

   - governance systems and their associated decision-making and regulatory processes for permitting and site management;
   - corporate social responsibility (CSR) practices of members of the mining/extraction sector;

- the provision of relevant, credible data and information related to the wetland ecosystems likely to be affected by mining/extraction activities, as well the full range of ecosystem services and benefits provided by those ecosystems.

4. Though it is important to treat these three factors as an interconnected package, an essential short-term need is to improve the scientific and technical knowledge base in order for wetland ecosystems to be considered adequately in all phases of mining/extraction projects, and for the full range of wetland ecosystem services to be explicitly considered in cost-benefit analyses as part of planning, permitting, decision-making, and mine site management processes.

Purpose, scope and content of this paper

5. The initial concerns that led to the preparation of this paper were focused on oil and gas exploitation and the potential impacts on wetlands in general, and Ramsar sites in particular. It is clear, however, that all sectors of the mining industry are expected to continue on an increasingly rapid growth path, leading to an increasing potential for impacts on wetland ecosystems. This paper therefore deals generally with economic trends in the mining/extraction sector and hence is relevant for oil and gas, precious and base minerals, coal, sand and gravel, industrial minerals, and peat.

6. While all three aspects mentioned above (i.e., governance, corporate social responsibility, and information) are necessary for implementing wise use, it is beyond the scope of this short paper to address any one of them in great detail. The paper addresses current and potential economic trends in the mining sector and the associated potential pressures on wetlands, but focuses particularly on the data, information and possible guidance needed in order to respond to these trends. It is intended as an information resource for Ramsar Contracting Parties to support further discussion and deliberations on this topic, and also to assist the STRP in identifying and prioritising tasks related to preparation of appropriate scientific guidance.

7. Section 2 provides an overview of the economic drivers currently influencing the mining/extraction sector and an outline of the "mining cycle" from exploration through to closure. Understanding the broader economic drivers and the typical mining cycle provides better insights for the wetlands sector into how and where the likely pressures on wetlands will occur. Such understanding can then support the development of proactive responses from the wetlands sector, particularly in engaging with decision-making processes related to Environmental Impact Assessments (EIAs) and permitting of mining/extraction activities.

8. The economic overview in Section 2 shows that world commodity prices are high, demand is high and growing, and global stockpiles for many commodities are generally relatively low. As a result, timelines for moving from exploration to production are being greatly accelerated, and previously marginal deposits are now becoming economic to exploit. It is considered likely that this situation will continue for the foreseeable future. This means that time for EIA processes and decision-making is being reduced, leaving even less time for gathering ecological information and conducting wetland inventory and baseline studies in the areas potentially targeted for mining development.

9. Section 3 addresses the kinds of scientific and technical information and guidance that might be helpful in supporting the proactive engagement of the wetlands sector in decision-making processes related to mining/extraction activities. In particular, the importance of identifying priority areas for inventory and baseline data collection is emphasized, in order to increase the lead time for the wetlands sector in responding to the greatly shortened timeframe for moving from exploration to production in the mining sector.

10. It is recognized that a range of potential situations might arise involving mining/extraction activities with varying impacts and implications for wise use of wetlands, and different requirements for response or input from the wetlands sector. These include:

    - historical mining/extraction activities now in post-handover or handover phase, meaning that responsibility for the closed mining area, and any remaining associated impacts, has been or is being transferred either to a public agency or to a new landowner for different purposes;
    - historical mining/extraction activities currently in late production, closure, or post-closure phases;
    - projects in commissioning/early production phases;
    - projects in late exploration phases;
    - projects in early exploration phases.

11. Not all of these situations can be covered in detail in this paper. However, the principles discussed in Section 3 are generally applicable to all phases of the mining cycle.

12. Section 4 addresses a specific aspect of governance, namely processes for making decisions regarding permitting and conditions under which mining/extraction activities may or may not proceed. In this section, a recent decision within the mining sector is reviewed in order to highlight relevant learning points.

