



An environmental management framework for Tanzania

by L. Richards*



Synopsis

The Mineral Sector Development Project, sponsored by the World Bank, has been set up to revise the legal, regulatory and fiscal framework for the minerals industry in Tanzania, with a view to attracting mining companies and investors to the country and facilitating future minerals development. One component of this project, the *Environmental Management Framework for the Mineral Sector*, was awarded to Wardell Armstrong of the UK and ENV Consult of Tanzania.

In developing a new framework of environmental regulations, emphasis was placed on developing realistic standards which reflect local conditions and prevailing values. The main cornerstones of this approach are; effective environmental impact assessment procedures; establishment of environmental management procedures; and monitoring and auditing of companies' performance. The favoured approach involves a three-tier framework, as follows:

- Framework environmental provisions within the new Mining Act;
- Regulations covering more detailed environmental requirements
- Guidelines and/or Codes of Practice, which may in future become regulations in their own right.

Careful consideration has been given, in developing the framework, to the limited resources likely to be available for implementation to the Ministry of Energy and Minerals and this has influenced the approach that has been adopted. This paper outlines the main components of the environmental management framework and discusses some of the important issues raised by these proposals.

Introduction

The United Republic of Tanzania has identified a need to attract investment in the mineral sector, in order to boost economic development and this has recently been expressed at numerous conferences and seminars around the world by ministers and officials of the Government. Support for this has come from the World Bank, in the form of the Mineral Sector Development Project (MSDP), which has the overall aim of revising the legal regulatory and fiscal framework for the industry, with a view to creating a more attractive regime and facilitating future minerals development. One

component of this project, the *Environmental Management Framework for the Minerals Sector* was awarded to Wardell Armstrong of the UK and ENV Consult of Tanzania.

One objective of this component of the MSDP was to review the environmental laws applicable to the mineral sector and to recommend additions and amendments to these. A second was to review the existing institutional arrangements for monitoring and pollution control of the mining industry and recommend an efficient organizational structure for this.

A general objective of this project is to develop an environmental framework which will enable the future development of the mineral sector to be undertaken in a more sustainable manner.

Sustainability

The generally accepted definition of sustainability, first published in the 'Brundtland Report' (1987), is '*development which meets the needs of the present without compromising the ability of future generations to meet their own needs*'. The minerals industry is primarily concerned with the exploitation of non-renewable resources, an operation which could be regarded as inherently non-sustainable. On this issue, the Brundtland Report gives the following guidance:

'The use of non-renewable resources reduces the stock available for future generations...but this does not mean that such resources should not be used...sustainable development requires that the rate of depletion of non-renewable resources should foreclose as few future options as possible...and land should not be degraded beyond reasonable recovery'.

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Alongside these environmental considerations, the concept of sustainability in relation to mineral exploitation requires recognition that the minerals sector is of crucial importance to development. This is especially the case in Tanzania.

In response to the Brundtland Report, the United Nations Department of Technical Co-operation for Development (DTCD) has been considering how the concept of sustainable development can be applied to the minerals industry (Bell, 1994). In the short-term, DTCD concluded that the concept implies efficient mining that minimizes adverse environmental impacts. This involves environmental impact assessment at all stages of minerals development, as well as the following other measures:

- ▶ Project redesign to minimize environmental damage and optimize ore recovery
- ▶ Pollution abatement measures, especially in respect of air pollution, water pollution and noise
- ▶ Rehabilitation of abandoned mine sites
- ▶ Implementation of adequate worker health and safety standards
- ▶ Adoption of environmental management plans to implement these measures.

Proposed environmental legislative framework

In developing the proposed environmental framework, consideration has been given to existing legislation in Tanzania, relating to the environment, as well as the considerable amount of legislation under discussion and in preparation. The proposed environmental framework addresses issues specific to the minerals sector, not covered by existing regulations, nor likely to be in the near future. It aims to set standards which are realistic, and regulations and procedures have been defined which are intended to be clear and explicit. The cornerstones of the new framework are:

- ▶ Environmental Impact Assessment, as both a project-planning and decision-making tool
- ▶ Environmental management by the industry, including mine closure and rehabilitation, and compliance monitoring
- ▶ An authorization procedure and standards for environmental emissions
- ▶ Monitoring and audit by the industry and the regulatory authorities.

