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## GENERAL NOTICE

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### NOTICE 798 OF 2008

#### DEPARTMENT OF MINERALS AND ENERGY

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998

(ACT NO 107 OF 1998)

PUBLICATION OF THE SECOND EDITION ENVIRONMENTAL MANAGEMENT PLAN UNDER SECTION 15(2) (b) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO 107 OF 1998)

I, Sandile Nogxina, hereby publish in terms of section 15(2) (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the Second Edition Environmental Management Plan of the Department of Minerals and Energy for adoption with effect from the date of Publication

S. NOGXINA

DIRECTOR GENERAL, DEPARTMENT OF MINERALS AND ENERGY

Department of Minerals and Energy

Second Edition

## Environmental Management Plan

Compiled in terms of section 11 (2) of the National Environmental Management Act,  
1998 (Act No. 107 of 1998)

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## ABBREVIATIONS

|                     |   |
|---------------------|---|
| <i>BEE</i>          | Black Economic Empowerment  |
| <i>CEC</i>          | Committee for Environmental Coordination  |
| <i>CGS</i>          | Council for Geoscience  |
| <i>CDM</i>          | Clean Development Mechanism   |
| <i>CSIR</i>         | Council for Scientific and Industrial Research                                    |
| <i>DEAT</i>         | Department of Environmental Affairs and Tourism                                   |
| <i>Dept EMP</i>     | Departmental Environmental Management Plan  |
| <i>DME</i>          | Department of Minerals and Energy   |
| <i>DNA</i>          | Designated National Authority   |
| <i>DWAF</i>         | Department of Water Affairs and Forestry  |
| <i>EBSST</i>        | Electricity Basic Service Support Tariff  |
| <i>ECL</i>          | Environmental Critical Level  |
| <i>EDI</i>          | Energy Distribution Industry  |
| <i>EDSS</i>         | Environmental Decision Support System   |
| <i>EIA</i>          | Environmental Impact Assessment   |
| <i>EIP</i>          | Environmental Implementation Plan required in terms of NEMA, 1998                 |
| <i>EM Plan</i>      | Environmental Management Plan required in terms of MPRDA, 2002                    |
| <i>EM Programme</i> | Environmental Management Programme required in terms of MPRDA, 2002               |
| <i>EMPR</i>         | Environmental Management Programme Report required in terms of Minerals Act, 1991 |
| <i>GHG</i>          | Green House Gas   |
| <i>GIS</i>          | Geographical Information System   |
| <i>HDSAs</i>        | Historical Disadvantaged South Africans   |
| <i>HIV and Aids</i> | Human Immunodeficiency Virus and Aids   |
| <i>I &amp; A Ps</i> | Interested and Affected Parties   |
| <i>IDP</i>          | Integrated Development Plan   |
| <i>IGFMMMSD</i>     | Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development   |
| <i>IEM</i>          | Integrated Environmental Management   |
| <i>INEP</i>         | Integrated National Electrification Programme                                     |

|               |  |
|---------------|--|
| <b>MEM</b>    | Mine Environmental Management  |
| <b>MHSI</b>   | Mine Health and Safety Inspectorate  |
| <b>MINTEK</b> | Council for Mineral Technology   |
| <b>MMSD</b>   | Minerals, Mining and Sustainable Development                               |
| <b>MoU</b>    | Memorandum of Understanding  |
| <b>MPRDA</b>  | Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) |
| <b>NECSA</b>  | Nuclear Energy Corporation of South Africa                                 |
| <b>NEMA</b>   | National Environment Management Act, 1998 (Act No. 107 of 1998)            |
| <b>NEPAD</b>  | New Partnership for Africa's Development                                   |
| <b>NGOs</b>   | Non-governmental organizations   |
| <b>NNR</b>    | National Nuclear Regulator   |
| <b>ODA</b>    | Overseas Development Assistance  |
| <b>RED</b>    | Regional Electricity Distributors  |
| <b>RMCS</b>   | Regional Mine Closure Strategies   |
| <b>RSA</b>    | Republic of South Africa   |
| <b>SA</b>     | South Africa   |
| <b>SABS</b>   | South African Bureau of Standards  |
| <b>SADC</b>   | Southern African Development Community                                     |
| <b>SASDA</b>  | South African Supplier Development Agency                                  |
| <b>SD</b>     | Sustainable Development  |
| <b>SDM</b>    | Sustainable Development through Mining                                     |
| <b>SIAT</b>   | Site Inspection Assistant Tool   |
| <b>SMME</b>   | Small, Micro and Medium Enterprises  |
| <b>UN</b>     | United Nations   |
| <b>UNFCCC</b> | United Nations Framework Convention on Climate Change                      |
| <b>USA</b>    | United States of America   |
| <b>WRC</b>    | Water Research Commission  |
| <b>WSSD</b>   | World Summit on Sustainable Development                                    |
| <b>WWIP</b>   | Witwatersrand Water Ingress Project  |

## 1. INTRODUCTION

### 1.1 Need and purpose for the Departmental Environmental Management Plan

Section 11 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA, 1998) requires national and provincial departments listed in Schedules 1 and 2 of NEMA, 1998, to prepare Environmental Implemental Plans and/or Environmental Management Plans within at least every four years. NEMA, 1998 divides national Government department into Schedule 1 or Schedule 2 departments. Schedule 1 departments are required to prepare EIPs as these departments exercise functions which may affect the environment. Schedule 2 departments are required to prepare EMPs as these departments exercise functions that involve the management of the environment.

The Department of Minerals and Energy (DME) falls within the ambit of the Schedule 2 departments and is required in terms of section 11 (3) of NEMA, 1998 to prepare a Departmental Environmental Management Plan (Dept EMP) every four years since it exercises functions that include the management of the environment.

The purpose of the Dept EMP as described in Section 12 of NEMA, 1998 is to:

- coordinate and harmonize the environmental policies, plans, programmes and decisions of the national Government departments that exercise functions that may affect the environment, or are entrusted with responsibilities aimed at the achievement of a sustainable environment;
- give effect to the principles of cooperative governance as contemplated in Chapter 3 of the Constitution;
- secure the protection of the environment;
- prevent unreasonable actions by provinces in respect of the environment that are prejudicial to the economic or health interests of other provinces or the country; and
- enable the Minister of Environmental Affairs and Tourism to monitor the achievement, promotion, and protection of a sustainable environment.

The first Edition Dept EMP of the Department of Minerals and Energy was published on 23 February 2001 in the *Government Gazette* No. 22080 of 23 February 2001. The Second Edition Dept EMP covers the period 2005/06-2009/10. Apart from meeting the requirements stated in NEMA, 1998, the

Dept EMP also explains the Department's contribution towards achieving the broader national sustainable development objectives.

The key sources of information reviewed in preparing this Dept EMP include legislation and policy documents, various international agreements relating to minerals, energy and environmental management, as well as several internal reports and documents of the DME.

The Dept EMP is presented in the following nine sections:

1. *Introduction:* The introduction sets out the need, purpose and context of the Dept EMP within the relevant legislative requirements in terms of NEMA, 1998.
2. *Mandate and institutional structure:* The second section discusses the mandate, mission, vision, values, key strategic objectives and institutional structure of the DME.
3. *Legislation and policy on minerals and energy:* The legislation and policy relevant to the functions of the DME is discussed in section 3.
4. *International collaboration:* The subject of section 4 is the international conventions or agreements to which the South African Government, through the DME, subscribes and which support the contribution of the minerals, mining and energy sectors towards sustainable development.
5. *Programmes and strategies for environmental management:* The programmes and strategies of the Department that contribute most directly to sustainable development and the environment are outlined in section 5.
6. *Strategic objectives and outcomes of core environmental functional areas:* The strategic objectives and outcomes of core functional areas of the Department that contribute most directly to sustainable development and the environment are outlined in section 6.
7. *Principles, norms and standards for environmental management:* The subject of section 7 is the norms, standards and principles for environmental management.
8. *Collaboration with other Departments or organs of state:* Section 8 describes the nature of collaboration within and between the DME and other departments or organs of state.
9. *Compliance with policies and principles:* The subject of section 9 is compliance by the minerals, mining and energy sectors with the policies and legislation that relate to environmental management.

## **2. MANDATE AND INSTITUTIONAL STRUCTURE**

### **2.1 Mandate, mission, vision and values of the Department**

The mandate of the Department of Minerals and Energy is to provide services for the effectual transformation and governance of the minerals and energy industries for economic growth and development, thereby improving the quality of life of the people of South Africa. The execution of the mandate is guided by a Mission, Vision, and a set of values which are articulated in the DME's Strategic Plan for 2005/6-2009/2010.

The mission of the Department is to regulate and promote the minerals and energy sector to the benefit of all citizens, while the vision is to establish world class minerals and energy sectors through sustainable development. The values adopted by the Department are aimed at improving the quality of service and the effectiveness with which it is delivered. These values include *Batho Pele*, excellence, professionalism, integrity, equity, and loyalty.

### **2.2 Key strategic objectives of Government on minerals and energy**

The strategic objectives of Government over the next five years with regard to minerals and energy are outlined in the DME Strategic Plan for 2005/6-2009/10, which are to:

- actively contribute to sustainable development;
- redress past imbalances and bridge the gap between the first and second economies;
- implement minerals and energy economic policies and legislation;
- govern the minerals and energy sectors to be healthier, cleaner and safer; and
- review and develop appropriate structures, processes, systems and skills as well as their maintenance.

Over the next five years, the objective of actively contributing to sustainable development will be achieved through infrastructure development, increased investment in the minerals and energy sectors, increased beneficiation of minerals, increasing access to modern energy carriers and reducing the impact of mining and energy activities on the environment and public health and safety.

The objective of redressing past imbalances will be achieved through the promotion of broader participation in the minerals and energy sectors, direct intervention in communities, increased Black Economic Empowerment (BEE) and Small, Micro and Medium Enterprises (SMME) participation, deracialising and gender equity within the minerals and energy sectors.

The objective of implementing the minerals and energy economic policies and legislation will be achieved by ensuring the orderly and equitable exploitation of minerals and energy, promoting internationally competitive prices and security of energy supply.

The objective of governing the minerals and energy sectors to be healthier, cleaner, and safer will be achieved through the effective implementation policies and legislation, and by embarking on promotional and regulatory activities and programmes that will sustain and improve the industries' health and safety standards.

The final objective of reviewing and developing appropriate structures, processes, systems and skills as well as their maintenance will be achieved through the alignment of administrative structures, the development of appropriate skills, as well as the introduction of processes and systems that enable the effective and efficient implementation and execution of policy and legislation.

The strategic objectives and outcomes of the functional areas of the Department of Minerals and Energy during the period 2005/2006 – 2009/2010 that relate to the environment are discussed in more detail in section 6 (Table 5).

### **2.3 Institutional framework**

The Department of Minerals and Energy undertakes its mandate, under the direction of the Director-General, through the following programmes / branches:

- Mineral Development;
- Mine, Health and Safety Inspectorate;
- Hydrocarbons and Energy Planning;
- Nuclear and Electricity; and
- Administration.

The DME underwent a dedicated restructuring process to effectively achieve the key strategic objectives set out in its Strategic Planning for the next 5 years and to ensure good service delivery.

### **2.3.1 Mineral Development Branch**

The purpose of the Mineral Development Branch is to effectively promote, manage and regulate a locally and regionally integrated, globally competitive mineral resource industry to achieve equitable and sustainable development for the benefit of all South Africans. The organizational structure and functions of the Branch with its Chief Directorates are included as Appendix A. The functions of the Branch include the control of mineral resource management; promoting mineral development and providing advice on trends in the mining industry; and directing and administering regional offices on economic growth and development. The Mineral Development Branch consisted of three Chief Directorates, i.e.:

- Mineral Resource Management, with the functions to ensure mine environmental management, manage prospecting and mining rights, integrate social planning with National Economic objectives and to provide specialized mine economics services.
- Mineral Policy and Investment, with the functions to manage the small-scale mining development framework, research and advise on local and international mineral economic trends, control and regulate the processing and trade in diamonds, provide mineral resource information for mining investment and to identify and align strategic beneficiation opportunities with policy objectives and the regulatory process.
- Mineral Development and Administration

The restructuring process for the Mineral Development Branch was, however, completed in November 2005 which divided the Branch into the following two Branches:

#### **2.3.1.1 Mineral Regulation Branch**

The purpose of the Mineral Regulation Branch is to direct and administer the nine regional offices of the DME on economic growth and development. The main functions are to manage the administration and evaluation of the applications for reconnaissance permissions, prospecting rights, mining rights

and mining permits within the eastern, central and western mining regions. The organizational structure and functions of the Branch with its Chief Directorates are included as Appendix B. The three Chief Directorates for Mineral Regulation and Administration, each responsible for one of the three regions are respectively the Eastern Regions, Central Regions and the Western Regions.<sup>1</sup> Their functions are to direct and administer regional offices on economic growth and development, manage the registration of prospecting and mining rights, and regulate and promote economic growth and development through the exploitation of mineral and energy resources.

Each one of the three Chief Directorates has a directorate responsible for Licensing and Legal Compliance whose core functions are to:

- Manage the rehabilitation of derelict and ownerless mines and assist mines threatened with closure as a result of the inflow of extraneous water.
- Provide a specialized mine economic service.
- Manage prospecting and mining rights.
- Provide a specialized empowerment transaction assessment service.
- Integrate the social plan with national economic objectives.

With regard to mine environmental management, there are nine regional offices where the Regional Manager reports to an appropriate Chief Director. Within each regional office, the Sub directorate: Mine Environmental Management exists whose environmental functions are to adjudicate environmental reports accompanying applications for permits and rights, to enforce environmental management in terms of the MPRDA, 2002 and other applicable law and to address the environmental legacy of mining in each region.

The Petroleum Agency of South Africa (PASA) has been appointed by the Minister of Minerals and Energy to act as the designated agency for petroleum exploration and production. They fulfill the same functions as the Regional offices of the DME.

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<sup>1</sup> Eastern Regions comprises Limpopo, Eastern Cape and Kwazulu-Natal; Central Regions comprises Gauteng, Northern Cape and Free State; Western Regions comprises North West, Western Cape and Mpumalanga.

#### 2.3.1.2 Mineral Policy and Promotion Branch

The purpose of the Mineral Policy and Promotion Branch is to formulate and promote mineral related policies that will encourage investment into the mining and mineral industry thus making South Africa attractive to investors. The organizational structure and functions of the Branch with its Chief Directorates are included as Appendix C.

The Branch has three Chief Directorates which deal with mining, mineral and environmental policy, mineral promotion and economic analysis. The Chief Directorate on Mining and Mineral Policy has one directorate with functions that relate to the environment. The functions of the Directorate for Mine Environment Policy, Research and Development include to:

- Advise on mine environmental policy, legislation, norms, standards.
- Conduct research and provide advice on matters pertaining to mine rehabilitation, water ingress, decanting problems and other past legacies.
- Develop measures to strengthen the implementation of environmental requirements in terms of the MPRDA, 2002.
- Participate in international and national processes and obligations.
- Develop and coordinate the national strategy for the rehabilitation of derelict and ownerless mines.
- Coordinate the development of an information system.

The functions of the Directorate for Mineral Policy Development include to:

- Conduct research to position South Africa's mining and mineral industry and review mining and mineral policies in general.
- Coordinate the harmonization of legislation.
- Draft legislation and regulations.
- Identify strategies and compile guidelines for the implementation of mine and mineral policies.