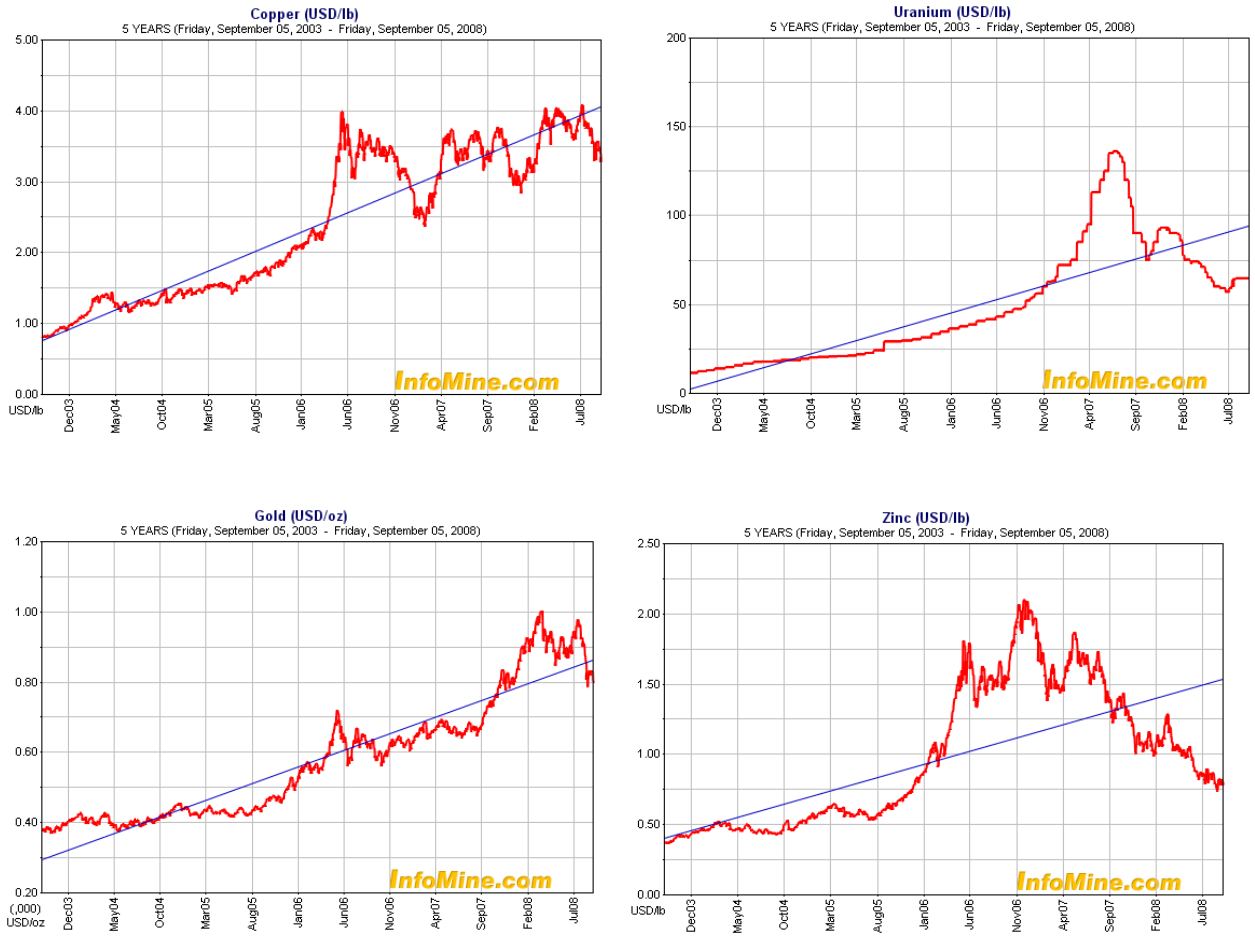
13. Section 5 summarizes recommendations for the wetlands sector, in order to support a higher degree of participation in planning and decision-making related to mining and extraction activities that may impact wetland sites.

2. Economic trends and drivers in the mineral industry

Global economic trends

14. At present, the mining industry worldwide has moved from a period of low-demand and low-revenue into a cycle of increased demand, increased competition for scarce resources, and higher commodity prices. Declining commodity prices in the 1990s resulted in a lack of exploration and development, which combined with the industrial growth of China and India has led to rapidly increased build-up of mining activity (see Figure 1). As revenues increase it then becomes possible to exploit previously uneconomic resources. In addition, there is currently a worldwide shortage in refinery and smelter capacity, further increasing commodity prices. Typically, a "boom-to-bust" commodity cycle will last around seven years; indications are that the current boom may continue for considerably longer.

Figure 1: Five-year prices for copper, gold, uranium and zinc.
Source: Infomine (www.infomine.com)



15. The worldwide mineral exploration budget for 2007 was USD9.99 billion, regionally distributed as shown in Table 1. The table shows that exploration activity in Latin America, Canada and Africa is significantly higher than elsewhere in the world.