The regulatory framework that has been developed in this project comprises three main components, as follows:

- ▶ Environmental clauses in the new Mining Act, which establish the key components of the framework
- ▶ Environmental regulations, which define the regulatory requirements in detail
- ▶ Guidelines and code of practice, which provide guidance to the industry on implementation of their obligations, and which provide guidance on other non-statutory areas, beyond the scope of the regulatory framework.

The Mining Act clauses

The proposals for the Act comprise a few key environmental clauses, establishing the essential structure of the framework but without specifying in detail the standards to be adopted or procedures to be followed; these are to be dealt with in the Regulations. The draft Mining Act is effectively a replacement of the existing 1979 Mining Act and the relationship of these two statutes has been the subject of another component of the Mineral Sector Development project (Transborder, Review and Revision of the Legal, Regulatory and Fiscal Regimes for the Mineral Sector, Draft Report to the Ministry of Energy and Minerals, United Republic of Tanzania, 1996). The bill for the new Mining Act is expected to be submitted to Parliament early in 1998.

The draft Mining Act defines four main types of mineral rights:

- ▶ Prospecting Licences
- ▶ Special Mining Licences—aimed specifically at international mining companies
- ▶ Mining Licences
- ▶ Gemstone Mining Licences.

The most important environmental clauses in the Act are:

- 1) *Environmental Impact Assessment (EIA)*—the Act will require all applications for a Special Mining Licence to include an EIA; applications for Mining Licences and Gemstone Mining Licences will require EIAs in some cases, according to criteria specified in Schedule 1 of the Regulations.
- 2) *Environmental Management Plans (EMPs)*—the Act will require EMPs to be prepared under similar arrangements to those applying to EIAs. The renewal of licences will be conditional on compliance with the relevant EMP.
- 3) *Mine Restoration Bonds*—the Minister will have the power, with regard to Special Mining Licences and Mining Licences, to require the establishment of a bond or fund, specifically for the post-closure restoration of sites in the event of default by the mine operator or licence holder.

Proposed regulations

The proposed regulations contain the main details of the environmental framework, and three main areas have been covered.

Environmental Impact Assessment (EIA)

Pending the adoption of national guidelines, the draft regulations set out the procedures for screening, submitting and reviewing an EIA, including the criteria for determining which applications will require one. The criteria have been defined to be simple to understand and unequivocal to operate; they consist of a set of area and capacity thresholds, which vary according to the type of operation and the sensitivity of the environmental setting. Sites exceeding these thresholds must complete an EIA and submit an Environmental Impact Statement. Experience will show whether the thresholds are set at the right levels and if not, the regulations, or possibly just Schedule 1 could be re-issued in a revised form, much more easily than an Act of

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Parliament can be revised. This allows an important degree of flexibility with this key component of the framework.

Supporting sectoral guidelines help to define the appropriate scope and level of EIA that should be carried out, and the issues that need to be addressed.

Environmental Management Plans (EMPs)

The draft regulations and supporting guidelines set out the requirements for the contents of EMPs and the procedures to be followed, which would be applied in a similar way to the proposed EIA Regulations. An EMP will be required to include provision for some or all of the following:

- Mine closure and rehabilitation
- Monitoring and standards
- Response procedures for exceedences and accidents
- Site management and responsibilities
- Record keeping and reporting
- Audit and validation.

The EIA and EMP regulations have been combined into a single document, because of the many areas of overlap between them.

Standards and monitoring

The draft regulations for standards and monitoring specify that minerals operators are required to obtain an authorization to discharge pollutants into the environment and must comply with applicable standards, for emissions to air, land or water. Supporting guidelines indicate appropriate methods of monitoring and sampling.