Apart from mine environmental management and for the purpose of reporting on sustainable development, the Chief Directorate: Mineral Promotion furthermore promotes mineral development and advice on trends in the mining industry to attract investment. This Chief Directorate consists of three Directorates, i.e. Mineral Economics, Small-scale mining and Beneficiation Economics. The Directorate: Mineral Economics advise on local and international development and tendencies in the field of precious metals, minerals and ferrous minerals, non-ferrous metals, minerals and energy commodities, industrial minerals, mineral economics and render a mineral statistical service in this regard. The Directorate: Small-scale mining facilitate and co-ordinate institutional support and develop small-scale mining projects in the nine provinces. The Directorate: Beneficiation Economics survey priorities and select particular mineral commodity opportunities for local beneficiation and develop policy interventions which address constraints and promote further local processing of mineral commodities.

### **2.3.2 Mine Health and Safety Inspectorate**

The purpose of the Mine Health and Safety Inspectorate is to execute the Department's statutory mandate to protect the health and safety of the mine employees and people affected by mining activities. The measurable objective is to reduce mining-related deaths, injuries and ill health, through the formulation of national policy and legislation and the provision of advice and systems that monitor and audit compliance by the mining sector. Key focus areas relating to the environment and well-being of people affected by mining are to address hazards emanating from mining which impact on public health (for example the dust originating from mine dumps and fumes from processing plants) and to reduce fatalities, injuries and occupational diseases through enforcement activities, audits and inspections on mines. Environmental matters within the mining area as well as those impacts which migrate outside the mining area, such as dust, noise and water pollution, are dealt with by the Mineral Regulation Branch in terms of the MPRDA, 2002, through the Environmental Management Plan or Programme process.

The work of the Inspectorate is regulated by the Mine Health and Safety Act, 1996 (Act No. 29 of 1996). The Chief Inspector of Mines also heads the tripartite structures established under the Mine Health and Safety Act, namely the Mine Health and Safety Council and the Mining Qualifications Authority.

### **2.3.3 Hydrocarbons, Energy Planning and Clean Energy Branch**

The purpose of the Hydrocarbons, Energy Planning and Clean Energy Branch is to regulate hydrocarbon energy carriers and ensure energy planning. The functions of the Branch are to regulate and promote hydrocarbon energy carriers, ensure sustainable development of the energy sector through integrated planning and to facilitate the implementation of renewable energy technologies, regulate and promote Clean Development Mechanism (CDM) Activities. The organizational structure and functions of the Branch with its Chief Directorates are included as Appendix D. The Branch consists of three Chief Directorates:

- Hydrocarbons, with the functions to ensure implementation and compliance monitoring of legislation by all stakeholders in the petroleum and gas industries, to direct policy and regulations development and promote transformation within the coal and gas industry.
- Energy Planning, with the functions to develop energy efficient policies, legislation and regulation, to manage and administer an information system and carry out integrated energy planning functions.
- Clean Energy, with the functions to fulfill international energy commitments and obligations under the United Nations Framework Convention on Climate Change pertaining to the Kyoto Protocol and to formulate and monitor the implementation of the ten year strategy for renewable energy integration into the mainstream energy supply in RSA.

### **2.3.4 Electricity and Nuclear Branch**

The purpose of the Electricity and Nuclear Branch is to manage the electricity sector and the nuclear industry. The organizational structure and functions of the Branch with its Chief Directorates are included as Appendix E. Specific functions within the Branch are the development, monitoring, enhancement and implementation of electricity policies and programmes, the management of the South African Nuclear Industry and ensure overall control of source and special nuclear materials in terms of nuclear legislation and to oversee the Integrated National Electrification Programme (INEP) for the Department. The Branch consists of three Chief Directorates, i.e.:

- Electricity, with the functions to manage electrification policies, to develop, implement and monitor policies and strategies relating to the restructuring of the Electricity Supply Industry, to undertake research on national and international trends/development that may impact on the Electricity Supply Industry and to develop policy and legislation with respect to electricity regulation.
- Nuclear, with the functions to administer all matters related to Nuclear Non-Proliferation as required by legislation and international agreements, to administer all matters related to nuclear technology and to administer all matters related to nuclear safety as required by legislation and international agreements.
- INEP/BPU, with the functions to manage finance, planning and the implementation of the INEP.

### 2.3.5 Public Entities under the Minister of Minerals and Energy

Several public entities which have been established under various statutes, report to the Minister of Minerals and Energy. Table 1 presents a summary of the responsibilities of these organizations:

**Table 1. Responsibilities of Public Entities under the Department of Minerals and Energy**

| Organisation                               | Responsibility  |
|--|---|
| National Nuclear Regulator                 | Safety of nuclear installations & protection of persons and environment from nuclear damage   |
| National Electricity Regulator             | Regulation of energy supply industries, Pilot programmes for supply of free basic energy  |
| Mine Health and Safety Council             | Advisor to Minister on safety and health in mines and research and legislative review of mine, health and safety                          |
| Mintek                                     | Minerals technology that promotes environmental sustainability  |
| Council for Geoscience                     | Acquisition and curator ship of national geoscience information.  |
| EDI Holdings                               | Restructure electricity distribution in terms of the White Paper on Energy.   |
| SA Diamond Board                           | Regulation of diamond industry sales, processing and exports  |
| Central Energy Fund                        | Provide access to affordable energy and invest in alternative, cleaner technologies that will improve quality of life.                    |
| Nuclear Energy Corporation of South Africa | Research and development in nuclear energy and radiation sciences, Implementation of the Radioactive Waste Management Policy and strategy |

The policies, functions and actions of the above organizations are not addressed in this Departmental EMP as these organizations do not function under the control of the Director-General. The Department of Minerals and Energy will, however, encourage them to prepare their own EIPs or EMPs as necessary.

### **3. LEGISLATION AND POLICY ON MINERALS AND ENERGY**

Policies and legislation for the minerals and energy sectors respond to a legacy which includes the alienation of mineral and energy resources from the majority of the population who are black, and/or female; inadequate provision of energy services to most of the citizens; inadequate environmental management practices; lenient health and safety laws; dangerous, unsafe and unhealthy working conditions in mines; dislocated and fragmented community life created in part by the migrant labour system; and, the absence of adequate social capital or infrastructure in mining communities once the mines had ceased operating.

#### **3.1 Legislative framework for environmental management**

The Department of Minerals and Energy undertakes its mandate within a legislative and policy framework. With regard to its environmental responsibilities, certain aspects of the Constitution and the National Environment Management Act, 1998 as well as several statutes which the DME administers (see section 3.2) are pertinent.

##### **3.1.1 The Constitution**

According to Schedule 4 of the Constitution a provincial executive is responsible for implementing national legislation unless the Constitution or Act of Parliament provides otherwise. In terms of the Constitution, mining is a functional area of exclusive national legislative competence.

The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) confers certain rights to citizens in regard to the environment. Section 24 provides that:

“Everyone has the right:

- a) To an environment that is not harmful to their health or well-being; and

- b) To have an environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
- i. Prevent pollution and ecological degradation;
  - ii. Promote conservation; and
  - iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable social and economic development”.

Section 8 binds the Government to give effect to this right.

### **3.1.2 National Environmental Management Act, 1998**

The National Environmental Management Act, 1998 (Act 107 of 1998) establishes principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for coordinating the environmental functions exercised by organs of state. Chapter 3 provides for the preparation of environmental implementation plans and management plans, their purpose and objects, content, submission, scrutiny and adoption, as well as compliance with them.

The Departmental Environmental Management Plan is expected to describe:

- The functions exercised by the relevant departments in respect of the environment.
- Environmental norms and standards, including norms and standards contemplated in section 146(2) (b) (i) of the Constitution, set or applied by the relevant department.
- Policies, plans and programmes of the relevant department that are designed to ensure compliance with its policies by other organs of state and persons.
- Priorities regarding compliance with the relevant department's policies by other organs of state and persons.
- The extent of compliance with the relevant department's policies by other organs of state and persons.
- Arrangements for co-operation with other national departments and spheres of government, including any existing or proposed memoranda of understanding entered into, or delegation or

assignment of powers to other organs of state, with a bearing on environmental management; and

- Proposals for the promotion of the objectives of integrated environmental management as described in Chapter 5 of NEMA, 1998.

### **3.1.3 Legislation administered by the Department of Minerals and Energy**

#### **3.1.3.1 Mineral and Petroleum Resources Development Act, 2002**

The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) was assented to on 3 October 2002 and came into effect on 1 May 2004. The MPRDA, 2002 makes provision for equitable access to and the sustainable development of the nation's mineral resources. The Preamble emphasizes the following:

- Recognizing that minerals and petroleum are non-renewable natural resources;
- Acknowledging that SA's mineral and petroleum resources belong to the nation and that the State is the custodian thereof;
- Affirming the State's obligation to protect the environment for the benefit of present and future generations, to ensure ecological sustainable development of mineral and petroleum resources and to promote economic and social development;
- Recognizing the need to promote local and rural development and the social upliftment of communities affected by mining;
- Reaffirming the State's commitment to reform and to bring about equitable access to SA's mineral and petroleum resources;
- Being committed to eradicating all forms of discriminatory practices in the mineral and petroleum industries;
- Considering the State's obligation under the Constitution to take legislative and other measures to redress the results of past racial discrimination;
- Reaffirming the State's commitment to guaranteeing security of tenure in respect of prospecting and mining operations; and
- Emphasizing the need to create an internationally competitive and efficient administrative and regulatory regime.

Specifically pertaining to the environment and matters relating to sustainable development, the following sections are relevant:

- Section 2(h) confirms the environmental objects of the Act “to give effect to section 24 of the Constitution by ensuring that the nation’s mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.
- Section 3(3) provides that the Minister must ensure the sustainable development of SA’s mineral and petroleum resources within a framework of national environmental policy, norms and standards while promoting economic and social development.
- Section 5(4)(a) provides that no person may prospect for or remove, mine, conduct technical co-operations, reconnaissance operations, explore for or produce any mineral or petroleum or commence with any work incidental thereto without the necessary environmental management plans or programmes being approved.
- Section 6 confirms that any process conducted or decision taken in terms of the MPRDA, 2002 is subject to the provisions of the Promotion of Administrative Justice Act, 2000 (Act No.3 of 2000).
- Section 10 provides for consultation with interested and affected parties regarding the application for a permit or right in terms of the MDRDA, 2002.
- Section 12 provides for assistance to HDSAs and vulnerable groups to access prospecting or mining.
- Section 26 provides for the promotion of the beneficiation of minerals.
- Sections 16, 18, 22, 24, 27 provides for procedures and requirements on applications and environmental requirements for a prospecting right and renewals, a mining right or renewals and a mining permit. For petroleum exploration and production sections 74, 76, 79, 81, 83 and 85 provides for the same.
- Sections 17, 18(3) (c), 23, 24(3) (c) and (d) and 27(5) (b) provides criteria for the Minister to grant or refuse the permit or right. With regard to the environment, the criterion “the prospecting or mining will not result in unacceptable pollution, ecological degradation or damage to the environment” applies throughout.

- Sections 19(2)(e), 25(2)(e), 82(2)(d), 86(2)(d) determines the rights and obligations of a holder of a prospecting right, mining right, mining permit, exploration right or production right including compliance to the approved EM Plan or EM Programme.
- Section 37 confirms the principles for environmental management / sustainable development in terms of section 2 of NEMA, 1998 which applies for decision-making throughout.
- Section 38 (1) gives effect to the objectives of Chapter 5 of NEMA, 1998 relating to Integrated Environmental Management.
- Section 38(2) keeps directors of companies or members of closed corporations liable for any unacceptable negative impact on the environment, damage, degradation or pollution advertently or inadvertently caused by the company or closed corporation which they represent or represented.
- Section 39 provides for applicants of a mining right to undertake EIAs and EM Programmes within a specified time-frame of 180 days and for applicants of a prospecting right or mining permit to submit an EM Plan. It also provides for procedural matters and time-frames pertaining to the submission and approval of EM Plans and EM Programmes.
- Section 40 provides for consultation on EM Plans or EM Programmes with all State departments which administer any law pertaining to the environment.
- Section 41 provides for matters relating to financial provision for the remediation, rehabilitation and closure of operations.
- Section 42 provides for the management of mine residue stockpiles and deposits.
- Section 43 provides for mine closure and provisions pertaining to the issuing of a closure certificate.
- Section 44 provides for the removal of buildings, structures and other objects as it relates to closure.
- Section 45 and 46 provides for the Minister's powers to recover costs in the event of urgent remedial measures and to remedy environmental damage. Section 46 also provides for the rehabilitation of derelict and ownerless mines/dumps which is a dedicated function within the Mineral Regulation Branch.
- Section 48 provides for restrictions or prohibition of prospecting and mining on certain land – also in the case of environmentally sensitive areas.

Regulations supporting the MPRDA, 2002 were promulgated in the *Government Gazette No. 26275 of 23 April 2004*. The Regulations address among others, the content of the social and labour plans, the scoping report, environmental impact assessment report, the EM plans or EM programmes, EM Plans/Programmes performance assessment reports, financial provision methodologies, the determination of the quantum, mine closure principles, application procedures, contents for environmental risk reports and mine closure plans. The Regulations also provides for the comprehensive management of mine residue stockpiles and deposits.

Since the President of the RSA assented to the MPRDA, 2002, the DME had the opportunity to identify a number of provisions in the Act requiring amendment. With regard to the environmental impact assessment, agreement between the respective Ministers of Minerals and Energy and of Environmental Affairs and Tourism were reached on the amendments in general in the MPRD Amendment Bill to harmonize EIA requirements with that in the NEMA EIA Regulations as well as the amendment of the definition of "competent authority" in terms of section 1 of NEMA, 1998. It is anticipated that the MPRD Amendment Bill to pass through Parliament for promulgation perhaps within the next financial year.

#### 3.1.3.2 Mining Titles Registration Amendment Act (Act 24 of 2003)

The Mining Titles Registration Act (Act 24 of 2003) was enacted to amend the Mining Titles Registration Act, 1967 with the objectives, among others, of re-regulating the registration of mineral and petroleum titles and to ensure consistency with the Mineral and Petroleum Development Act, 2002.

#### 3.1.3.3 Mine Health and Safety Act, 1996 (Act 29 of 1996)

The Mine, Health and safety Act is administered by the Mine Health and Safety Inspectorate and focuses on reducing the number of fatalities and injuries in the mining industry. It provides for tripartite structures of labour, business, and the Government at all levels of the industry to implement and monitor health and safety management systems, as well as identify causes of accidents.

The specific objects of the Act are captured in more detail in Box 1:

**Box 1: Objectives of the Mine Health and Safety Act, 1966**

- Protect the health and safety of persons at mines.
- Require employers and employees to identify hazards and eliminate, control and maximize the risks relating to health and safety at mines.
- Give effect to the public international law obligations of the Republic that concern health and safety at mines.
- Provide for employee participation in matters of health and safety through health and safety representatives and committees at mines.
- Provide for effective monitoring of health and safety conditions at mines.
- Provide for enforcement of health and safety measures at mines.
- Provide for investigations and inquiries to improve the health and safety at mines.
- Promote a culture of and training in health and safety in the mining industry and cooperation and consultation on health and safety between the State, employers, employees and their representatives.

**3.1.3.4 Precious Metals and Diamond Amendment Acts**

The Diamond Amendment Act makes provision for the establishment of the State Diamond Trader which will facilitate the supply of rough diamonds equitably and the Precious Metals and Diamonds Regulator to promote equitable access to rough diamonds to license holders. The main objects of the amendments are to promote the culture of value addition of minerals by maximizing the value of economic benefit of South Africa's economy. The Precious Metal Act amended Chapter XVI of the Mining Rights Act, 1967 to eliminate the barriers to local beneficiation of precious metals and to rationalize the regulation of matters pertaining to the downstream beneficiation of precious metals. The main objective of the Act is to allow for the acquisition and possession of precious metals for the local beneficiation. The DME has also published draft Regulations in terms of the Precious Metals Act, 2005 (Act No. 37 of 2005) for comment.