16. Of the 2007 exploration total, 20% was associated with existing operations, 39% with grassroots exploration, and 41% with late stage exploration. Current exploration activities are becoming more and more mature, with a majority of viable projects now reaching the pre-feasibility stage. A large number of projects are therefore set to become operating mines in the immediate future.

Table 1: Worldwide exploration budget for 2007
(Metals Economics Group, 2008)

AREA	PERCENTAGE OF TOTAL INVESTMENT BUDGET
Pacific/SE Asia	4%
Latin America	24%
Canada	19%
Africa	16%
Australia	12%
United States	8%
Rest of World	17%

17. It is widely acknowledged within the mining and petroleum industries that there is limited potential for the discovery of new large-scale "world-class" high-grade deposits. Therefore the industry is moving towards the discovery and exploitation of marginal resources. "Marginal" resources include the following categories:

- High-grade small-scale deposits;
- Low-grade large-scale deposits;
- Low-grade small-scale deposits;
- Technically complex deposits;
- High risk operations.

18. ***High-grade small-scale deposits*** generally have a short lifetime, but may have high start-up costs. A priority target within the industry, there is increased financial pressure worldwide to locate and exploit this category of resource as quickly as possible, at minimal cost.

19. ***Low-grade large-scale deposits*** are normally exploitable only by major mining companies and generally require extensive capital investment in order to exploit economies of scale.

20. ***Low grade small-scale deposits*** are typically exploited by smaller mining companies or artisanal (informal) miners. In order to remain profitable, exploitation of these deposits requires that costs be reduced to an absolute minimum – including associated environmental protection, mitigation, and closure costs.

21. ***Technically complex deposits*** include those resources that require a higher investment in technology. Examples include marginal petroleum fields that can be exploited through the use of more invasive technology, or improved metallurgical technology that provides for a more efficient recovery of the commodity from the host rock, at a higher cost. Technically complex resources also include those deposits that generate a higher environmental impact during exploitation, for example, sulphide deposits with a high acid content which requires the design, operation and maintenance of long-term tailings

retention facilities. In addition, the increase in fuel prices is currently driving mining companies to look at non-traditional or less fuel-intensive mining methods.

22. ***High risk operations*** include those that were previously considered uneconomic due to remote location, political instability or lack of infrastructure. High commodity prices have to a large degree reduced the overall risk to the point where exploration and mining are no longer as limited by these considerations.

23. Higher commodity prices and increased demand will therefore be offset by the need to exploit marginal resources, as well as the impact of increased fuel costs. It can also be expected that there will be a concomitant trend in the mining industry towards minimizing associated costs and long-term social and environmental investments.

24. As commodity prices continue to rise, newer technologies will be utilized to extract previously marginal resources. Given the accelerated timeline discussed above, there will be limited time for site-specific assessments of the impacts of the newer technologies in any particular mining project. Strategic environmental assessments of newer technologies prior to their implementation would provide a knowledge base to improve the abilities of environmental regulators to assess the longer term impacts of a mining operation that utilizes these newer technologies.

25. The overall trend in the immediate future will therefore be to locate and exploit previously marginal or uneconomic resources, while keeping costs at a minimum in order to maximize the profit of the operation – and all within a much more compressed timescale. This will hold true regardless of whether the operator is a major international mining conglomerate, a local operator, or an artisanal miner.

The mining cycle and economic studies for individual projects

26. For an individual mining project, there is usually a generic cycle of activities, each of which may have different potential environmental, social and economic impacts. Each phase of the cycle may also require different kinds of inputs from the wetlands sector, including, for example, provision of baseline ecological data, review of environmental impact assessment studies, and monitoring of compliance with environmental permit conditions. The generic mining cycle can be outlined as follows:

    a) Exploration: the search for an exploitable mineral deposit.
    b) Development: determining the potential value of the mineral deposit. Environmental costs, including mitigation and restoration, are assessed during this phase (see Table 2 for detailed breakdown of this phase).
    c) Operation: the production of a mineral or extracted commodity for the benefit of the stakeholders in the mining operation.
    d) Closure: the conversion of an operating mine to a closed state.
    e) Post-closure and handover: all costs associated with the mine site, for example costs of managing long-term or residual impacts, revert to society. This phase is not usually included in economic planning for the mining project.

