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CHALLENGES FOR ENVIRONMENTAL MANAGEMENT IN THE MINING SECTOR

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1 Global Trends

1.1 Introduction

Revenue from mineral resources has contributed to the improvement of the quality of life in several countries globally. The importance of mining in the SADC region is demonstrated by the amount of minerals produced; 40% of vanadium, 72% of the platinum group of metals, 40% of chromite, and 55% of diamonds of the global output. Mining contributes about 60% of the foreign currency receipts of the SADC region (www.sadc.int). Some of the major settlements providing much needed services have developed due to mining, e.g. Johannesburg, Francistown, Copperbelt towns of Zambia. Mining contributes significantly to government revenue in Southern Africa, e.g. 45% in Botswana in 2004. The importance of the mining sector has been recognized at the SADC level through various initiatives aimed at the development of this sector, e.g. SADC Protocol on Mining, and attempts at harmonizing policies relevant to the development of the sector (UNECA, 2004). However, in the international arena, continued exploitation of mineral resources is increasingly depended upon the demonstrated capacity of the industry to effectively deal with the vast amount of waste generated from mining through to beneficiation.

1.2 Global Initiatives

Due to increased awareness in environmental issues, several initiatives have been launched globally in an effort to ensure sustainable exploitation of mineral resources. A few of them are given below.

1.2.1 The Extractive Industries Transparency Initiative (EITI):

This is a coalition of governments, companies, civil society, investors and international organizations with the goal of improving the quality of life of citizens through sustainable utilization of mineral resources (www.eitransparency.org).

Mining activities have both positive and negative effects on the environment which is an important element of the quality of life. Improvement of the quality of life is an objective of EITI as has already been stated. The Lancaster House Conference of June 2003 agreed on principles that guide EITI, and the principles which are relevant for environmental management of mining activities are the following:

“We share the belief that the prudent use of natural resource wealth should be an important engine for sustainable economic growth that contributes to sustainable development and poverty reduction, but if not managed properly, can create economic and social impacts.

We are committed to encouraging high standards of transparency and accountability in public life, government operations and in business.

In seeking solutions, we believe that all stakeholders have important and relevant contributions to make” (www.eitransparency.org).

Prudent or wise use of natural resource implies maximising the environmental benefits while mitigating against negative environmental effects of mining. Sustainable development which EITI aims to contribute towards its achievement incorporates environmental management as a critical element. The achievement of high standards of transparency and accountability will partly depend on whether citizens are fully informed about environmental effects of development initiatives. Achievement of accountability requires that those who cause adverse effects are responsible for managing their effects. EITI advocates for stakeholders making contributions in the mining sector. Contributions by stakeholders will inevitably include acceptable environmental practices within the mining sector.

1.2.2 The Whitehorse Mining Initiative

This is a Canadian initiative where the mining industry, government, labour unions, natives and environmental agencies met to discuss and approve a strategic vision for a healthy mining industry in the context of maintaining healthy and diverse ecosystems in Canada and sharing opportunities with the native people. The final approved accord called for the following; (a) improving the investment climate for the investors, (b) streamlining and harmonising regulatory and tax regimes, (c) ensuring the participation of indigenous peoples in all aspects of mining, (d) adopting sound environmental practices, (e) establishing an ecologically based system of protected areas (f) providing

workers with healthy and safe working environment, and (g) guaranteeing public participation where the public interest is affected.

1.2.3 International Council on Mining and Metals (ICCM)

The ICCM has a vision of contributing towards sustainable development by ensuring sound environmental management with the adoption of the cradle to grave principle in the exploitation, use and disposal of metal products

1.2.4 World Bank Initiatives

World Bank Guidelines for Base Metals and Iron Ore Mining (http://publications.worldbank.org/commerce/catalog/product?item_id=202374)

We have just selected a few of the initiatives that all came up as a result of the Rio Earth Summit of 1992 that put the environment at the top of the development agenda. Nevertheless, mining despite its indispensable importance to national and world economies, is inherently associated with both positive and negative socio-economic and ecological impacts to which we now explore.