### 3.1.3.5 The Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry

The Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry has been developed in accordance with section 100(2)(a) of the Mineral and Petroleum Resources Development Act, 2002. It establishes a framework, targets and a time-table for affecting the entry of historically disadvantaged South Africans into the mining industry, and enables South Africans to benefit from the exploitation of mining and mineral resources. The Charter requires that historically disadvantaged groups should own 15% equity in existing mines within 5 years and 26% within 10 years. The Charter also urges the formal mining industry to adopt a proactive strategy to encourage black economic empowerment (BEE) and transformation in ownership, management, skills development, employment equity, procurement and rural development.

### 3.1.4 Other Statutes administered by Public Enterprises

#### 3.1.4.1 Nuclear Energy Act, 1999 (Act No.46 of 1999)

The Nuclear Energy Act provides for the establishment of the South African Nuclear Energy Corporation and promotes research and the processing and enrichment of source material. It also provides for a Safeguards Agreement Administration between the RSA and the International Atomic Energy Agency in relation to the Nuclear Non-Proliferation Treaty, 1991; the control of all source material; enactment of regulations for the management, storage and discarding of radioactive waste and irradiated nuclear fuel and the consent of the Minister of Minerals and Energy prior to the disposal of radioactive fuel.

#### 3.1.4.2 National Nuclear Regulator Act, 1999 (Act No 47 of 1999)

The National Nuclear Regulator Act provides for the establishment of a National Nuclear Regulator to regulate and manage nuclear activities. It also provides for safety standards and regulatory practices for the protection of persons, property and the environment against nuclear damage. The Regulator is also required to provide assurance of compliance with the conditions of nuclear authorizations through the implementation of a system of compliance inspections, fulfill national obligations in respect of

international legal instruments concerning nuclear safety and ensure that provisions for nuclear emergency planning are in place.

#### 3.1.4.3 National Energy Regulator Act, 2004 (Act 40 of 2004)

The object of the National Energy Regulator Act, 2004 is to establish a National Energy Regulator responsible for the regulation of the electricity, piped-gas and petroleum pipeline industries. The Act requires every decision of the Energy Regulator to be in writing, consistent with the Constitution and applicable laws, and in the public interest and to make available to the public all its decisions. This excludes information protected in terms of the Promotion of Access to Information Act, 2000 (Act 2 of 2000).

#### 3.1.4.4 Other statutes that govern parastatal organizations

The following statutes govern parastatals reporting to the Minister of Minerals and Energy.

- Central Energy Fund Act, 1977
- Petroleum Products Act, 1977
- Electricity Act, 1987
- Mineral Technology Act, 1989 and Geoscience Act, 1991

#### 3.1.5 Energy-related Statutes pertaining to environmental matters

*DME's obligations under the Nuclear Energy Act in terms of Radio-active Waste, Nuclear liabilities and the IAEA:* A Radio-active Waste Management Policy and Strategy was approved by Cabinet at the end of 2005 and the drafting of legislation has commenced in 2006 to implement the policy and strategy.

*DME's nuclear non-proliferation obligations under the Nuclear Energy Act:* Regulations were drafted on restricted material, source material, special nuclear material and nuclear equipment material.

*DME's nuclear obligations under the Disaster Management Act, 2002 (Act No. 57 of 2002):* The DME is the National Organ of State for nuclear disaster management in terms of the Disaster Management

Act, 2002 (Act No. 57 of 2002). A Nuclear Disaster Management Plan for DME was developed, consulted with stakeholders and approved by the Director-General on 5 October 2005.

*Implementation of the Petroleum Products Amendment Act and Regulations:* A petroleum licensing system is provided for in terms of the Petroleum Products Amendment Act, 2003 (Act No. 58 of 2003). Regulations in this regard have also been promulgated.

*Environment Conservation Act, 1989 and NEMA, 1998*

EIA and the management of energy development is being regulated in terms of the Environment Conservation Act, 1989 and the NEMA EIA Regulations promulgated in terms of section 24(5) read with section 44 of NEMA, 1998. The following activities have been listed requesting a Basic Assessment approach to be followed in terms of the NEMA EIA Regulations:

- The construction of facilities or infrastructure, including associated structures or infrastructure, for-
  - (a) the generation of electricity where the electricity output is more than 10 megawatts but less than 20 megawatts;
  - (l) the transmission and distribution of electricity above ground with a capacity of more than 33 kilovolts and less than 120 kilovolts;
- The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas and paraffin, in containers with a combined capacity of more than 30 cubic meters but less than 1000 cubic meters at any one location or site.
- The decommissioning of existing facilities or infrastructure, other than facilities or infrastructure that commenced under an environmental authorization issued in terms of the NEMA EIA Regulations, for:
  - (a) electricity generation;
  - (b) nuclear reactors and storage of nuclear fuel.
- The recommissioning or use of any facility or infrastructure, excluding any facility or infrastructure that commenced under an environmental authorization issued in terms of the NEMA EIA Regulations, for
  - (a) electricity generation;
  - (b) nuclear reactors and nuclear fuel storage

The following activities have been listed requesting an EIA approach to be followed in terms of the NEMA EIA Regulations:

- The construction of facilities or infrastructure, including associated structures or infrastructure, for-
  - (a) the generation of electricity where the electricity output is 20 megawatts or more;
  - (b) Nuclear reaction including the production, enrichment, processing, reprocessing, storage or disposal of nuclear fuels, radio-active products and waste;
  - (c) the above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas and paraffin, in containers with a combined capacity of more than 1000 cubic meters at any one location or site;
  - (d) the refining of gas, oil and petroleum products;
- The construction of filling stations, including associated structures and infrastructure or any other facility for the underground storage of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin.

The *Gas Act, 2001 (Act No 48 of 2001)* and the Government / Sasol regulatory agreement referred to in section 36 of the Act, aims to:

- Promote the orderly development of the piped gas industry;
- Establish a national regulatory framework; and
- Establish a National Gas Regulator as the custodian and enforcer of the national regulatory framework.

The *Gas Regulator Levies Act, 2002 (Act No. 75 of 2002)* provides for the imposition of levies for the functioning of the national gas regulator and for matters connected thereto.

## **3.2 Policy framework**

### **3.2.1 Environmental Management Policy, 1998**

The aim of the 1998 Environment Policy is to set out the vision, principles, strategic goals and objectives and regulatory approaches that the Government will use for environmental management. The vision of the policy is that of a society in harmony with its environment. To achieve the vision, South Africans are encouraged to work together towards the goal of sustainable resource use and

sustainable living to meet present and future needs. In moving towards the vision, the Government commits itself to abide by several principles of sustainable development.

The strategic goals and objectives that the Government will pursue in meeting its commitment to sustainable development include:

- Creating an effective, adequately resources and harmonized institutional framework and an integrated legislative system, and building institutional capacity in all spheres of government to ensure the effective implementation of this policy.
- Promoting equitable access to, and sustainable use of, natural and cultural resources, and promote environmentally sustainable lifestyles. Integrating environmental impact management with all economic and development activities to achieve sustainable development with the emphasis on satisfying basic needs and ensuring environmental sustainability.
- Developing mechanisms where necessary, and build on existing ones, to ensure that environmental considerations are effectively integrated into existing and new government policies, legislation and programmes, all spatial and economic development planning processes, and all economic activity.
- Establishing mechanisms and processes to ensure effective public participation in environmental governance.
- Promoting the environmental literacy, education and empowerment of South Africa's people.
- Developing and maintain information management systems to provide accessible information to interested and affected parties that will support effective environmental management.
- Developing mechanisms to deal effectively and in the national interest with international issues affecting the environment.

### **3.2.2 Minerals and Mining Policy for South Africa, 1998**

The Government's priorities on minerals and mining are articulated in the 1998 White Paper on Minerals and Mining. Through this policy, the Government aims to maintain and promote a stable legal and fiscal climate, and to create a stable macro-environment in which business can be competitive and

support economic development. In addition the Government will facilitate access to business opportunities, skills and resources to those previously excluded to enable them to compete effectively. Exploration and investment that lead to increased mining output and employment will be promoted, and security of tenure in respect of prospecting and mining operations will be ensured. It is also the intention of the Government that legislative and other measures are taken, to foster conditions that will enable entrepreneurs to gain access to mineral resources on an equitable basis; and that the State is recognized as the custodian of the nation's mineral resources for the benefit of all.

In order to develop South Africa's mineral wealth to its full potential with maximum benefit for the population, the Government will promote the establishment of secondary and tertiary mineral-based industries to add maximum value to raw materials, and undertake and promote research, technology development and transfer that will stimulate the optimal development of mineral resources and ensure that the industry remains competitive.

The Government will encourage, support and facilitate human resource development in the mining and mineral industry, and will endeavour to ameliorate the social consequences of downscaling and mine closure. It will create a framework for a productive approach to industrial relations. Healthy and safe working conditions at all mines will be promoted and, in accordance with national health policies, the Government will ensure that mines deal humanely with the health consequences of work in the mining industry. The Government will also ensure that all employees have a choice of suitable housing and living conditions, and it will regularly review the system of migrant labour with the intention of minimizing its adverse social consequences. In the longer term, the Government will seek to phase out the migrant labour system.

The Government, in recognition of the responsibility of the State as a custodian of the nation's natural resources, will ensure that the development of the country's mineral resources takes place within a framework of sustainable development and in accordance with national environmental policy. This will include ensuring equal treatment and standards in respect of management and regulation of the mineral industry, and conducting the management and regulatory activities in a transparent manner that takes into account the views and interests of all the stakeholders.

The Government will encourage co-operation on mineral and mining matters amongst the countries of the southern African region and base that co-operation on the principle of mutual benefit. It will also develop policies to enhance South Africa's capacity to contribute to the development of the region.

The development of the country's mineral resources will take place within a framework of sustainable development and in accordance with national environmental policy, norms and standards and that the following principles are adhered to:

- Compliance with a single national environmental policy and governance within a framework of co-operative governance.
- Adoption of risk-averse and cautious approach, which includes the consideration of the "no go" option, in decision-making.
- The application of the polluter-pays principle in the regulation and enforcement of environmental management.
- The application of a consistent standard of environmental impact management irrespective of the scale of the mining operation.
- Equitable and effective consultation with interested and affected parties will be undertaken proactively to ensure public participation in the decision-making process. The *audi alteram partem* (hear the other side) rule shall apply to all decision-making.
- Compliance by mining companies with local development objectives, spatial development framework and integrated development planning of the local authorities.
- Application of the principles of Integrated Environmental Management (IEM).
- Capacity building for the effective implementation of environmental management measures and monitoring of compliance.
- Adherence to multiple land use in planning decisions.
- Promotion of a culture of waste minimization, recycling and re-use.
- Identification of problem areas in environmental management and to co-ordinate research.

### **3.2.3 Energy Policy of the Republic of South Africa, 1998**

With regard to energy, the Government's priorities are contained in the 1998 Energy Policy of the Republic of South Africa. These priorities include to:

- Ensure secure access to a balanced mix of alternative energy resources for all people over the long term.
- Promote increased access to affordable electricity services and to satisfy the basic needs with regard to security of supply, affordability by domestic and commercial users, efficiency and equitable access.
- Improve energy governance and the effectiveness of the energy industry by consolidating fragmentation and facilitating increased competition. In this regard, the following are relevant transformation from an industry-led grid electrification programme to an Integrated National Electrification programme; the rationalization of the Electricity Distribution Industry (EDI) into financially viable independent Regional Electricity Distributors; and the promotion of an efficient and internationally competitive liquid fuels industry, the continued availability of quality products throughout the country, the development of an equitable balance between the interests of industry and consumers, an industry supportive of the Government's broader social and economic goals and the inclusion of historically disadvantaged groups.
- Improve Government's capacity to govern energy and energy policy formulation.

#### **3.2.4 Renewable Energy Policy for South Africa, 2003**

The Renewable Energy Policy sets out the Government's vision, policy principles and, strategic goals and objectives for promoting the use of renewable energy. The main aim of the policy is to create the conditions for the development and commercial application of renewable technologies. The policy will be evaluated after five years, to consider whether the targets, objectives and outputs are being achieved. The White Paper's target of 10 000GWh renewable energy contribution for final energy consumption by 2013 was confirmed to be economically viable with subsidies and carbon financing. Achieving the target will:

- Add about 1.667MW new renewable energy capacity, with a net impact on GDP as high as R1.071billion a year;
- Create additional government revenue of R299million;
- Stimulate additional income that will flow to low-income households by as much as R128million, creating just over 20 000 new jobs; and

- Contribute to water savings of 16.5million kilolitres, which translates into R26.6million saving.

Renewable energy sources, other than biomass (the energy from plants and plant-derived materials), have not yet been exploited optimally in SA. A Strategy on Renewable Energy which will translate policy goals, objectives and outputs into an implementation plan has also been developed and is explained in more detail in Section 7.1.

### **3.2.5 Radioactive Waste Policy and Strategy, 2005**

The Radioactive Waste Management Policy and Strategy serves as a national commitment to address radioactive waste management in a coordinated and cooperative manner. The emphasis of this policy and strategy document is on the nuclear industry in SA within which the management of radioactive waste is a national responsibility assigned to the Minister of Minerals and Energy as per the Nuclear Energy Act, 1999. The scope of this policy relates to all radioactive wastes, except operational radioactive liquid and gaseous effluent (waste discharge) which is permitted to be released to the environment routinely under the authority of the relevant regulators.

The Policy provides for a National Radioactive Waste Policy Framework through the application of international and national radioactive waste management policy principles and applicable national legislation. The Policy also provides for a framework for Co-operative Governance through the clarification of responsibilities of Government departments, other regulatory bodies, generators and operators. Definitions and a classification of radioactive waste are also provided for in the Policy.

The National Radioactive Waste Management Strategy sets out the communication structures, their Terms of Reference and functions in this regard. It also provides a national process for the implementation of this strategy through the classification of waste scheme, financial provision required, management models for radioactive waste and long-term waste management issues.

#### **4. INTERNATIONAL COLLABORATION**

##### **4.1 Conventions**

South Africa is a Party to several international conventions which deal with a range of issues on which international action is required for effective environmental management. South Africa's participation in these conventions is consistent with its acceptance of shared responsibility for global and regional environmental issues as outlined in the Environmental Management Policy. The Conventions and other agreements advocate the application of the principles of sustainable development which are elaborated in Section 7. Some of the commitments result from South Africa's membership of the United Nations. However, as a member of the Southern African Development Community (SADC), the country is committed to ensuring that national policies are consistent with the goals of regional coordination. Illustrative of this are the protocols on energy and mining, which advocate common and coordinated approaches to the development of the respective sectors.

The global and regional agreements that relate to the environment are administered by DEAT. Other departments support implementation where it relates to their mandates. South Africa's offshore prospecting and mining activities (marine diamond mining and oil and gas exploration) relate to the international conventions described in Table 2 with whose provisions the DME must abide.

**Table 2. International Conventions relevant to Offshore Prospecting and Mining Activities**

| Name of Convention  | Date of Signature /<br>Ratification / Accession   | Overall objectives  |
|---|---|---|
| Geneva Convention on the Continental Shelf (1958)   | Date of accession: 9 April 1963. Entered into force on 10 June 1964. Administered by Dept of Foreign Affairs. | To define and delimit the rights of States to explore and exploit the natural resources of the continental shelf.   |
| UN Convention on Law of the Sea   | Administered by DEAT.   | It provides for the comprehensive codification of the law of the sea.   |
| Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and its Protocol of 1996 (London Guidelines) | South Africa became a signatory in 1972 and ratified the Convention in September 1978.                        | The convention provides a regulatory framework for the prevention and control of dumping of waste into the sea, where dumping is defined as: <ul style="list-style-type: none"> <li>▪ Any deliberate disposal at sea of wastes or other matter from vessels, aircrafts, platforms or other man-made structures.</li> <li>▪ Any deliberate disposal at sea of vessels, aircrafts, platforms or other man-made structures.</li> </ul> |
| Convention on the Prevention of Pollution from Ships (1973) (Marpol) including 1987 Protocol.   | South Africa ratified the Convention in March 1975. Convention entered into force on 28. February 1985        | Prevention of marine pollution from ships.  |
| The Convention on Wetlands of International Importance especially as Waterfowl habitat (RAMSAR Convention).                               | RSA ratified the convention in March 1985.  | The broad aims of this convention are to stem the loss and to promote wise use of all wetlands. The convention addresses one of the most important issues in RSA, namely the conservation of the country's water supplies, for both the use of the natural and human environments.  |

On-shore prospecting and mining activities in South Africa too have to conform to international conventions and agreements. The conventions and other agreements in Table 3 are relevant to some of the on-shore activities over which the DME has oversight.