27. Economic studies to ascertain the profitability of a mining or extraction project are usually carried out during the development phase of the mining cycle. Table 2 indicates the general correspondence between economic studies and environmental studies during this phase,

and it highlights the importance of having adequate environmental data and information available in good time, in order to ensure that the economic studies fully reflect environmental costs and benefits.

Table 2: Economic and environmental studies in the mining development phase
*Durations are based on current economic trends and experiences.

Economic studies	Purpose	Duration*	Corresponding environmental studies
(a) Scoping study	Preliminary economic assessment of exploitation potential of a deposit	10 -30 days	Environmental baseline studies begin.
(b) Pre-feasibility study	Preliminary design and engineering studies to verify a project's potential	30 -120 days	Environmental assessment begins. Permitting requirements are determined.
(c) Feasibility study	Determines whether a mineral deposit can be mined profitably	90 - 720 days	Environmental planning completed (including assessment of remediation costs). Draft EIS/EIA has been submitted.
(d) Bankable feasibility study	Establishes a final cost for the project.		Review of environmental costs related to permit conditions.
(e) Mine construction begins.			

3. Ensuring wetland ecosystems are adequately addressed in decision making processes – building the information base

Identifying and prioritizing information needs

28. In order to have good information and adequate capacity to contribute to decision-making processes about new mining/extraction projects, the wetlands sector needs to:

- understand when and where mining exploration and production activities are likely to occur or are already occurring, and the potential nature of their impacts, since impacts will vary depending on the occurrence and geology of the mineral/commodity deposits and the extraction technologies to be used;
- in response to likely mining activities, prioritize programmes for wetland inventory, assessment and valuation;
- become educated on technologies proposed for use in new mining projects by accessing guidance and information on best practices for current mining methods and technologies, likely impacts of new/emerging technologies, and new restoration technologies/approaches.

Information and guidance needs for different situations

29. There are several kinds of situations within which scientific and technical information and expertise will be needed, depending on the phase of the mining cycle in each case. Some Contracting Parties to the Ramsar Convention are likely to have sufficient capacity to address these needs for information and expertise, but others may require support, including scientific and technical guidance from the STRP.

- ***Historical (up to several hundred years before present) or present-day mining activities***. These might be currently in late production/closure, post-closure or post-handover phases, and where there were or are long-term environmental impacts, whether mitigation and restoration were addressed in licensing or not. This might be principally a restoration issue, and there may be sufficient guidance and best practice material available in the wetland restoration literature, though it may require review for specific relevance to wetland ecosystems and various wetland types.

- ***Mining/extraction projects in commissioning or early production phases***: There might still be some limited scope for mitigation of existing and future impacts, depending on the conditions at individual sites, and hence for provision of some technical and scientific guidance perhaps through a field advisory mission. Most projects will have already completed the locally required EIA requirements. In addition, some of these situations are possibly already the subject of advocacy initiatives by external groups.

- ***Mining/extraction projects in late exploration phase***: A license application may arise in the near future, since the likelihood of a project proceeding to production increases as it enters the late exploration stage. However, the time taken to enter the production phase will vary depending on the economic and regulatory environment for the commodity and the country in question. In these situations, appropriate scientific guidance might comprise:

    - guidance on potential restoration and mitigation options associated with the project;
    - guidance on the potential impacts of technologies proposed for use in the project;
    - early identification of areas with high potential for near-term mining/extraction development, in order to provide longer lead times for EIA processes and studies, where there are wetland ecosystems in the neighborhood or region that could potentially be impacted by such development.

- ***Mining/extraction projects in the early exploration phase***: These may still allow lead time for wetland inventory and baseline studies. In these situations, appropriate guidance might comprise:

    - identification of areas with potential for medium-term mining/extraction development, where such development could potentially impact on wetland ecosystems;
    - support for inventory efforts and baseline ecological studies, prior to any mining license applications actually being received.

Identification of potential future mining/extraction impacts

30. Current and recent exploration activities are a good indicator of the likelihood of new mining or extraction projects being proposed in the future. In some countries, the wetlands sector might be easily able to access such information and use this to identify potential future pressures on specific wetlands, before the permit applications for individual projects and associated EIA processes (if any) commence. Typically, such information might be generated through Strategic Environmental Assessment (SEA) initiatives if a national government undertakes such an initiative, or could be proactively shared between government departments at national level. However, in many countries, this kind of information on exploration-stage activities might not be easily accessible to wetland managers at site or sectoral level unless they take proactive steps in requesting the information or even generating it themselves.