Guidelines and Codes of Practice

A number of guidelines or codes of practice have been prepared, either in full or in framework form.

- Environmental Guidelines for the Mineral Sector
- EIA—methods and content (see above)
- EMP—methods and content (see above)
- Environmental standards and monitoring (see above)
- Rehabilitation bonds
- Prospecting activities—environmental conduct and rehabilitation
- Artisanal and small-scale mining.

Three of these have been described above; the remainder are briefly summarized as follows:

Environmental guidelines for the mineral sector

These guidelines give general guidance on good environmental practice in the minerals sector in Tanzania and support the framework of legislation on environmental issues.

The guidelines cover a very wide field, in terms of both the range of types of mining operation and also of types of environmental impact. They are therefore, of necessity, very generalized and cannot deal with every aspect in detail. However, they are intended to emphasize some key aspects, such as water management, waste management and rehabilitation. These are not intended to be definitive or comprehensive, nor compulsory in every case.

These guidelines cover the following topics:

- Management of land
- Management of socio-economic and human aspects
- Management of ecological and landscape resources
- Management of cultural heritage
- Management of air quality
- Management of noise and vibration
- Management of water resources
- Management of solid wastes
- Mine closure and rehabilitation.

Bonds for mine closure and rehabilitation

The decommissioning and rehabilitation of mineral workings is one of the most important environmental issues and will be a key component of mine EMPs. There will thus be a requirement on operators to reclaim their sites and restore to a condition suitable for an appropriate after-use.

The Act gives the Minister power to require a form of financial provision for rehabilitation, in certain cases, which can be drawn on in the event of the licensee failing to carry out adequate decommissioning and rehabilitation of the land. The guidelines discuss the various forms in which this financial provision can be made; it is emphasized that a legal agreement will be required in each case and that the exact arrangements made need to be tailored to the circumstances.

Code of Practice for Exploration and Prospecting

The environmental impacts of exploration and prospecting activities increase as the intensity of sampling and investigation increases and the prospect approaches commercial exploitation. Intensive prospecting activity can have significant environmental impacts, although these tend to be mainly short term.

In view of the large amount of activity of this type in Tanzania, and the sparse resources available to the Mines Section, it does not appear realistic to attempt to legislate practice in this field, in the short term. A Framework Code of Practice for Exploration and Prospecting has, therefore been drawn up. It is intended that this should be used as the basis for a consultation process involving representatives of the minerals industry, Government departments and other interested parties, leading to the production of a full Code of Practice, in the medium term.

Artisanal and small-scale Mining

Framework guidelines have been prepared, that will form part of a programme for technical, economic and social support and training on environmental issues. Other initiatives for this sector are proposed under the Mineral Sector Development Project. These will need to be developed in the medium term by the Ministry, perhaps involving other agencies. Our recommendation is that a Pilot Project area is established, in order to identify the specific requirements and develop the best approaches to the problem.

Relationship of the proposed framework to the existing environmental regulatory structures

Environmental regulations have existed in Tanzania for a number of years and a study conducted in 1994 identified over 100 items of primary legislation relating in some way to

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the environment. However, until recently there has been little co-ordination between the government agencies concerned and implementation of the statutes has been patchy at best. The regulatory framework in Tanzania is based on the 'sectoral' approach, with the individual ministries dealing independently with the development and implementation of environmental regulations. The principal ministries and agencies concerned are:

- Ministry of Water
- Ministry of Tourism, Natural Resources and Environment
 - Division of Environment
 - Department of Wildlife
 - Department of Forestry and Beekeeping
- Ministry of Lands
- Land Use Planning Commission
- Ministry of Energy and Minerals
- Local Government Authorities
- Ministry of Agriculture
- National Environment Management Council (NEMC).