**Table 3. International Conventions**

| Name of Convention  | Date of Signature /<br>Ratification / Accession   | Overall objectives   |
|---|---|--|
| Rio Declaration and Principles, Agenda 21   | Administered by DEAT.   | The main objective of this declaration and agreement is to promote sustainable development.  |
| UN Convention on Biological Diversity   | The convention was signed by South Africa in June 1993 and ratified on 2 November 1995. | <ul style="list-style-type: none"> <li>▪ Conservation of biological diversity;</li> <li>▪ Sustainable use of its components; and</li> <li>▪ Fair and equitable sharing of benefits arising from genetic resources.</li> </ul>  |
| UN Convention to Combat Desertification and Drought                                     | The Convention was signed on 9 January 1995, and ratified on 30 September 1997.         | To combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas. |
| Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) | South Africa ratified the convention in 1975.   | The protection of endangered species prominent in international trade through appropriate control measures and monitoring the status of such species.  |
| Convention on the Conservation of   | South Africa acceded to the convention in   | The convention was a response to the need for nations to co-operate in the conservation of animals that  |

| Name of Convention   | Date of Signature /<br>Ratification / Accession                                  | Overall objectives   |
|--|--|--|
| Migratory Species of Wild Animals<br>(Bonn Convention)   | December 1991.   | migrate across their borders. These include terrestrial mammals, reptiles, marine species and birds. Special attention is paid to endangered species.  |
| Convention on Wetlands of<br>International Importance especially and<br>Waterfowl Habitat (Ramsar<br>Convention) | South Africa ratified the convention in<br>March 1975.                           | The broad aims of this convention are to stem the loss and to promote wise use of wetlands. South Africa has designated 15 sites to the List of Wetlands of International Importance. The designation of other sites is under consideration,   |
| Protocol for the Protection of the<br>Ozone Layer (Montreal Protocol)  | South Africa became a signatory to the<br>protocol in January 1990. <sup>2</sup> | The protocol is aimed at ensuring measures to protect the ozone layer.   |
| Convention on the Trans-boundary<br>Movement of Hazardous Wastes and<br>their Disposal                           | Ratified in May 1994   | <ul style="list-style-type: none"> <li>▪ Reduce transboundary movements of wastes subject to the Convention to a minimum consistent with the environmentally sound and efficient management of such wastes;</li> <li>▪ Minimize the amount and toxicity of wastes generated and ensure their environmentally sound management as closely as possible to the source of generation; and</li> <li>▪ Assist least developed countries in environmentally sound management of the hazardous and other wastes they generate</li> </ul> |
| UN Framework Convention on Climate<br>Change   | Ratified in August 1997  | The ultimate objective is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system.   |
| Kyoto Protocol   | South Africa acceded to the Protocol on  | The Kyoto Protocol is an amendment to the United Nations Framework Convention on Climate Change  |

<sup>2</sup> • South Africa also ratified the subsequent London Amendments to the protocol designed to restrict the use of Chlorofouro-carbons (CFCs) and halons. Even though the Copenhagen Amendments to the protocol have not yet been ratified, South Africa has acted in full compliance with these amendments and is in the process of ratifying them.

| Name of Convention            | Date of Signature /<br>Ratification / Accession   | Overall objectives   |
|-------------------------------|---|--|
|                               | 31 July 2002. The Protocol entry into force in South Africa on 16 February 2005.  | (UNFCCC). Countries that ratify this protocol commit to reduce their emissions of carbon dioxide and five other greenhouse gases, or engage in emissions trading if they maintain or increase emissions of these gases.  |
| Convention on Nuclear Safety  | Convention signed on 20 September 1994. Instrument of ratification deposited on 24 December 1996. Entered into force 24 March 1997. | To legally commit participating States operating land-based nuclear power plants to maintain a high level of safety by setting international benchmarks to which States would subscribe.   |
| SADC Protocol of Energy, 1996 | Ratified on 29 April 1999   | <ul style="list-style-type: none"> <li>▪ Harmonize national and regional energy policies, strategies and programmes on matters of common interest based on equity, balance and mutual benefit.</li> <li>▪ Co-operate in the development of energy and energy pooling to ensure security and reliability of energy supply and the minimization of costs.</li> <li>▪ Co-operate in the development and utilization of energy in the Region in the following sub-sectors: wood fuel, petroleum and natural gas, electricity, coal, new and renewable energy sources, energy efficiency and conservation, and other cross-cutting themes of interest to Member States.</li> <li>▪ Ensure the provision of reliable, continued and sustainable energy services in the most efficient and cost-effective manner.</li> <li>▪ Promote joint development of human resources and organizational capacity building in energy.</li> <li>▪ Co-operate in the research, development, adaptation, dissemination and transfer of low-cost energy technologies.</li> <li>▪ Achieve standardization in appropriate energy development and application including the use of common methods and other techniques.</li> </ul> |
| Protocol on Mining, 1997      | Ratified on 29 April 1999   | <ul style="list-style-type: none"> <li>▪ Seek to harmonize national and regional policies, strategies and programmes related to the development and exploitation of mineral resources.</li> </ul>  |

| Name of Convention | Date of Signature /<br>Ratification / Accession | Overall objectives   |
|--------------------|---|--|
|                    |   | <ul style="list-style-type: none"><li>▪ Cooperate in facilitating the development of human and technological capacity.</li><li>▪ Encourage the development, transfer and mastery of science and technology throughout the Region.</li><li>▪ Encourage private sector participation in the exploitation of mineral resources.</li><li>▪ Promote economic empowerment of the historically disadvantaged groups in the mining sector.</li><li>▪ Jointly develop and observe internationally accepted standards of health, mining safety and environmental protection.</li></ul> |

## 4.2 Bilateral Agreements

South Africa has entered into several bilateral agreements aimed at enhancing cooperation in the field of energy. These include the following:

1. Memorandum of Understanding between the Republic of South Africa and the Republic of Mozambique to enter negotiations aimed at reaching agreement on gas, 1996
2. Memorandum of Understanding between the Republic of South Africa and the Republic of Mozambique with regard to Mepanda Uncua to investigate the possibility of a hydro scheme, 1997
3. Agreement between the Republic of South Africa and the Republic of Mozambique to create a Cross Border Gas Trade Commission and facilitate the movement of gas across the border, 2001
4. Agreement between the Republic of South Africa and the Republic of Namibia to create a Cross Border Gas Trade Commission and facilitate the movement of gas across the border, 2001
5. Agreement between the governments of Swaziland, Mozambique and South Africa to establish a joint commission to oversee the electricity interconnector, 2000.
6. Memorandum of Cooperation between the Government of the USA and the Government of the RSA on the exchange of information and cooperation on nuclear safety, safeguards and physical security, 1999.
7. Agreement of Cooperation between the Government of France and the Government of the RSA on the development and utilization of peaceful nuclear energy
8. Statement of Intent Concerning Cooperation in Sustainable Energy Development and the Mitigation of Greenhouse gases between the USA and RSA.
9. Agreement between the Department of Energy of the USA and the Government of the RSA through its Department of Minerals and Energy on Collaboration in Energy policy, Science, Technology and Development.
10. Memorandum of Understanding on Energy between RSA and the Dutch Government.
11. Agreement on Energy Policy, Science, Technology and Development between the SA Government and the Department of Energy of the United States of America.
12. Memorandum of Understanding between the Government of the Republic of Zimbabwe and the Government of the Republic of South Africa on Cooperation in the field of Energy.
13. Memorandum of Understanding on Energy Co-operation between the Republic of South Africa and the Arab Republic of Egypt.
14. Southern African Power Pool Memorandum of Understanding

15. Agreement of Cooperation between USA and RSA on the Peaceful Uses of Atomic Energy, November 2005.

#### **4.3 Other International Commitments**

Through participation in various fora, the Government of South Africa has also assumed certain responsibilities and obligations. With regard to minerals, these responsibilities arise from among others the Johannesburg WSSD Plan of Implementation, the New Partnership for Africa's Development, the Inter-governmental Forum on Mining, Minerals, Metals and Sustainable Development, the Global Dialogue, the African Mining Partnership, and the Mining, Minerals and Sustainable Development Project.

##### **4.3.1 WSSD Johannesburg Plan of Implementation**

The WSSD Johannesburg Plan of Implementation recognizes that the implementation of the outcomes of the World Summit for Sustainable Development which took place in 2002 will benefit all people, particularly women, youth, children and vulnerable groups and that implementation should involve all relevant stakeholders through partnerships, including between governments. It also notes that good governance; peace security, stability and respect for human rights as well as respect for cultural diversity are essential for achieving sustainable development. Also acknowledged by the Plan is the importance of ethics for sustainable development.

The key aspects of the Plan include poverty eradication, changing unsustainable patterns of consumption and production, protecting and managing the natural resource base of economic and social development, sustainable development in a globalizing world, health and sustainable development, sustainable development of small island developing states, sustainable development for Africa, other regional initiatives in Latin America and the Caribbean, Asia and the Pacific, West Asia, Economic Commission for Europe region, the means of implementation, as well as an institutional framework for sustainable development. With regard to enhancing the contribution of mining, minerals and metals to sustainable development, the plan aims to

- i. Support efforts to address the impacts and benefits of mining, minerals and metals, including workers' health and safety, and use various partnerships to promote transparency and accountability for sustainable mining and minerals development.
- ii. Enhance the participation of stakeholders, to play an active role in minerals, metals and mining development throughout the life cycles of mining operations, in accordance with national regulations and taking into account significant transboundary impacts;
- iii. Foster sustainable mining practices through the provision of financial, technical and capacity-building support for the mining and processing of minerals, including small-scale mining, and, where possible and appropriate, improve value-added processing, upgrade scientific and technological information and reclaim and rehabilitate degraded sites.

With regard to energy, the Plan among other advocates measures to improve access to reliable, affordable, economically viable and environmentally sound energy resources; transition to cleaner use of liquid and gaseous fossil fuels; the development of energy for policies and frameworks that will help create access to reliable, affordable and economically viable, socially acceptable and environmentally sound energy services; and enhance international cooperation to improve access to energy.

#### **4.3.2 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development**

This Forum is a Type II Partnership Agreement which emanates from the 2002 World Summit on Sustainable Development (WSSD) outcomes for mining which was held in Johannesburg, South Africa in September 2002. From this Summit, a WSSD Johannesburg Plan of Implementation (JPOI) was developed for implementation. The JPOI provided specific actions and targets for the mining industries throughout the world.

The objective of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGFMMMSD), is to enhance and promote the contribution of the mining, minerals and metals sector to sustainable development. The functions of the Forum are consultative and advisory. The forum aims to provide governments with a framework for discussing the opportunities provided by the mining sector and to respond to the challenges that they pose.

The thirty-three members of the Forum are: Argentina, Bolivia, Brazil, Burkina Faso, Burundi, Canada, Dominican Republic, Ethiopia, Gabon, Ghana, Kazakhstan, Jamaica, Kenya, Madagascar, Malawi, Mali, Mauritania, Morocco, Niger, Nigeria, Philippines, Republic of Guinea, Romania, Russian Federation, Senegal, South Africa, Surinam, Swaziland, Tanzania, Uganda, United Kingdom, Uruguay and Zambia. In addition to member countries, international agencies (UNCTAD, UNDESA, UNIDO, UNEP, ILO, World Bank, the European Commission and observers from China also participated).

A market outlook advisory committee was established to examine mineral and metal market trends and potential constraints to international trade in mineral and metal products. Members of the Forum also agreed that preparations must be initiated to report progress on the WSSD outcomes for mining to the United Nations Commission on Sustainable Development Conference to be held in 2010-2011. From all the countries represented at the Forum, South Africa has certainly taken the lead on preparations in this regard through the Sustainable Development through Mining (SDM) Programme that was initiated by the DME in November 2004.

#### **4.3.3 Mining, Minerals and Sustainable Development**

The Mining, Minerals and Sustainable Development (MMSD) project was an independent process of multi stakeholder engagement and participatory analysis that sought to address aspects of the interface between the mining and minerals sector and the concept of sustainable development. The project was coordinated by the International Institute for Environment and Development and undertaken between 2000 and 2002. The objective of the project in Southern Africa was to determine how the mining and minerals sector can best contribute to the region's transition to sustainable development. The MMSD Southern Africa project comprised two components namely research and stakeholder consultation. The five research topics identified by stakeholders were:

- Small scale mining and sustainable development in southern Africa
- HIV/AIDS, the mining and minerals sector and sustainable development in southern Africa
- Social issues within the mining and minerals sector in southern Africa
- Mining, minerals, the biophysical environment and the transition to sustainable development in southern Africa

- Mining, minerals, economic development and the transition to sustainable development in southern Africa.

#### **4.3.4 New Partnership for African Development**

The New Partnership for Africa's Development (NEPAD) is a programme of the African Union whose primary objectives are to eradicate poverty; place African countries on a path of sustainable growth and development; halt the marginalization of Africa in the globalization process and enhance beneficial integration into the global economy; and, accelerate the empowerment of women. The priorities are:

- a) Establishing the conditions for sustainable development by ensuring peace and security; democracy and good, political, economic and corporate governance; regional co-operation and integration; and Capacity building.
- b) Policy reforms and increased investment in agriculture, human development, infrastructure, diversification of production and exports, intra-African trade and improving access to markets of developed countries; as well as the environment.
- c) Mobilizing resources by increasing domestic savings and investments; improving management of public revenue and expenditure; improving Africa's share in global trade; attracting foreign direct investment; and increasing capital flows through further debt reduction and increase overseas development assistance (ODA).

#### **4.3.5 African Mining Partnership**

The aim of the African Mining Partnership (AMP) is to promote and coordinate mining and mineral-led initiatives under the auspices of NEPAD. Projects and programmes have been identified in six key areas namely: artisanal mining, harmonization of mining policies, environment and sustainable development, beneficiation, human resource development, and promoting foreign investment and indigenous participation in mining ventures. To date, South Africa and Mali have initiated training exchange programmes in the area of beneficiation. On the project sustainable development / environment, the AMP has linked up with the NEPAD Infrastructure on the Spatial Development Initiative (SDI) in Africa. The intention is to influence infrastructure development with the mineral potential within areas. The AMP will have its next Minister's meeting again early in February 2007 which is linked with the Mining Indaba.

## **5. PROGRAMMES AND STRATEGIES FOR ENVIRONMENTAL MANAGEMENT**

The Department of Minerals and Energy is implementing several programmes and strategies aimed at realizing its objectives. These programmes and strategies which are largely aligned with national policy and legislation, as well as with international commitments include the Energy Efficiency Strategy, Integrated National Electrification Strategy, Free Basic Electricity Programme, Integrated Energy Plan and Gas Infrastructure Plan.

### **5.1 Programmes and Strategies for the Energy Sector**

#### **5.1.1 Clean Development Mechanism**

Clean Development Mechanism (CDM) is a flexible mechanism under the Kyoto Protocol of the UNFCCC that provide a practical framework to reduce or stabilize gases (greenhouse gases) that cause global warming and climate change. CDM projects generates carbon credits with a monetary value that could result in additional financial resources flow to a developing country allowing it to implement a greenhouse gas reduction programme that would otherwise not be viable.