1.3 Key environmental issues associated with mining

Well managed mining activities have significant positive environmental benefits. Revenue from mining has enabled some countries to provide greatly needed social services such as education, health, transportation, and provision of water. This has improved the quality of life in countries where revenue from mining has been wisely used. Botswana whose economy greatly depends on mining had by 2002 expanded coverage of improved water supply to 95% of the population (UNDP, 2005). The improvement in the quality of life can reduce dependence on natural resources for sustenance and therefore reducing depletion or degradation of these resources.

Poorly managed mining has the potential to cause significant negative environmental effects. The following are the major environmental concerns related to mining (Glausser *et al*, 2005; UN 2002; Ashton *et al*, 2001):

- 1 Disturbance or destruction of valued ecosystems
- 2 Conflicts between mining and other land users
- 3 Changes to the landscape
- 4 Effects arising from disposal of large volumes of solid waste and effluents;
- 5 Release of large volumes of gaseous emissions
- 6 Depletion and possible contamination of water resources
- 7 Effects of poorly managed mine closure planning.

Lack of management of these effects by the mining industry in some parts of the world has resulted in society being distrustful of mining companies. Some sections of society perceive mining companies as lacking transparency and accountability in the manner in which they manage environmental impacts of their operations.

1.3 Responses of the mining industry to environmental concern

The acceptance of the need to consider environmental issues arising from mining is due to various reasons which include; (a) a genuine commitment by some of the mining companies to addressing environmental concerns, (b) shareholders insisting on environmentally responsible investment, (c) the need to comply with legislation, (d) companies protecting themselves against future environmental liability, (e) a condition of financial institutions funding mining, and (f) consumers demanding high environmental standards in the production of goods. Some of the mining companies have made the following responses for improving their environmental management practices:

- Development and implementation of environmental management plans within their organizations.
- Conducting environmental impact assessments for proposed projects.
- Implementation of environmental management systems.
- Incorporation of environmental monitoring as part of mine management.
- Undertaking environmental audits for existing mining operations.

Mining operations of some companies have been certified to be in compliance with environmental management standards such as the ISO14001, e.g. Jwaneng Mine in Botswana is ISO 14001 certified, and AngloGold Ashanti aims to have all its mines certified by the end of 2006 (AngloGold Ashanti, 2005). Planning and managing effects of mine closure is being integrated into routine mine operation (Goodyear, 2006). Some countries have now legislation requiring some form of environmental financial surety for funding environmental management after the closure of a mine, e.g. South Africa. AngloGold Ashanti had a budget of \$337.7 million to cover for environmental liability for its mining operations, of which \$143.3 million, \$3.1 million, and \$44.1 million cover their operations in South Africa, Namibia, and Tanzania, respectively.

There are still some major differences between countries and within the mining industry with regards to environmental management of mining activities in Southern Africa. These differences pose challenges for improving environmental management within the sector. This paper, however, concerns itself with the challenges faced by the industry in Zimbabwe.

3 The formal Sector in Zimbabwe

3.1 Introduction

Most of the existing mines in Zimbabwe were initiated when the development and implementation of environmental management plans was not a legal requirement. It is interesting to note that the first environmental impact assessment to be done in Zimbabwe was for a mining concern and this was done voluntarily. Nevertheless, the formal sector in Zimbabwe has moved in strides since the beginning of the 1990s in mine environmental management.

3.2 Industry initiatives

Since the beginning of the 1990s (and indeed earlier) the Environmental Management Board, through the Mineral Resources Subcommittee conducted what was known as the Dump Competition. Entry into the competition was voluntary. Initially the competition as its name implies restricted itself to managing slimes dams. This resulted in the introduction of the fast growing port Jackson willow, a tree which in that period provided the basis of greening of the dumps. The only disadvantage being that the tree had a short life span of 5 to 10 years. Then came the Vetiva grass that proved to be good at restricting the formation of gulleys due to erosion at the dumps. But then greening of the dumps is not the ultimate in environmental management. We are not clear as to which of the two reasons caused the industry at that stage to restrict themselves to the greening of dumps.

- 1 The disasters resulting from slimes dams failure; or
- 2 The increased awareness of the environmental issues within the sector.