There is a wide range of legislation and there are a number of areas where this already affects, directly or indirectly, the mining sector. The main examples of this, apart from the Mining Act itself and its subsidiary legislation, are:

- Water—a number of different items of legislation control the abstraction, use and discharge of water, generally making it an offence to cause pollution of waters
- Land use—various enactments have been made for the purpose of land use planning in urban and rural areas
- Land tenure—there is complex legislation on land tenure, some of which is unclear and has been controversial, in some parts of the country
- Health and safety—mineral operations are affected by H&S legislation from two different enactments, the Factories Ordinance and the Mining (Safe Working) Regulations
- Wildlife—a number of enactments restrict and affect the conduct of mineral activities in designated areas
- Natural resources and cultural heritage—forests, fisheries and antiquities are protected by a number of designations, requiring consultation with the appropriate ministries.

The Ministry of Tourism, Natural Resources and Environment, with the assistance of NEMC, is responsible for cross-sectoral issues and, at present, this is principally in relation to Environmental Impact Assessment and the National Environmental Policy.

After a period of research and consultation, the National Environmental Management Council (NEMC) has recently produced the Tanzania Environmental Impact Assessment Procedures. The National Environmental Policy (NEP), other Government environmental strategies and the environmental policies of sectoral ministries recognise the importance of EIA as an important policy instrument. According to the Tanzania EIA Procedures:

'...EIA is to be an "Environmental permitting prerequisite", and the issuance of any developmental permit/licence is subject to provision of "an environmental approval" by the National Environmental Management Council...'

It is not clear at this stage what the legal basis of the above statement is or whether legislation will be required to enable the procedures to be effectively implemented. Since permits for developments, such as mining operations, are currently issued at the discretion of the responsible sectoral Ministers, it seems likely that some confusion may arise, unless a legal basis for the EIA procedure is established.

The National Environmental Policy, published in December 1997 sets out the Government's approach to the principal environmental issues facing Tanzania. It recognises the need for sustainable development and presents policies to pursue this aim in cross-sectoral and sectoral areas.

The Policy considers a range of 'Instruments for Environmental Policy' as the means to achieve the objectives set. The following are considered as priority policy instruments:

- Environmental Impact Assessment
- Environmental legislation
- Economic instruments
- Environmental standards and indicators
- Precautionary approach
- International co-operation.

The NEP stresses the importance of framework environmental laws and sectoral legislation in effective environmental management. Framework legislation will be designed to organize co-operation among Government agencies and define environmental management tools of general scope (e.g. EIA). Sectoral legislation will be designed to factor environmental policy objectives in to the relevant areas of coverage.

The environmental regulatory framework for the mineral sector defined in this project has been designed to fit within the existing structure of regulations and policies for the environment in Tanzania, specifically taking account of the sectoral approach.

The proposed institutional framework

Proposals for the organization of the Mineral Resources Department (MRD)

The structure and current staff complement of the MRD have been reviewed, in relation to the need for the future development of environmental services, to implement the proposed environmental framework. It is concluded that capacity in this field needs to be developed at both HQ and local levels and that close integration between these two is important.

The MRD will need to establish a range of environmental skills to carry out its environmental regulatory functions, which will include monitoring of all stages of mining operations, including prospecting, the implementation of EMPs and rehabilitation, as well as review of EIAs. It will also be necessary to review, draft and/or update the regulations, codes of practice and regulations, to promote good environmental practice throughout the industry and to

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promote research and development in areas related to environmental management in the minerals sector.

The range of skills required will include environmental chemistry and engineering, air and water pollution, acoustics, socio-economics, ecology and landscape science; few if any of these are currently available in the Department.

In a large country like Tanzania, it is clear that the local offices will need to carry out much of the day-to-day work, including environmental monitoring and regulatory activities and will need to have access to the necessary skills. To this end, an environmental specialist is likely to be needed in at least every zonal office and preferably in regional and district offices. No such specialists are currently in post.

The HQ environmental unit will also need to be developed, to provide a range of services to the local offices, including training, technical support and to take the lead in cases which could lead to court proceedings. The HQ unit would probably be responsible for dealing with SMLs and the more environmentally contentious projects. It would also maintain and develop the legislative framework and supporting documentation.