The South African Designated National Authority (DNA) was established in December 2004 as an important step for the implementation of the provisions of the Kyoto Protocol and of the UNFCCC. The main function of the DNA is to regulate and promote CDM activities in SA. In its evaluation process, the DNA uses an established approval procedure and criteria that looks at the social, economic and environmental contribution of projects. SA ranks in number 7 in the CDM market in the world.

The facilitation of the establishment of the Designated Operational Entity (DOE) plays an important role in the CDM project life cycle. It is responsible for validation and verification of the project and the project developers incur the validation costs. In order to reduce validation costs for SA project developers the DNA approached a number of organisations that could potentially act as DOEs and encourage them to apply for accreditation by the CDM Executive Board. As a result SA based Price Waterhouse and Coopers have been accredited by the CDM executive Board. This is the only DOE in Africa at large.

### **5.1.2 Renewable Energy Strategy**

Underpinning the Renewable Energy Strategy is a realistic implementation plan, including budgets and targets. The Renewable Energy Strategy and Implementation Plan were finalized in June 2004. The legislative framework for this Strategy was provided in the formulation of the Energy and Electricity Regulation Acts. National Treasury approved the renewable energy subsidy scheme in September 2005. The scheme started off with once-off capital grants (R14.2m) for over a period of 3 years made available for renewable energy projects. The scheme is administered by the DME Renewable Energy Finance and Subsidy Office which came into operation in October 2005.

### **5.1.3 Energy Efficiency Strategy**

The Energy Efficiency Strategy of South Africa was approved by Cabinet in March 2005 and is aimed at developing and introducing energy efficiency practices in South Africa in accordance with the Energy Policy. The Strategy also sets the target for improved energy efficiency in South Africa at 12% by 2015. The strategy relates the development of the energy sector with national socio-economic development plans and other Government initiatives. It also provides guidelines for the implementation of energy efficient practices. The Minister also signed an Energy Efficiency Accord with 32 companies including large industrial consumers to get the commitment of industry to implement energy efficiency practices in the industrial sector. The Strategy acknowledges the significant potential for energy efficiency improvements across all sectors. Its vision is to contribute towards affordable energy and to minimize the negative effects of energy usage on human health and the environment. The Strategy allows for the introduction of voluntary measures to monitor progress in implementation.

### **5.1.4 Paraffin Safety Information Strategy**

In order to deal with the problems created by the use of paraffin, the Department has drafted this Strategy document to give guidance to the implementation of a campaign to increase awareness of health and safety hazards related to illuminating paraffin. This will enable the DME to start with the campaign which is expected to promote behavioral changes with respect to the handling, storage and use of paraffin.

### **5.1.5 South African Supplier Development Agency**

The South African Supplier Development Agency (SASDA) was launched by the Deputy President on 12 September 2005, with the support of the Minister of Minerals and Energy. The purpose of SASDA is to increase the participation of HDSAs in the petroleum sector through targeted procurement. Its mandate is to accelerate progress in the empowerment of HDSAs in the petroleum industry through increased access to industry procurement opportunities.

### **5.1.6 Integrated National Electrification Strategy**

The purpose of the Integrated National Electrification Programme (INEP) is to provide capital subsidies to municipalities to address electrification backlogs for residential dwellings. The Government co-ordinates the electrification programme, including the establishment of targets, determination of allocation criteria and priority areas, allocation and management of funds, and the determination of the appropriate mix between grid and non-grid technologies. The Government will also establish a National Electrification Fund to provide electrification subsidies from an electrification levy. The National Electricity Regulator will regulate domestic electricity tariffs in order to rationalize the large variety of tariffs existing in South Africa and ensure that supply options with progressive capacity-differentiated tariffs and connection fees are available to domestic customers.

### **5.1.7 Free Basic Electricity**

The DME has joined hands with the Department of Provincial and Local Government through the National Free Basic Services Task Team in assisting municipalities with capacity necessary for effective implementation. Since June 2005, the number of municipalities that have not signed the funding agreements with ESKOM is less than 56%. Nationally there are about 3.5 million beneficiaries on the programme of which about 0, 5 million are in Eskom areas. In addressing the energy in balance in the domestic sector, the government has initiated an integrated national electrification programme (see above) and also put in place measures to provide free basic services, including electricity, to poor households. The Free Basic Electricity Policy addresses ways through which the Government can bring relief to poor electrified households and ensure optimal socio-economic benefits from the

National Electrification Programme. The Electricity Basic Service Support Tariff (EBSST) allows for a limited free amount of electricity to support basic energy services of a typical poor household.

#### **5.1.8 Integrated Energy Plan**

The purpose of the integrated energy plan is to balance energy demand with supply in concert with safety, health and environmental considerations. The following are the key aspects of the plan:

- Energy supply will remain reliant on coal for at least the next two decades.
- Energy supply will be diversified through the increased use of natural gas and renewable energies.
- Investigations into nuclear options as a future new energy source will be continued.
- The use of energy efficiency management and technologies will be promoted.
- Load factors on electricity generation plant to lower levelised lifecycle costs will be maximised.
- Reliance on imported liquid fuels by exploring and developing oil / gas deposits will be lessened.
- Existing oil refineries capacities when appropriate rather than green fields development will be increased.
- Existing synfuel plants will be maintained and supplemented with natural gas as feedstock.
- New electricity generation will remain coal based with potential for hydro, natural gas and nuclear capacity.
- Environmental considerations in energy supply, transformation and end use will be ensured.
- Universal access to clean and affordable energy, with emphasis on household energy supply being co-ordinated with provincial and local integrated development programmes will be promoted.
- Policy, legislation and regulation for the promotion of renewable energy and energy efficiency measures and mandatory provision of energy data will be introduced.
- Integrated energy planning will be undertaken on an ongoing basis.

### **5.1.9 Restructuring of the Electricity Distribution Industry**

The restructuring of the electricity distribution industry will ensure increased access to electricity, affordability of energy services, improved governance and will stimulate the economy. The process of launching the Regional Electricity Distributors (RED) has taken place and will now be municipal entities. RED one has been established as a municipal entity in July 2005 by merging the electricity business of Eskom within the political boundaries of the City of Cape Town. On 14 September 2005, Cabinet approved the creation of 6 metro REDs and by 30 March 2006, the final RED boundaries for selected local municipalities to determine whether they will form part of a Metro RED, the National RED or a RED on their own.

### **5.1.10 Integrated Energy Centers**

A total of 5 Integrated Energy Centers (leCs) were proposed for construction and launching in 2005. Delays were however experienced as a result of approving EIAs. Three such centers were established:

- The Caba Mdeni leC in Magadla village (Eastern Cape), partly sponsored by Sasol.
- Kgalagadi leC in Dithakong Cillage in Kuruman (Northern Cape).
- Eshane leC in Greytown (KwaZulu Natal)

leCs are at the heart of Government's Integrated Sustainable Rural Development Project. An leC is a one-stop energy shop owned and operated by a community co-operative and organized as a community project. It provides energy solutions to communities and access to affordable, safe and sustainable energy services. Each local leC is aligned with the IDPs for that particular area, which is implemented through the Integrated Sustainable Rural Development Project, thus integrating the provision of wider energy choices with other projects such as water supply, building schools etc.

### **5.1.11 Appliance Labeling Campaign**

To assist households in becoming more energy efficient, the DME initiated an Appliance Labeling campaign. Labels on household appliances inform consumers how energy efficient their appliances are. The DME, in collaboration with the Department of Public Works and Eskom, is retrofitting government buildings to make them more energy efficient. This contributes a saving of about R600 000 in electricity bills per year.

#### **5.1.12 Gas Infrastructure Plan**

The Gas Infrastructure Plan is intended to be a strategy for the development of the natural gas industry in South Africa.

#### **5.1.13 Women in Nuclear South Africa**

Women in Nuclear South Africa (Winsa) were launched in August 2003. Winsa aims to gather and disseminate information at national, regional and global level on providing women and sharing information with women on the challenges and opportunities for women in the nuclear discipline and to find a dedicated way in empowering women in the nuclear discipline.

### **5.2 Programmes and Strategies for the Mining Sector**

#### **5.2.1 Sustainable Development through Mining Strategy**

"The South African Constitution provides that everyone has the right to an environment that is not harmful to their health and well-being and to have the environment protected for the benefit of present and future generations." Following on from the World Summit on Sustainable Development in 2002, the Department of Minerals & Energy (DME) initiated a programme to develop a national strategic framework to guide the mining and minerals sector in South Africa to sustainable development.

The programme titled "Sustainable Development through Mining" (SDM) embraces initiatives and policies emanating from the United Nations (UN) Johannesburg Plan of Implementation (JPOI), the UN Global Compact, the Mineral and Petroleum Resources Development Act (MPRDA), the Business Charter for Sustainable Development and the Mining, Minerals and Sustainable Development Initiative among others. The DME has undertaken this programme and appointed the Council for Scientific and Industrial Research (CSIR), Mintek and the Council for Geoscience (CGS) to assist them in this task. The programme has now entered its second full year, and the core competencies of the respective science councils have been harnessed into a cohesive unit.

The classic definition of sustainable development is "development that meets the needs of the present generation without compromising the ability of future generations to meet their needs" and the DME has integrated this philosophy through the articulation of its vision "by 2010 the mining sector will contribute optimally to sustainable. The overarching aims of the strategic framework will give effect to the fulfillment of the DME's commitments in terms of the Johannesburg Plan of Implementation (World Summit on Sustainable Development 2002).

The sustainable development ideal lies at the nexus of biophysical, social and economic realms, supported by good governance and the concept can be seen as a process of continually striving for a dynamic balance between people, planet and prosperity through:

- Using and protecting the physical and natural environment and its resources;
- Creating equitable and viable economic systems with an ethical basis
- Acknowledging and guiding social and cultural systems and values towards greater equity, responsibility and human well being

The illustration (Figure 1) below outlines these four elements interacting harmoniously in achieving the SDM vision:

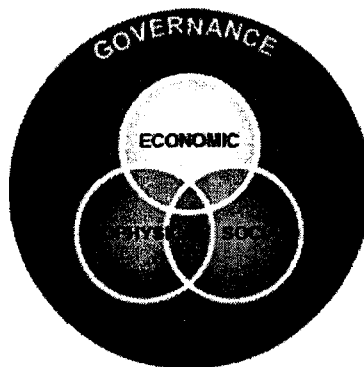


Figure 1: Four elements of Sustainable Development

The challenge of sustainable development within the minerals sector is how to ensure that the sector contributes to human welfare and well-being without reducing the potential for future generations to do the same. The challenge lies on how to ensure judicious use and management of the various forms of capital such as:

- natural capital, which provides a continuing income of ecosystem benefits, such as biological diversity, mineral resources, and clean air and water;
- manufactured capital, such as machinery, buildings and other forms of infrastructure;
- human capital, in the form of knowledge skills, health, and cultural endowment;
- social capital, the institutions and structures that allow individuals and groups to develop collaboratively;
- financial capital, the value of which is representative of the other forms of capital

Sustainable development, the understanding thereof and the move towards more sustainable practices within the mining sector, has been characterized by an ecocentric focus, where a disproportionate amount of emphasis had been placed on "righting" the environmental impacts of mining. There is however broad consensus that in order for sustainable development in mining to be practiced more equitably, actions and interventions in the biophysical, social, economic and governance realms must take place. The schematic below (Figure 2) illustrates the above and summarizes the overall aim of the SDM programme, viz. moving from this unbalanced picture towards a more balanced inclusive one where social, economic and governance actions to move the sector towards sustainable development are more equitable.

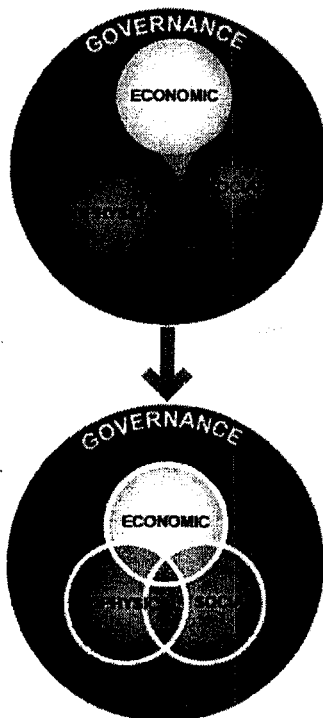


Figure 2: Balancing the four elements of Sustainable Development

The achievement of the SDM vision above is a broad concept encompassing amongst others, the full minerals resource value chain, expectations of a range of stakeholders and complex regulatory environments. Achieving the vision of sustainable development therefore needs to be guided by a framework to ensure synergy between stakeholder efforts and directed progress in this regard.

With a broadly supported vision in place, the approach will be to identify key obstacles to achieving the vision and to develop strategies and plans to overcome these obstacles. This framework will provide guidelines to the mining industry, government and other key stakeholders as well as interested and affected parties, ensuring that South Africa and its people benefit in a sustainable manner from the mining of its mineral wealth. Indicators to monitor the mining industries adherence to the sustainable development guidelines will also be created. Aiming to ensure that the appropriate tools are created to assist the mining industry with sustainable development, the strategy takes into account the national, regional and international commitments made by the minerals sector. In order to support the achievement of the vision for the sector's optimal contribution to sustainable development, the strategy will identify and provide direction for among others:

- institutional structures (Government and business sector level);
- policy, planning and legal aspects;
- competency and capacity building;
- financial resources;
- research priorities;
- infrastructure and technology requirements; and
- monitoring, evaluation and reporting.

For the DME to achieve its stated objective, the need to conduct intense consultation with government, industry, civic organizations etc. was realized. The research will commission specialist studies to understand the current situation in areas such as beneficiation, economic, social and governance. Once these are understood the process of developing a long term strategy with sustainable development indicators will be conducted through specialist studies or research based on the understanding of the constraints and gaps.

Stakeholders within the South African minerals sector will play an important role in developing the DME's strategic framework for sustainable development. Key in this respect is stakeholder support for the vision regarding the sector's contribution to sustainable development. Another important element is the role of stakeholders in identifying obstacles to the achievement of this vision, and in identifying possible actions to offset/overcome these constraints. A number of strategic themes have been developed out of the SDM vision – the provisional listing below will form a basis for debate and consideration (through the stakeholder consultation forum and other appropriate channels). For each strategic theme, a number of objectives have been derived from that aim to contribute to the attainment of the vision of the SDM initiative. Some of the themes identified are:

1. That the South African Mining sector reflects the Sustainable development values, principles and aspirations of the country.
2. That community empowerment, environmental & social rights is central tenets of the sector.
3. That all those operating within the minerals sector earn a social license to operate and that building and accounting for social and natural capital is implicit.
4. To recognize that sustainable development strategy and policy must transcend both the government of the day and the requirements of the UNCSD and should be valid and appropriate across all time scales.
5. That Sustainable Development strategy facilitates the transition from finite resource based industries & economies to sustainable knowledge based economies.
6. That Sustainable Development strategy promotes economic diversification in existing and future mining industries
7. That the minerals sector takes due cognizance of globalization's influence on sustainable development and the consequences thereof. This includes the implications of trade barriers, global market forces, international agreements, requirements and conventions.
8. That the cumulative and life-cycle aspects of the sector are fully aligned with sustainable development principles.
9. That Sustainable Development Policy acknowledges the potential and realized contribution of the industry for socio-economic empowerment and that policy creates conditions to ensure the continuation of this (valued) contribution.
10. That value extraction from South Africa's minerals sector benefits vulnerable groups.
11. Government is empowered to facilitate sustainable development outcomes and to link to national and international sustainable development strategies and initiatives.
12. Government, industry and other stakeholders must realize the synergies achieved through effective cooperation.
13. The Minerals Sector moves towards sustainable end states and to internalize negative costs and associated consequences.
14. That value addition from SA's mineral resources should be maximized locally.
15. All stakeholders in the sector must share an SD vision based on a culture of mutual respect.
16. The vision of sustainable development in the sector must be communicated effectively to all stakeholders.