31. The information needed to conduct such an assessment is readily available within the mining industry, since almost all exploration and production activities in the world are publicly reported, either through governments or through securities exchanges. It is necessary to know where to find the information, how to interpret it from a database of reported exploration projects, and how to use this to indicate the likelihood of actual mining production and the nature of the potential impacts, depending on the regional geology, mining processes and extraction technologies.

32. Clearly such assessments would require a multidisciplinary approach, and the Convention may wish to consider developing partnerships with other intergovernmental agencies and appropriate private sector groups in order to conduct assessments of this kind, perhaps for certain key minerals/commodities in priority regions or for priority wetland types.

Best-practice guidance and case studies related to impacts of mining/extraction

33. It is usually helpful when participating in any permitting or decision-making process to have credible scientific information and guidance available for identifying, assessing, mitigating and/or preventing impacts on wetland ecosystems of mining/extraction activities, including exploration, commissioning, production, closure and post-closure phases. There are two sorts of scientific information that might be needed:

    - Guidance for "business as usual" mining/extraction activities being carried out with technologies currently in use: this would entail a review of available guidance and literature, highlighting that which provides good technical detail, especially on the production and closure phases.

    - Guidance for emerging technologies or technologies not previously economically feasible but likely to be applied in the future. This is more challenging, since most of these emerging technologies have not been applied at full scale, and only some have proceeded beyond bench to pilot scale. The recommendation here would be to ask a suitably qualified person or team to conduct a strategic review of these newer/emerging technologies and to provide a qualitative assessment of their potential impacts on wetland ecosystems in the field.

4. Ensuring wetland ecosystems are adequately addressed in decision making processes – an example

34. This section provides an example of a recent decision-making process to illustrate the value of decision-making systems that are transparent and that allow information on the value of wetland ecosystem services, and the potential costs of loss of those services, to be explicitly factored into cost-benefit analyses related to all phases of mining/extraction projects.

Kemess North Joint Review Panel report

35. A recent decision in British Columbia, Canada, regarding the environmental impacts of the proposed Kemess North copper/gold operation has potentially significant implications for the definition of "sustainability" of mining activities in Canada, and for the long-term post-closure liability of mining companies in that country. The decision was based on recommendations arising from an independent review by a specially-appointed Joint Review Panel, who recently published their report on the findings of the Kemess North EIA (Kemess North JRP, 2007).

36. Of special interest in this case is the panel's view that the post-closure phase for the Kemess North project will be several hundred years in duration, until the water quality impacts will no longer require some form of active mitigation involving storage, treatment, and safe disposal of mining wastes. The panel questioned the likelihood that the mining company would be around for a post-closure phase lasting up to one thousand years, since the economic life of the mine is relatively short (eleven or so years). The panel also observed that any future unforeseen costs of mitigation and/or cleanup would then fall to the state (i.e., the public) once the mining company has met its post-closure obligations. The Joint Review Panel notes that the costs of production, post-closure site management, and loss of ecosystem services (notably the spiritual value of an associated freshwater lake) are not easily quantifiable in dollar terms, thus placing in doubt the overall economic benefit to society of the project.

37. The Joint Review Panel report also provides a set of "sustainability perspectives" that were used as the basis for their recommendations on the Kemess North project. These represent a possible basis for sustainability evaluation criteria for mining generally, and they are useful starting points for identifying the kinds of wetland-related information that might be needed as inputs to a transparent and balanced decision-making process. These sustainability perspectives are:

- ***Environmental Stewardship***, i.e., the degree to which potential adverse environmental impacts are mitigated and compensated throughout all phases of the project, including post-closure;
- ***Economic Benefits and Costs***, i.e., the degree to which a fair balance is achieved between short-term benefits and long-term costs, even where some aspects cannot readily be priced in dollar terms;
- ***Social and Cultural Benefits and Costs***, i.e., the degree to which the project contributes to social well-being and community stability in affected communities, particularly if the project will result in a loss of ecosystem services currently important to resident communities;

- ***Fair distribution of Benefits and Costs***, i.e., the degree to which the costs and benefits of the project are fairly distributed amongst project proponents and affected stakeholders; and
- ***Present versus Future Generations***, i.e., the potential for the project to create a "long-term legacy of substantial minesite management and maintenance obligations" and the degree to which these obligations are passed on to future generations.