Currently, the resources for the development of this capacity are not available, within the Ministry of Energy and Minerals but it is obviously critical that the funds are found for a development programme, to enable the framework to be put into place effectively.

Training requirements to achieve environmental capacity

A review of training requirements has been completed and considered in detail; the likely training needs of the MRD, in developing capacity to implement and monitor the environmental management framework for the mineral sector. An important component of the approach is to provide a mechanism whereby a core team at headquarters can be trained to become an expert grouping, which can itself then contribute to the provision of training of staff for the outlying offices.

A number of approaches to the delivery of the training requirements have been considered, including higher degree courses in environmental subjects for key existing staff; external short courses, day release and distance learning in environmental issues, and in-house training programmes for existing staff, using external trainers and internal specialist staff. Most of these techniques, individually, have disadvantages, most often in terms of high costs.

Some particular courses have been identified which could be suitable for the training needs of the HQ environmental staff. However, a number of problems are foreseen, particularly when staff are faced with the 'realities' of implementation of the lessons learned, in the field environment.

Therefore, it is proposed that the best overall approach would be to develop a tailored training programme, comprising a combination of the other elements. This would involve an initial formal training component, delivered at a training institution, supported by 'hands-on' training, in Tanzania, with longer-term secondment, to support staff at outlying offices. This approach is regarded as the most likely to deliver the required capacity building in a sustainable manner, in the medium and long term.

Other initiatives

Artisanal and small-scale mining

A review has been conducted of the artisanal and small-scale mining sector and has presented proposals for the environmental aspects of a development programme to address the most important problems identified. There are clearly a number of inter-related problems in this sector, many related to the poverty and lack of resources available to the miners and their dependants. It is clear that the environmental problems identified cannot be addressed by regulation alone and this conclusion is supported by the findings of other studies, carried out as part of the Mineral Sector Development Project and elsewhere. It is therefore proposed that the environmental issues should be addressed as part of the overall strategy for reform of this sector, as proposed by others (Tan Discovery 1996).

The first stage of the environmental components of the strategy involves the development of an Environmental Code of Practice for the artisanal and small-scale sector. The approach we have adopted here has been to prepare a framework code of practice, for discussion and development with appropriate representatives of this sector of the minerals industry.

The implementation of the Code, following discussions with the appropriate representatives, should be conducted as part of the larger strategy for this sector. We recommend that this should involve preparation of a trial programme by a team of specialists, focusing on one artisanal mining area, or group of areas. To develop an effective approach, the team would need to co-ordinate a range of project elements, involving mining technology, health, safety and environmental initiatives, socio-economic, legal, public health and educational programmes. The exact blend of these elements would need to be carefully planned, according to the circumstances of the individual mining areas. The objective of this trial programme would be to establish the effectiveness of the approach, before applying this in a wider context. The overall aim would be to regularize the artisanal/small-scale mining sector, within the licensing framework of the new Mining Act. The Ministry of Energy and Minerals will play a leading role in the trial project but will need to work with other organizations, including the regional mining associations, local authorities and other Government departments, to achieve a successful outcome.

Reclamation of abandoned mines

This study has reviewed the current situation in respect of abandoned mines and has identified the need for the reclamation of some derelict abandoned mineral workings, particularly where pollution and related impacts affect significant numbers of people or sensitive environmental features. However, the resources likely to be available to the Government for the reclamation of abandoned mines will be limited. It is likely that in many cases no land owners or mineral operators will be identifiable who can accept liability for the reclamation work. It is therefore important that a strategy is developed, so that sites can be prioritized, according to well-defined criteria.

The criteria used for prioritization of sites must take account of the environmental impacts of the abandoned

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mines, including pollution of air, land and water, and impacts on human beings, ecology, archaeology and cultural heritage. We recommend that a review of derelict mining sites is carried out, to identify those generating significant environmental problems. A scoring system is suggested, which places emphasis on impacts on human beings, in particular. The costs of undertaking reclamation are likely to be substantial and this factor is of some importance in Tanzania, where average income and standard of living are low. It is thus recommended that the prioritization of sites for reclamation should be weighted in inverse proportion to the costs of the schemes. The combination of this factor with the others will generate a simple cost/benefit analysis, and provides a reasoned justification supporting a shortlist of reclamation schemes, which can be used as a basis to approach donor agencies for assistance.