#### **5.2.2 Database for Derelict and Ownerless Mines**

The SDM programme will identify and map all current and previously unrehabilitated and abandoned mines in South Africa, and assess or rank the status of these mines in terms of their impact on the environment and community among other issues. Best practice rehabilitation methods and regional rehabilitation strategies will be developed for each mineral sector and region. One of the core focus areas for the research is the development of a ranking / prioritization system for derelict and ownerless mines in South Africa. This will allow evaluation and comparison of derelict mining sites in terms of the

risk they pose to human and ecological health and safety, as well as their impact on the surrounding environment, their potential for deterioration, and associated rehabilitation cost efficiency. This enables decisions regarding rehabilitation and closure priorities to be made on a scientific basis.

The ranking system will be based on five principle considerations:

- public and ecological health and safety;
- physical stability;
- chemical stability;
- land use; and
- economic considerations.

In developing mining strategies, the programme conducts mining and closure studies. The key aspect of these studies is that they are intended to consider the holistic environment and may assist in identifying best practices for mining, rehabilitation and closure in support of a sustainable future.

Based on the current environmental state, these are used to inform future development options for the study area. Comprehensive consultation and collaboration with stakeholders in the various regions will assist in the elimination of duplication and ensure all role players in a region are part of the process.

Based on the understanding of the state of the area, specialist studies are commissioned where gaps exist. Best practice guidelines for managing the exploration, mining, rehabilitation, closure and post closure in a most sustainable manner are then developed for each mining sector and region. To date some five thousand ownerless and derelict mines have been identified throughout the country and some 3000 smaller shafts, trenches and operations have also been identified which are being verified.

### **5.2.3 Regional Mine Closure Strategies**

A tremendous urgency has been placed on resolving the water ingress and other gold mining related closure problems. The development of Regional Mine Closure Strategies (RMCS) within the various gold mining areas in South Africa, have therefore been identified as a major and urgent outcome for the DME for 2006/2007, 2007/2008 financial years. Six reasons have been identified highlighting the importance of regional mine closure strategies within which individual mine closures can be planned:

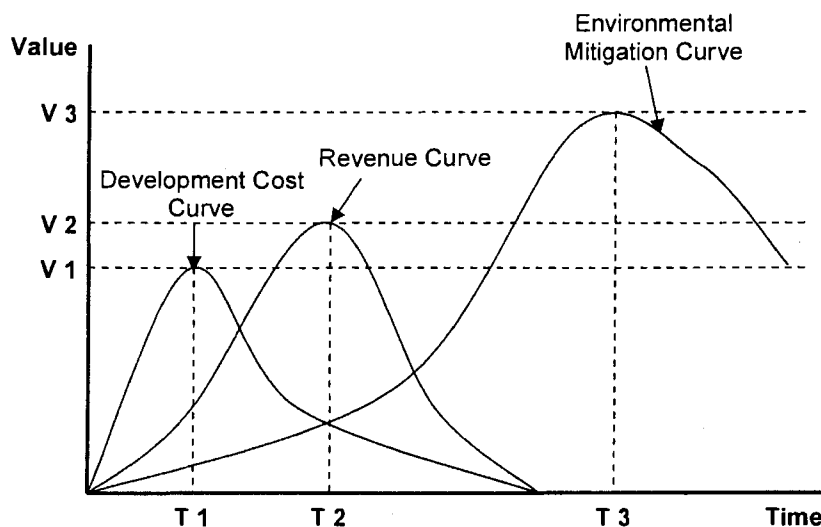
1. According to the report *The Development of Appropriate Procedures towards and after Closure of Underground Gold Mines from a Water Management Perspective* (WRC Report no. 1215/1/05) (Pulles, Banister and van Biljon, 2005), the suggested division of all of South Africa's goldfields into 17 regions has been decided on the basis of inter-mine connectivity and the geo-hydrological units

that apply. An advantage of this divisional logic is that in all cases except the Far West Rand's Central sub-basin and the Eastern sub-basin, the mines grouped within a geo-hydrological region are also located within the same hydrological unit. This potentially simplifies questions of management and administration. However, Pulles et al. (2005: ix) state that the closure of a mine within one region will often impact on the remaining mines. By implication, there is consequently a risk that "the cumulative impact resulting from all the mines in a region could be imposed upon the last mine in the region to cease operations". The last mine to be functioning could thus potentially be held responsible and liable for the cumulative impact of all the mines which are connected with it. This translates to financial risk which can become a driver of disinvestment in the mining industry with a resultant potential loss of jobs and associated economic activity. Even if this scenario does not take place, at the very least, it may be difficult, if not impossible, to apportion liability to the contributing mines within a region in a manner that is legally defensible and hence enforceable. Within this ordering logic, it is noted that because different mines will cease their operations at different times, an overarching framework needs to be developed for each region within which individual mines will be able to plan for mine closure. That framework should not become a disincentive to long-term investment and should also be legally enforceable if it is to be viable over time.

2. RMCS could be developed in order to make provision for the likelihood of a potential cumulative environmental impact resulting from the mining operations of certain groupings of mines, for example, polluted water from several mines decanting at one point with a resultant negative environmental impact on a specific area potentially removed from individual mine premises. This is currently taking place on Harmony's mine property in the West Rand where acidic water is decanting and polluting both the Wonderfontein and Tweelopies streams, potentially with heavy metals and radionuclides. Environmental impacts are, however, not limited to polluted groundwater but also include other hazards such as toxic dust deposits. This has the potential for strong and emotive public responses and therefore needs to be recognized as a management problem that is likely to need constant and creative solutions if it is to be contained.
3. It is also important to take into consideration issues of scale. A particular manifestation of this is the ratio of dependence of individuals on one mining operation. For example, the majority of the inhabitants of Carletonville are highly dependent on the mines in that area, whereas Johannesburg's population is not greatly dependent on the mining operations in the city's

surroundings. This point suggests that there may be reasons for looking at mine closure in the context of a region other than solely on the basis of underground mine inter-connectivity. In similar vein, the scale of the localized economy centered on the Klerksdorp-Orkney-Stilfontein-Hartbeesfontein (KOSH) area differs fundamentally from the scale associated with either the Far West Rand or Johannesburg area. Scale thus has many permutations and dimensions to it, both temporally and spatially, but also in terms of economic enmeshment and dependency of livelihoods. One of the critical elements of scale that needs to be considered is that relating to the "transboundary nature" of the problem which is further complicated by different authorities managing specific "parts" of the problem. Each of these different authorities introduces complexity into the management solution and thus needs to be considered from the start.

4. RMCS may provide the possibility for establishing controlling mechanisms that could make it more difficult for mining houses to externalize their costs. This could become a control mechanism to induce responsibility by the mining houses to accept the unintended consequences of their activities, such as the cost of environmental or human health mitigation. The externalization factor seems to be a key element when it comes to developing regional mine closure strategies, because the temporal dimension of this has the potential to impact on future generations and thus be fundamentally at odds with the Constitutional imperatives in this regard. Conceptually this can be thought of as shown here in Figure 3.



Conceptual representation of the cost of mining externalities such as environmental mitigation, which has a periodicity that differs from the Development Cost Curve and the Revenue Curve cycles that both terminate on mine closure. The Environmental Mitigation Curve is potentially greater in magnitude than the Revenue Curve, representing an externality imposed on society.

Figure 3: Environmental Mitigation Curve

5. It is important that mine closure be approached from a sustainable and "cradle to grave" perspective. Ideally it should be planned when a mine starts operating. In this regard, regional mine closure strategies may be able to provide regulations regarding mine closure that are applicable to all mines within a given region. They may also make provision for post-closure stewardship, in order to continue monitoring the implementation of individual mine closure plans. This will set specific standards for all mines and promote the alignment of individual mine closure plans.
6. RMCS are also needed to prevent a decline in investor confidence, which may be the unintended consequence of one mine deciding to close unilaterally in a way that affects the safe operation of an adjacent mine, or possible publicity arising from environmental degradation that impacts negatively on the stock market price of gold shares (such as that which could arise from the recent publicity of alleged radioactivity in a dam on the farm Adma, near Calretonville. The consequences of a single mine's decision (taken in isolation from its neighboring mines) may thus ultimately provide a disincentive for future foreign investment in the mining industry. This could also arise from a fear that litigation arising from alleged radioactivity could become a future financial risk for any given investor. It should be noted here that if sustainable development is to go hand in hand with mining, foreign investment is crucial and as such public perception matters a great deal. Government thus needs to consider a move away from the *laissez faire* approach of the Apartheid years where mining houses were allowed to drive their own agenda, towards a controlled and regulated environment that is both investor friendly, but at the same time ensures that all mines in a particular region operate safely, both in terms of mineworkers and the broader public that are exposed to surface contamination.

It can therefore be argued that for the above reasons, regional mine closure strategies will be able to address the diverse and complex issues related to mining and mine closure from a broader and more inclusive perspective than individual mine closure plans would be able to provide.

The gold mining areas in South Africa (Figure 4) for the development of such Regional Mine Closure Strategies are grouped as follows:

1. The Witwatersrand Gold Fields

2. Free State Gold Field
3. KOSH gold mining area
4. The Far West Rand Gold Field
5. West Rand Basin
6. Central Basin
7. Eastern Basin
8. Evander Gold Field
9. The Rietfontein Gold Field
10. The South Rand Gold Field
11. The Venterskroon Gold Field

Gold outside the Witwatersrand Gold Fields:

1. Pilgrim 's Rest Gold Field
2. Barberton Gold Field
3. Kwazulu-Natal (Klipwal)
4. The Giyani Greenstone Belt
5. The Murchison Greenstone Belt
6. The Amalia-Kraaipan Goldfield
7. The Pietersburg Gold Field
8. Other isolated gold mines e.g. Millwood

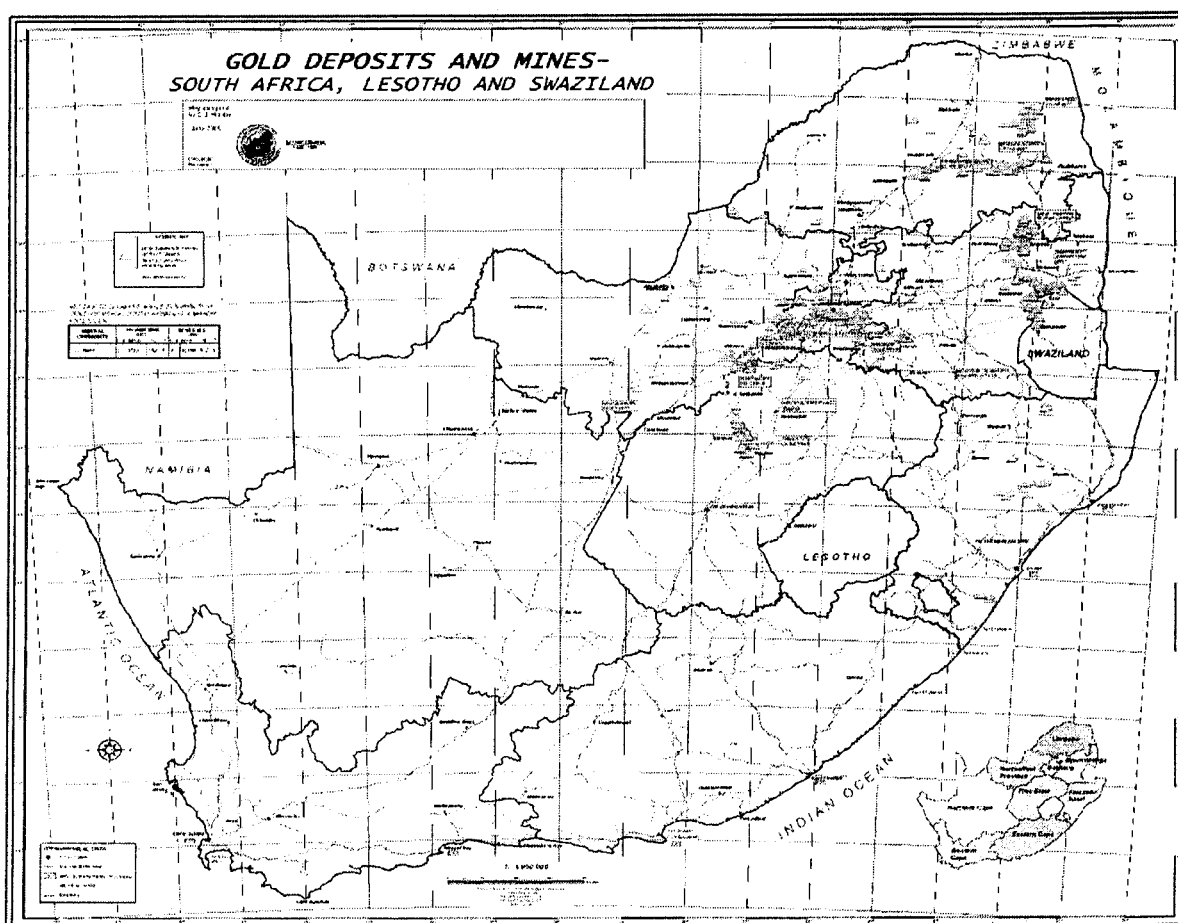


Figure 4: Map indicating the gold mining areas in South Africa (Source, Council for Geoscience)

RMCS are different to a mine closure plan. The closure strategy considers the various issues that are relevant to mine closure on a broader integrated level and develops a strategic framework within which individual mine closure plans to fit. The regional closure strategy must be developed in consultation with the relevant authorities, relevant mining industry (employers and employees) and I&APs that fall within that region. Due to the urgency of the need to develop these strategies, it is suggested that only relevant authorities (including local authorities) and the mining industry be consulted. The individual mines submitting their closure plans will still be required to engage all the relevant I&APs in accordance with the requirements of the MPRDA, 2002 and its supporting regulations. A regional mine closure strategy must as a minimum incorporate the following aspects within its framework:

- Listing of all mine infrastructures located within the "region" (i.e. mine shafts, ventilation shafts, headgears, waste rock dumps, sand dumps, slimes dams etc.).

- The legal status and ownership of the mines and/or the various components of the mine infrastructure must be established.
- The Spatial Development Plans that have been prepared by the various local authorities that fall within the region must be accessed and integrated.
- The socioeconomic profile of the "region" must be established and consultations must be held with local government officials in order to develop an integrated socioeconomic profile and to define the socioeconomic development plans that exist.
- A review of the type and value of the minerals that could potentially be sterilized through regional closure must be undertaken.
- A regional scale assessment must be undertaken in order to define the regional issues and to develop broad mine closure and environmental management objectives for the "region". This assessment must, as a minimum, include through review of surface and ground water, dust, radioactivity and instability issues.
- As it is well known that there are major potential long-term water pollution issues associated with the regional closure of the gold mines, particular emphasis must be placed with the regional closure of the gold mines, particular emphasis must be placed on developing a clear understanding of the following water related issues:
  - I. Construct a 3-dimensional model of all the underground workings for all the mines in the region.
  - II. Define all confirmed and potential hydraulic interconnections between mines.
  - III. Define anticipated remaining life for each mine and shaft.
  - IV. Develop a regional-scale groundwater model capable of quantifying major water ingress points, rates of flooding and inter-mine flow rates.
  - V. Undertake a regional-scale geochemical sampling programmes and screening-level kinetic geochemical modeling.
  - VI. Establish the probability of decant of contaminated underground water into the aquifer or surface water systems and the location, volumes and contaminant loads associated with such decants.
  - VII. Establish surface and groundwater impacts associated with surface features (e.g. waste rock dumps, tailings dams, pollution control dam's metallurgical plant footprints, etc.)
  - VIII. With reference to the applicable Catchment Management Plan, establish the acceptable volumes and contaminant loads and negotiate and agree with Authorities
  - IX. Apportion acceptable load to each mine within region and reach agreement between mines and Authorities

- X. Develop and implement regional monitoring programmes to provide data to validate the basis of the regional mine closure strategy.