5. Concluding remarks and recommendations

Key response areas for the wetlands sector

Provide information to ensure consideration of the full range of wetland ecosystem services in decision making

38. Valuation of the full range of wetland ecosystem services must be incorporated into decision-making processes, both within the mining sector and in independent/external EIA processes, in order to fully assess long-term costs and benefits and the distribution of those costs and benefits. It is particularly important to be able to quantify the costs of remediation, mitigation, and restoration in the post-handover phase, since these costs would probably have to be borne by the public.

Catch up with economic drivers in mining sector

39. The wetlands sector should not get left behind or left out of decision-making processes, especially as timelines will get shorter for mining/extraction projects to move from exploration to production:

    - Prioritize wetland inventory and baseline data collection activities for areas where the potential for mining/extraction is high, in order to have good information available for SEA/EIA processes;
    - Get educated, with credible scientific information related to mining technologies, potential impacts, mitigation and restoration options, long- and short-term costs, in order to be prepared for EIA and license application processes;
    - Ensure access to appropriate scientific capacity and expertise for advice, review and guidance during all phases of the mining cycle.

Strengthen decision-making processes to address protection and wise use of wetlands in all phases of mining/extraction projects

40. Strengthen national and transboundary governance systems to ensure:

    - due process and proper attention to valuation of wetland ecosystem(s) services in the cost-benefit analysis (ecological, social, economic and cultural values) prior to permitting of mining/extraction activities
    - Adequate enforcement and compliance with conditions of permits in all phases of mining/extraction activity
    - Adequate attention to managing and implementing requirements of the post-closure and post-handover phases – assignment of responsibility, accountability

41. Strengthen requirements for, and enforcement of, corporate social responsibility (CSR).

Interdependence between governance, CSR and scientific/technical information: bridging the "governance gap"

42. While acknowledging the importance of scientific and technical aspects of managing the impacts of mining and extraction on wetlands, these aspects must be addressed in a way that also integrates and recognizes the importance of governance and corporate social responsibility:

    - Even if good wetland inventory and baseline information is available, the governance system's decision-making processes must allow that information to be tabled and considered in an open and transparent manner.
    - Even if a strong, transparent governance system exists, if the ecological information is lacking then cost-benefit analyses will not adequately take account of the potential value of wetland ecosystem services or the potential costs of losing those services. Subsequent decisions could be biased or flawed.
    - Even if a strong, transparent governance system and good wetland information are in place, Corporate Social Responsibility is still a necessary (but not sufficient) factor for ensuring compliance while achieving the benefits and minimizing the costs of mining to society.

43. It may not be realistic to expect members of the corporate sector to fill a "governance gap" in a particular country, i.e., to rely solely on a corporate sense of social responsibility and self-regulation to compensate for a weak regulatory environment or a lack of environmental/ecological information. Nor is it realistic to expect the corporate sector to operate outside the proscribed legal requirements of a particular country or to oversee the distribution of the social benefits of mining. This is particularly challenging with respect to managing the activities of other members of the mining/extraction sector who do not subscribe to or comply with the sector's agreed CSR norms.

44. Any governance gap needs to be bridged by strong government and civil administration agencies, hence there is potentially a larger role for intergovernmental agencies to play in supporting and strengthening national governance systems, concurrently with ongoing global and regional CSR initiatives.

Innovative strategies for ensuring adequate capacity

45. Not all countries currently have adequate capacity to address the three issues of information, governance, and CSR concurrently. To address this in the short to medium term, innovative strategies/partnerships for implementation and capacity-building should be considered. A more comprehensive approach could potentially incorporate the role of intergovernmental agencies in supporting and strengthening governance systems and processes and the role of the corporate sector in promoting CSR, setting agreed minimum standards, promoting sectoral self-regulation, and contributing to the information and knowledge bases.

References

Kemess North JRP (2007). *Kemess North Copper/Gold Mine Project: Joint Review Panel Report Summary*. http://www.infomine.com/publications/docs/KemessNorth2007.pdf

Metals Economics Group (2008). *World Exploration Trends: Special report for the PDAC International Convention 2008*. Metals Economics Group, Halifax, Canada.

Ramsar Convention Secretariat (2007). *Wise use of wetlands: A conceptual framework for the wise use of wetlands.* Ramsar handbooks for the wise use of wetlands, 3rd edition, Volume 1. Ramsar Convention Secretariat, Gland Switzerland.