Health and safety regulations

The health and safety regulations, now nearly 30 years old, are in the detailed and prescriptive style, now regarded as outmoded. The problem with this style of regulation is that it cannot keep up-to-date with the continuous development in techniques and technology that takes place. The modern approach is to have more general regulations, setting out general health and safety goals, and for the mine management to be required to devise systems of work which are appropriate to their operations but which meet the stated goals. Regulations of this type may be supported by codes of practice, which can more readily be updated. We have recommended that the existing regulations should be replaced at the earliest opportunity, to bring them into line

with the new draft Mining Act and environmental regulations.

Conclusions

In this project we have formulated a framework of environmental regulations, guidelines and codes of practice which should be practical but effective in implementation for all parties involved in the minerals sector in Tanzania. Our aim has been to provide the means to achieve a balanced approach to minerals development, with the ideal of 'optimizing economic development while minimizing environmental degradation' (The Berlin Guidelines 1992).

The future success or failure of this project is now heavily dependent on the availability of the resources required to build the capacity in the Mineral Resources Department to effectively implement the proposed environmental management framework.

References

- BELL, A.V. Environmental Responsibility: the Post-Brundtland Paradigm. *Mineral resource development and the environment*. Proceedings of a seminar held in Bangkok, Thailand, 1991. Economic and Social Commission for Asia and the Pacific, United Nations Development Programme, New York. 1994. pp. 81-85.
- TAN DISCOVERY 1996. *Baseline survey and preparation of development strategy for small scale and artisanal mining program*. Unpublished report to the Ministry of Energy and Minerals, United Republic of Tanzania.
- THE BERLIN GUIDELINES 1992. *Mining and the Environment -The Berlin Guidelines*. Mining Journal Books, London.
- TRANSBORDER 1996. *Review and Revision of the Legal, Regulatory and Fiscal Regimes for the Mineral Sector*. Unpublished Report to the Ministry of Energy and Minerals, United Republic of Tanzania.
- World Commission on Environment and Development 1987. *Our Common Future*. Oxford University Press (The Brundtland Report). ◆

Mobil and Royal Bafokeng in joint venture*

Unique lubricants distributorship for North West Province.

Mobil Oil SA and the Royal Bafokeng Administration have set up a joint venture company, known as Phoka Petroleum, to distribute Mobil lubricant products in the North West Province. The company will also actively seek opportunities to enter the fuels market.

The Royal Bafokeng Administration is the majority shareholder. Both organizations have an equal number of directors on the board. The staff of the company are all new recruits with no previous affiliations with either the Bafokeng Administration or Mobil.

Current sales of lubricants in the North West Province constitute 7% of total lubricant sales in South Africa and cover the mining, agricultural and transport sectors. Mobil products sold in the area will include fully synthetic and mineral lubricants.

The Royal Bafokeng Administration (the name Bafokeng means 'people of the dew', from the time when they settled on the dew-covered plain north of Rustenburg)

is known in South Africa for its stand on land rights and for the unique manner in which the community as a whole enters into business partnerships. The Royal Bafokeng Administration is the community's commercial conduit for business ventures geared for profit. The profits are then allocated to community projects according to priorities voted on by the Supreme Council, in which the Executive Council, an elected body, and hereditary Bafokeng headmen are represented. The mission of the Royal Bafokeng is to ensure that every adult member of the community will be employed and that the community as a whole will be self-sufficient by the year 2020.

Says Kgosi Lebone: 'We have always believed that, in the spirit of Masakhane, there are any number of innovative ways in which community and business interests can be served together. All our business ventures are examples of those kinds of innovative initiatives. This deal with Mobil is another one where everyone wins'. ◆

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