Integrate all the above into a coherent and practical regional mine closure strategy which:

- can assist to identify appropriate solutions to strategic problems i.e. water ingress, mining waste/dust, water pollution, instability/seismic events within that "region";
- can be used by the relevant authorities to review the appropriateness of individual, mine closure plans; and
- can be used by the mines as a framework within which to plan their own detailed individual mine closure plans.

In developing a regional mine closure strategy, use must be made of the extensive previous investigations undertaken by various Government departments, institutions, mining companies, consultants etc. in this "region". Unnecessary duplication of work should be avoided. In this regard, the DME is finalizing various MOUs with other Government departments (national, provincial, local), research and academic institutions to use existing information. However, it is known that there are significant data gaps, e.g. geochemistry and mineralogy within specific "regions" that will need to be filled with specific sampling programmes.

#### **5.2.4 Witwatersrand Water Ingress Project**

The DME initiated the Witwatersrand Water Ingress Project (WWIP) in 2003. The Witwatersrand area includes the following basins:

- Central Basin;
- Eastern Basin;
- Western Basin;
- Far Western Basin; and
- Klerksdorp-Orkney-Stilfontein-Hartebeestfontein (KOSH) gold mining area.

The Council for Geoscience was appointed to assist the DME in investigating viable water management solutions and sustainable closure options. As a result the generic solutions within all the basins include the following:

- Water management options are evaluated from the basis of preventing water ingress (through the building of canals and to keep clean water clean) and managing and control decant water.
- Where mining can still continue in the short (5 years) to medium (10 years) term - the water levels must be maintained at an appropriate safe level for mining. Mining companies and prospective mining companies must make a commitment towards pumping water while mining.
- After cessation of underground mining, any option which allows water to recover to decant level and decant freely is not regarded as sustainable in the long term – owing to the unpredictability of the decant process.
- The water level within a basin can only be allowed to recover to an “Environmental Critical Level” (ECL), which will prevent surface and groundwater contamination. The ECL has only been defined for the Western Basin (Figure 5 and 6) and need to be established for the other basins.

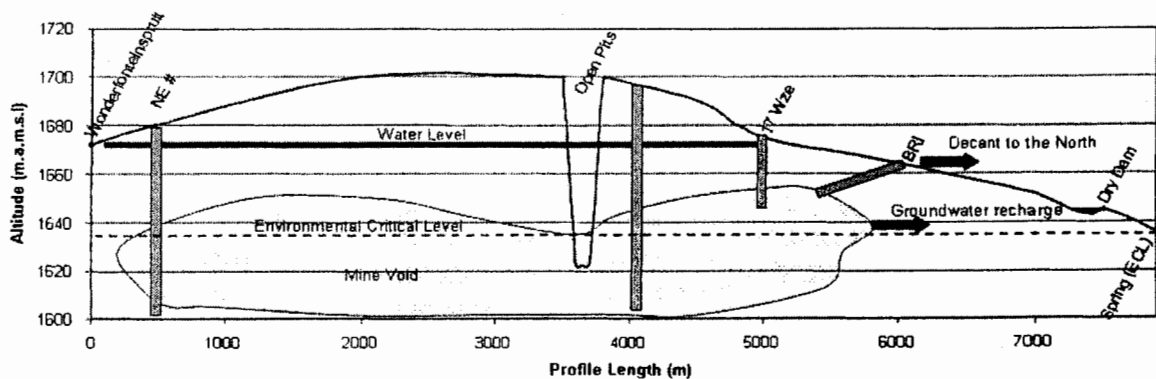


Figure 5: A north-south section across the Western Basin, showing the current water level, the ECL, the shaft positions and the decant and recharge areas. (Source, WWIP)

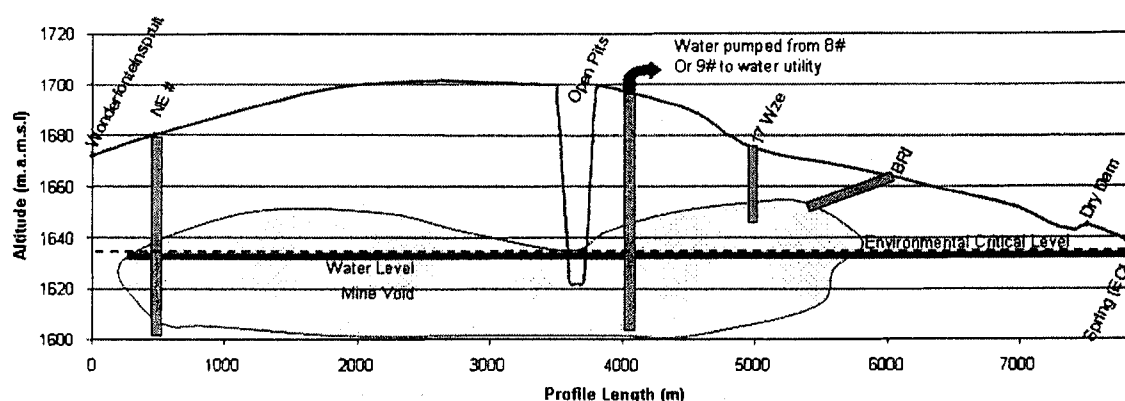


Figure 6: A north-south section across the Western Basin, showing the effect that pumping water to lower the void water level to around or below the ECL would have. (Source, WWIP)

- Owing to the high cost of full desalination of the water, it is proposed that water be treated to industrial quality and used locally for industrial or agricultural purposes. The transfer of industrial quality water to scarce areas such as the Rustenburg area (to provide water for the platinum mines) is also possible.

The following water management options were identified as the preferred management options:

- Central Basin: A controlled decant tunnel is attractive from a sustainability viewpoint. It is however expensive and the possibility of using a siphon has been identified. Continued pumping and treatment of water would result in long-term liabilities to Government and this option is not recognized as long-term sustainable water management option. A canal at Florida Lake is being implemented to prevent water ingress (5Ml/day) which will assist in making the decant volumes less and prevent clean water from running through mined-out areas and picking up pollution.
- Western Basin: The pumping and treatment of water seems to be the only option left. Atomaer is in the process of finalizing an agreement with the relevant mining companies to establish a water utility and treatment plant for this purpose.
- Eastern and Far Western Basins: Partial dewatering of the dolomites via well-fields, which are currently a major source of ingress would limit ingress into the mining basins and keep clean water clean. In the Far Western Basin, this would maintain current water levels in the dolomite, reducing the risk of reactivating sinkholes.

With regard to the water management options for the basins, the following risk factors were identified:

- Water levies could pose a risk to the financial viability of the options.
- Dutiable users may have to be identified or developed for the water produced.
- The water volumes involved will have to be correctly predicted, for the efficient design and abstraction, treatment and distribution infrastructure. Seasonal variations, as seen in the Western Basin will have to be taken into account.

#### **5.2.5 Strengthening Environmental Enforcement Programme**

The DME as part of the SDM programme are producing a series of documents in an effort to aid implementation of the Minerals and Petroleum Resources Development Act (MPRDA). The aim of these guidelines are to assist mine planners, government officials, major stakeholders as well as other interested and affected parties alike to understand the key legislative requirements pertaining to the guideline documents. It is believed that a simpler explanation of the legislative requirements will facilitate a deeper understanding thereof. There are several of these publications and at present they are in different stages of production which are:

##### 1) Evaluation of the quantum of closure-related financial provision provided by a mine.

The objectives of this guideline document are to:

- Improve the understanding of the financial and legal aspects pertaining to the costing of remediation measures as a result of prospecting and/or mining operations;
- Enable the DME to adequately evaluate/review the quantum for financial provision submitted by the mining industry; and
- Provide the DME Regional Office personnel with a comprehensive and useful guideline on the generally accepted closure methods.

This document is now available and can be accessed on [www.dme.gov.za](http://www.dme.gov.za) or alternatively a hard copy is available on request through our website.

## 2) Strategies to Improve the Contribution of Granite Mining to Sustainable Development

This document is based on a study that was carried out as part of the SDM research programme commissioned by the DME. The programme's over-arching goal is to develop strategies for ensuring that mining activities contribute optimally to the sustainable development of the areas and regions within which they take place. Some of the objectives of the draft document are:

- Understand the nature of activities of the granite value chain.
- Understand the biophysical, socio-economic, planning and policy environments within which granite mining take place.
- Acquire insights into the macro-economic context within which the industry operates.
- Analyze the industry within the broad sustainable development context.
- This document is currently in its final draft phase, and will shortly become available.

## 3) MEM Guideline on Mine Closure

The purpose of this guideline is:

- to simplify the complex processes and procedures around the issue of formal mine closure and also
- to enhance understanding of the requirements of the MPDRA and its regulations.
- to provide some practical guidance to mine owners/ operators and government officials involved with mine closure.

## 4) Towards Management and Closure of South African Gold Mine Mineral Residue Deposits

This document is specifically designed to deal with gold mine mineral residue deposits (tailings/slimes dams, waste rock dumps and sand dumps), and will be used in conjunction with the guidelines on overall mine closure. The objective of this document is two-fold:

- to provide the South African gold mining industry with a set of legislative principles to manage the environmental impacts associated with gold residue deposits; and
- to provide guidance to environmental practitioners and the regulators, for the optimal requirements for gold mine residue deposit management when aiming to attain closure.

5) MEM Guideline - Environmental decision-making and implementation (for Scoping, EIAs and EMPs) and the monitoring and performance assessment of EMPs

Drafts of these guideline documents have been finalized and it awaiting the finalization and promulgation of the MPRD Amendment Bill.

6) GIS Decision-making support system

Industry compliance includes assisting the DME (in terms of enforcement) and industry to comply with the Minerals Petroleum Resources Development Act (MPRDA) in conjunction with any additional relevant legislation. The SDM programme will develop an Environmental Decision Support System (EDSS) that will enable government and other parties to monitor the compliance of the mining industry with the sustainable development framework for mines.

The EDSS will support data capture, storage, retrieval and reporting per mine, mine sector and region. A system to facilitate mine audits by the DME and the transfer of this data to decision support systems will be developed. A key component of this area is in assisting department officials when making decisions, in particular those decisions that are related to socio-economic and environmental impacts. As part of strengthening enforcement and assistance with industry compliance, the Site Inspection Assistant Tool (SIAT) is being developed to assist DME officers when doing mine audits. The current tool is a PDA assisted site inspection tool. The tool will:

- Ensure that the environmental officer verifies the information contained in the EMP's
- Provides a template according to which inspections can be conducted
- Add GPS and an integrated camera as additional data capturing tools
- Keep record of all field inspections
- Provide an electronic report facility

**5.2.6 Rehabilitation of unsafe shafts and holdings within the Witwatersrand gold mining area**

The DME initiated a project in 2005 to close and rehabilitate the unsafe shafts and holdings within the Witwatersrand area. The Council for Geoscience was appointed to assist DME in this task. About 600 mine openings, shafts or holdings were identified. As a phase 1, the DME identified 44 extremely

hazardous mine related openings which were rehabilitated in 2006. A second phase was initiated in 2006 for rehabilitation. An extensive public awareness campaign was launched through the publication of an awareness pamphlet. Various public meetings, door-to-door visits were undertaken in co-operation with the Ward Councillors of the relevant local authorities.

#### **5.1.7 Rehabilitation of Derelict and Ownerless Mines Programme**

With the 2005/06 financial year, the following derelict and ownerless mines were identified for rehabilitation:

- Asbestos: Bestwell, Asbes mine, Bute, Heuningvlei, Corheim, Hartland, Jebolo.
- Clay-coal informal mine: Osizweni phase 1 – making the mining area safe.

### **6. STRATEGIC OBJECTIVES AND OUTCOMES OF CORE ENVIRONMENTAL FUNCTIONAL AREAS**

This section describes the functions of the functional areas described in Section 2 as well as their strategic objectives and outcomes for the period 2005/6 to 2009/10.

#### **6.1 Core Environmental Functions**

The functions of the directorates within the Department of Minerals and Energy which are directly relevant to environmental management are described in Table 4. Please note that input is focused other new structures as approved within DME.

#### **6.2 Strategic Objectives and Outcomes**

The DME undertakes its work through programmes on mine health and safety; mineral development, hydrocarbons and energy planning and nuclear and electricity. The strategic objectives focus areas and the expected outcomes and impacts in each functional area that is relevant to environmental management are described in Table 5. The objectives and outcomes are well-related to the various conventions, policies and legislation that are described in the earlier sections.

**Table 4. Functions of the Department of Minerals and Energy Relating to Environmental Management**

| Branch                       | Chief Directorate   | Directorate: Functions  | Role of Environmental Management                                      |
|------------------------------|---|---|---|
| Mineral Policy and Promotion | <b>Mining and Mineral Policy</b><br>Undertake research, develop mine environmental policies and advise thereon. | <p><i>Directorate: Mine Environmental Policy, Research and Development</i></p> <ul style="list-style-type: none"> <li>▪ Develop, implement and advise on environmental management legislation, policy, and guidelines for the SA mining industry.</li> <li>▪ Align environmental legislation and policies with national policies.</li> <li>▪ Co-ordinate and monitor the effective implementation of mine environmental management, legislation, policies and strategies.</li> <li>▪ Liaise with all stakeholders on relevant matters.</li> <li>▪ Provide and co-ordinate training to regional personnel on relevant mine environmental matters.</li> <li>▪ Develop, co-ordinate and implement a National Strategy for the rehabilitation of derelict and ownerless mines and provide advice in this regard.</li> <li>▪ Develop measures to strengthen the implementation of environmental requirements in terms of the MPRDA.</li> <li>▪ Conduct research and provide advice on matters</li> </ul> | <p><b>Environmental Management:</b></p> <p>As Directorate column.</p> |

| Branch   | Chief Directorate  | Directorate: Functions  | Role of Environmental Management  |
|--|--|---|---|
|  |  | <p>pertaining to:</p> <p>(a) Mine rehabilitation;</p> <p>(b) Water ingress and decanting problems;</p> <p>(c) Other past legacies.</p>  |   |
|  | <p><b>Mining and Mineral Policy</b> Develop new policies, review existing policies and amend legislation to achieve transformation and to attract new investment</p> | <ul style="list-style-type: none"> <li>▪ Conduct research to position South Africa's mineral and mining industry</li> <li>▪ Review mining and mineral policies</li> <li>▪ Co-ordinate harmonization of legislation</li> <li>▪ Draft legislation and regulations</li> <li>▪ Identify strategies and compile guidelines for the implementation of mine and mineral policies.</li> </ul> | The same as Directorate column.   |
| <p>Mineral Policy and Promotion</p> <p>[Note: for purpose of reporting on SD, the functions of Mineral Promotion were included].</p> | <p><b>Mineral Promotion.</b> Promote mineral development and advice on trends in the mining industry in order to attract investment.</p>                             | <ul style="list-style-type: none"> <li>▪ <i>Directorate Mineral Economics:</i> Research and advice on local and international mineral economic trends.</li> </ul>   | <p>Advise on local and international development and tendencies in the field of:</p> <ul style="list-style-type: none"> <li>▪ Precious metals, minerals and ferrous minerals;</li> <li>▪ Non-ferrous metals, minerals and energy commodities;</li> <li>▪ Industrial minerals;</li> <li>▪ Mineral economics; and</li> <li>▪ Render a mineral statistical service.</li> </ul> |
| Mineral Policy and Promotion   | <p><b>Mineral Promotion.</b> Promote mineral development and advice on trends in</p>   | <ul style="list-style-type: none"> <li>▪ <i>Directorate Small-scale mining:</i> Facilitate and co-ordinate institutional support and develop SSM projects</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Facilitate joint venture partnerships and/or mentor arrangements for SSM and mineral</li> </ul>  |