Nonetheless the competition gradually graduated from a mere dump competition to include mine villages, sewage disposal, waste rock disposal, hazardous substances storage and handling. Towards the end of the 1990s there was a quantum leap for the competition when the Association of Mine Managers of Zimbabwe inherited the program. It became a comprehensive environmental management programme tailored within the framework of the tenets of sustainable development. Presently most of the bigger operations in Zimbabwe prescribe to the ISO14001 environmental management systems. Furthermore, these operations have recognized the need for a structure in which there is a department headed by a senior manager dealing with environmental issues.

3.3 Challenges faced by the industry

- 1 The competition is still voluntary but more comprehensive;
- 2 Due to economic constrains, environmental management budgets are sacrificed at the expense of production
- 3 Not all mines have a mandatory environmental reporting protocol
- 4 Monitoring, a necessary tool for ensuring that environmental effects of mining operations are being effectively managed (UNEP, 2002; Bisset and Tomilson, 1988) is not being conducted effectively; and
- 5 Lack of a well trained and informed inspectorate leaves operations to be run in a manner that suits the operator;
- 6 There is no proper mine closure planning (Alaska-ZMDC, Empress-Rio Tinto etc).

4 The Informal Sector

4.1 Introduction

Gold panning has been recognised as a poverty coping strategy for the poor and unemployed. Whilst few panners have legal title to mine, the majority do so illegally. The operations of these "korokozas" have tarnished the image of the industry through several illicit dealings including:

- 1 Selling of gold in the parallel market;
- 2 Theft of explosives from established mining operations;
- 3 Escalation of farmer miner disputes particularly after the land reform exercise;

- 4 Increase in mine accidents;
- 5 Theft of ore from established mines;
- 6 Massive environmental degradation (chemical, physical and biological); and
- 7 Pollution of water courses.

The above is a selection of a few vices (now habits) emanating from the activities of the korokozas. They however, have a positive claim to their operations.

4.2 The Good

- 1 Korokozas are self-employed individuals ready to face the current economic challenges and fend for their families.
- 2 They are different from touts who terrorize commuters in towns;
- 3 They do not belong to gangs of robbers or rapists. They pay for services rendered generously;
- 4 Given the correct prize, they have a role to play in increasing gold resources to the national coffers;
- 5 They are geological pathfinders for bigger operators
- 6 Ability to exploit small deposits which are uneconomic for large scale operations;
- 7 Ready market for local small scale informal industry,

5 The legal Framework

- 1 Mines and Minerals Act Chapter 21:05
- 2 Mining (Management and Safety) Regulations, 1990
- 3 Explosives Regulations, 1989
- 4 Mining (Health and Sanitation) Regulations, 1995
- 5 Environmental Management Act Chapter 21:05
- 6 Environmental Impact Assessment Policy, 1997
- 7 National Environmental Policy
- 8 Public Health Act Chapter 15:09
- 9 ZINWA Act

6 Way Forward Zimbabwe?

Because we do not have answers to the challenges faced by the industry, we therefore pose some questions which we believe if they can be answered and debated upon; solutions to the dilemma could be found.

- 1 Should the korokozas be recognised as important players in the economic turnaround of the country?
- 2 Should big mining operators contribute to the training of the korokozas?
- 3 Should panning activities be restricted to inhabitants of the area in which the resources are found?
- 4 Do the traditional leadership have a role to play in the management of the mineral resources?
- 5 What role if any should be given to the Rural District Councils?
- 6 Is the Ministry of Mines and Mining Development adequately resourced to cope with the management and inspection of all mining operations?

- 7 Should the Reserve Bank of Zimbabwe be directly involved in mining operations as it is currently doing or pump the resources to the Ministry of Mines?
- 8 What role is there for the Zimbabwe Mining and Development Cooperation?
- 9 What role should the Minerals Marketing Corporation of Zimbabwe play?
- 10 The last time we heard of the Institute of Mining and Metallurgy Zimbabwe Chapter was in 1994. What happened to it?
- 11 Who should have the mandate of mine inspections? Industry specific inspectors or any inspectors from any department dealing with any aspect of environmental management?
- 12 Should the Ministry of Mines have extension services like AREX?
- 13 Is the gold rush a passing phase which does not warrant efforts to control it?
- 14 Should efforts and resources be directed at improving the economy of the country rather than running battles with the panners?

Ladies and gentlemen, we rest our case.

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