| Branch  | Chief Directorate   | Directorate: Functions  | Role of Environmental Management  |
|---|---|---|---|
| [Note: for purpose of reporting on SD, the functions of Mineral Promotion were included].                                 | the mining industry in order to attract investment.   | within the 9 provinces.   | enterprises;<br><ul style="list-style-type: none"> <li>▪ Provide economic and technical advise;</li> <li>▪ Co-ordinate SSM enterprise development projects;</li> <li>▪ Identify SSM projects and provide statistical information to DME;</li> <li>▪ Provide secretarial services to the SSM Board.</li> </ul> |
| Mineral Policy and Promotion<br>[Note: for purpose of reporting on SD, the functions of Mineral Promotion were included]. | <b>Mineral Promotion.</b> Promote mineral development and advice on trends in the mining industry in order to attract investment. | <ul style="list-style-type: none"> <li>▪ <i>Directorate: Beneficiation Economics:</i> To identify and align strategic beneficiation opportunities with policy objectives and the regulatory process.</li> </ul> | <ul style="list-style-type: none"> <li>▪ To survey priorities and select particular mineral commodity opportunities for local beneficiation;</li> <li>▪ To develop policy interventions which address constraints and promote further local processing of mineral commodities.</li> </ul>                     |
| Mineral Regulation  | <b>Mineral Regulation and Administration (Eastern, Central, Western Regions):</b> Transform and regulate the industry             | <b>Regional Directorate(s) Mineral Regulation:</b> Transform the industry through the allocation and regulation of rights and maintain an electronic geographic system.   | <b>Industry Transformation and Regulation:</b> <ul style="list-style-type: none"> <li>▪ Ensure that rights are granted in compliance with the law and that Brad-based Socio-economic Empowerment targets are achieved in the process.</li> </ul>  |

| Branch | Chief Directorate | Directorate: Functions   | Role of Environmental Management  |
|--------|-------------------|--|---|
|        |                   |  | <ul style="list-style-type: none"> <li>▪ Consult with and incorporate requirements of other regulations into the regulatory process.</li> <li>▪ Maintain a database on rights granted and on socio-economic matters.</li> <li>▪ Monitor compliance with the conditions of rights granted and take corrective action when required.</li> <li>▪ Co-ordinate and integrate the services of attached National Mining protection System personnel.</li> <li>▪ Provide financial administrative services for both external financial management and the verification and collection of royalties.</li> <li>▪ Facilitate urban renewal and rural development through the economic development of surface land and by co-coordinating integrated development plans with mining activities.</li> </ul> |
|        |                   | <p><b>Regional Directorate(s) Mineral Regulation:</b> Enforce environmental management and address environmental legacy of mining in the region.</p> | <p><b>Environnemental Management :</b></p> <ul style="list-style-type: none"> <li>▪ Adjudicate environnemental management programmes.</li> <li>▪ Ensure that environmental cost information is</li> </ul>   |

| Branch                  | Chief Directorate   | Directorate: Functions   | Role of Environmental Management   |
|-------------------------|---|--|--|
|                         |   |  | <p>forwarded to the mine economic adjudicators for economic evaluation purposes and maintain a database in this regard.</p> <ul style="list-style-type: none"> <li>Ensure effective environmental auditing and performance assessment.</li> </ul> <p>Implement effective measures to address the environmental legacy of mining.</p> <p>Co-ordinate and integrate the services of attached specialist personnel for small-scale mining, social plans and energy.</p> <p>Ensure receipt and verification of results and returns and the transmission to appropriate information custodians.</p> <p>Establish social plan cost and forward the information to mine economic adjudicators for economic evaluation purposes.</p> |
|                         | <b>Mineral and Petroleum Titles Registration</b> : Manage registration of prospecting & mining rights centrally | Register and administer prospecting, mining and other rights               |  |
| Hydrocarbons and Energy | <b>Hydrocarbons</b> Regulate hydrocarbon energy carriers and related activities                                 | <b>Petroleum and Gas Regulation:</b> Administer the Petroleum Products Act | <b>Petroleum regulation</b>  |
|                         |   | <b>Petroleum and Gas Regulation:</b> Administer the Gas Act                | <b>Gas regulation</b>  |

| Branch | Chief Directorate   | Directorate: Functions  | Role of Environmental Management                       |
|--------|---|---|--|
|        |   | <b>Petroleum and Gas Regulation:</b> Administer the Petroleum Pipelines Act   | <b>Pipeline regulation</b>                             |
|        | <b>Hydrocarbons</b> Direct policy development for petroleum   | <b>Petroleum Policy:</b> Determine fuel standards and promote fuel efficiency   | <b>Fuel Standards, Environment and Fuel Efficiency</b> |
|        |   | <b>Petroleum Policy:</b> Develop and implement policies for the petroleum sector  | <b>Petroleum policy development</b>                    |
|        | <b>Hydrocarbons</b> Direct optimal policy development for the coal and gas sectors, taking into account the environmental aspects | <b>Coal and gas:</b> Develop and implement policy on coal reserves, discard coal and low smoke fuels  | <b>Coal policy</b>                                     |
|        |   | <b>Coal and gas:</b> Develop and implement policy for the gas sector  | <b>Gas policy</b>                                      |
|        | <b>Energy Planning</b> Manage policy development and effect energy efficiency and environmental compliance                        | <b>Environment and energy efficiency:</b> Ensure energy efficiency and environmental compliance   | <b>Energy efficiency and environment</b>               |
|        |   | <b>Environment and energy efficiency</b> Research, develop and implement general policy and legislation relating to cross-cutting energy issues | <b>Energy policy and research</b>                      |

| Branch                  | Chief Directorate   | Directorate: Functions  | Role of Environmental Management            |
|-------------------------|---|---|---|
|                         | <b>Energy Planning</b> Manage an administration service, information service and ensure integrated planning               | <b>Energy planning and development</b> Manage and energy information system   | <b>Database information and publication</b> |
|                         |   | <b>Energy planning and development</b> Ensure integrated energy and resource planning taking into account the national economic needs                       | <b>Planning and energy economy</b>          |
|                         | <b>Energy Planning</b> Develop policy and strategy for the implementation of renewable energy technology                  | <b>Renewable energy</b> Develop policy and strategy towards the establishment of a regulatory and legislative framework and renewable energy technologies   | <b>Technology development</b>               |
|                         |   | <b>Renewable energy</b> Implement and monitor renewable energy technologies as a catalyst for economic development with a specific reference to rural areas | <b>Renewable energy implementation</b>      |
| Electricity and Nuclear | <b>Electricity</b> Research national and international trends/developments that impact on the electricity supply industry | <b>Electricity policy analysis</b> Do research on national and international trends/developments regarding the electricity supply industry                  | <b>Policy analysis</b>                      |
|                         | <b>Electricity</b> Develop, implement and monitor policy and legislation with   | <b>Regulation</b> Develop, implement and monitor policy and legislation relating to all aspects of regulation within the                                    | <b>Regulation</b>                           |

| Branch | Chief Directorate  | Directorate: Functions   | Role of Environmental Management |
|--------|--|--|----------------------------------|
|        | respect to electricity regulation  | electricity supply industry  |                                  |
|        | <b>Nuclear</b> Administer all matters related to nuclear non-proliferation as required by legislation and international agreements | <b>Nuclear Non-proliferation</b> Ensure compliance with all existing and new national and international nuclear non-proliferation obligations and agreements                                 |                                  |
|        | <b>Nuclear</b> Administer all matters related to nuclear technology  | <b>Nuclear technology</b> Administer at national level the management and discarding of radioactive waste and storage of irradiated nuclear fuel   |                                  |
|        | <b>Nuclear</b> Administer all matters related to nuclear safety as required by legislation and international agreements            | <b>Nuclear safety</b> Develop, implement and monitor nuclear policy and legislation related to all nuclear safety matters including radiological environmental protection and advise thereon |                                  |
|        |  | <b>Nuclear safety</b> Draft regulations and administer matters related to:<br>(a) safety standards and regulatory practices  |                                  |

| Branch | Chief Directorate | Directorate: Functions  | Role of Environmental Management |
|--------|-------------------|---|----------------------------------|
|        |                   | (b) co-operative governance<br>(c) fees for nuclear authorization<br>(d) financial securities for nuclear installations or any other<br>Ministerial obligations in the NNR Ac |                                  |
|        |                   |   |                                  |

**Table 5. Strategic objectives, focus areas and expected outcomes and impacts of functional areas with environmental responsibility, 2005/6 – 2009/10**

| Programme and Objective  | Focus Areas  | Actively contribute to sustainable development   | Redress past imbalances and bridge the gap between the first and second economies   | Govern the minerals and energy sectors to be healthier, cleaner and safer   | Review and develop appropriate structures, processes and systems and skills as well as their maintenance                   | Regulate mining industry to achieve transformation | Bridging the gap between the two economies through SMME development | Achieve universal access to electricity |
|--|--|--|---|---|--|--|---|---|
| Mine, Health and safety<br><br>Reduce mining-related deaths, injuries and ill health, through the formulation of national policy and legislation and the provision of advice and systems that monitor and audit compliance by the mining sector. | Hazard emanating from mining which impact on public health: Address environmental impact of mining at source (e.g. the dust originating from mine dumps and fumes from processing plants)<br>Fatalities, injuries and occupational diseases relating to mining:<br>Reduce the number of fatalities, injuries and | Reduce impact of minerals and energy on public health and environment<br>Specific initiatives to address occupational health and safety problems<br>Public health and environmental hazards dealt with at source | Deracialising of minerals and energy sectors<br>Human resource development and poverty alleviation through the development of scarce skills, training and support of new entrants to mining | Cleaner, healthier and safer energy sectors<br>Policy and legislation in place to govern the mining sector<br>Research and development programmes to improve occupational health and safety are encouraged<br>Harmonization of initiatives with | Alignment of processes, structures and systems to achieve objectives and mandate<br>Develop and retrain appropriate skills |  |   |   |

| Programme and Objective  | Focus Areas   | Actively contribute to sustainable development   | Redress past imbalances and bridge the gap between the first and second economies | Govern the minerals and energy sectors to be healthier, cleaner and safer   | Review and develop appropriate structures, processes and systems and skills as well as their maintenance | Regulate mining industry to achieve transformation | Bridging the gap between the two economies through SMME development | Achieve universal access to electricity |
|--|---|--|---|---|--|--|---|---|
|  | occupational health diseases through enforcement activities, audits and inspections on mines.   |  |   | other Government departments<br>Contribution to international policies, and compliance with international obligations |  |  |   |   |
| <i>Mineral Development</i><br><br>To transform, promote and regulate the mineral resources industry to competitively contribute to the equitable and sustainable socio-economic development in | Implementation of the Mineral and Petroleum Resources Development Act<br>Finalization and implementation of the amendments to the Precious Metals and Diamond Acts<br>Promotion of investment and broadening participation in the economy | Community upliftment programmes and skills<br>Sound environmental management practices<br>Optimal utilization of mineral resources |   |   |  | A representative mining industry at all levels     | Partnerships between small and major players<br>Sustainable SMMEs   |   |

| Programme and Objective  | Focus Areas   | Actively contribute to sustainable development | Redress past imbalances and bridge the gap between the first and second economies   | Govern the minerals and energy sectors to be healthier, cleaner and safer                          | Review and develop appropriate structures, processes and systems and skills as well as their maintenance | Regulate mining industry to achieve transformation | Bridging the gap between the two economies through SMME development | Achieve universal access to electricity |
|--|---|--|---|--|--|--|---|---|
| the country.   | Environmental hazards relating to un-rehabilitated mine sites.  |  |   |  |  |  |   |   |
| Hydrocarbons and Energy Planning<br><br>Integrated energy planning leading to the sustainable use of South Africa's energy resources, internationally competitive energy prices and an increase in energy efficiency through the development and | Economic regulation<br>Redressing past imbalances<br>Promotion of Renewable energy and energy efficiency<br>Cleaner safer fuels |  | Increased access to affordable modern energy for low income household<br>Increased access to affordable energy<br>Deracialisation and gender equity in the petroleum sector<br>Increased procurement by oil companies from BEEs<br>Improved skills supply | Decrease coal fire emissions and improve health<br>Decrease vehicular emissions and improve health |  |  |   |   |

| Programme and Objective  | Focus Areas   | Actively contribute to sustainable development  | Redress past imbalances and bridge the gap between the first and second economies  | Govern the minerals and energy sectors to be healthier, cleaner and safer                     | Review and develop appropriate structures, processes and systems and skills as well as their maintenance | Regulate mining industry to achieve transformation | Bridging the gap between the two economies through SMME development | Achieve universal access to electricity |
|--|---|---|--|---|--|--|---|---|
| implementation of appropriate energy policy and regulation/  |   |   |  |   |  |  |   |   |
| <i>Electricity and Nuclear</i><br><br>To ensure a well managed efficient, safe and cost effective electricity and nuclear industry in the Republic of South Africa through policy, legislation and regulations. Achieving increased access to electricity and globally competitive electricity | Security and diversity of supply<br>Effective electricity distribution<br>Universal access to electricity | Greater share of renewable energy<br>Increased energy efficiency<br>Increased efficiency of coal usage<br>Carbon trading to reduce GHG emissions<br>Meet multilateral commitments | Deracialisation and gender mainstreaming of the electricity and nuclear sectors<br>Broader participation within the electricity sector | Cleaner, safer and healthier electricity and nuclear sectors and secure nuclear installations |  |  |   | Poverty alleviation                     |

| Programme and Objective                           | Focus Areas | Actively contribute to sustainable development | Redress past imbalances and bridge the gap between the first and second economies | Govern the minerals and energy sectors to be healthier, cleaner and safer | Review and develop appropriate structures, processes and systems and skills as well as their maintenance | Regulate mining industry to achieve transformation | Bridging the gap between the two economies through SMME development | Achieve universal access to electricity |
|---|-------------|--|---|---|--|--|---|---|
| prices within a safe, clean and healthy industry. |             |  |   |   |  |  |   |   |

## **7. PRINCIPLES, NORMS AND STANDARDS FOR ENVIRONMENTAL MANAGEMENT**

The DME applies standards, norms and criteria aimed at ensuring compliance with policy and legislation which promote sustainable development. Environmental standards, norms and criteria are normally reflected in statutory regulations. However, legislated standards are not common in South Africa. In the absence of legislated standards, the DME applies standards that are generally accepted, though not legally binding. The standards are based on the principles of sustainable development.

### **7.1 Principles for Sustainable Development**

The principles of sustainable development that are reflected in the legislation or policies which are implemented by the DME or which guide the work of the Department include those shown in Box 2. The statutes and policies that are based on these principles include the Environmental Management Policy, 1998; the Minerals and Mining Policy, 1998. Mineral and Petroleum Resources Development Act, 2002 and the National Environment Management Act, 1998.

In particular Chapter 5 of the National Environmental Management Act, 1998 promotes the application of environmental management tools that can ensure the integrated environmental management of activities. The objective of integrated environmental management (IEM) is to integrate the principles of environmental management into decision-making; identify and evaluate the impacts on the environment and options for minimizing negative impacts and maximizing benefits; ensure that the effects of activities on the environment receive adequate consideration; and ensure that adequate participation by the public is provided for in decisions that may affect the environment. Integrated environmental management therefore provides a framework for the integration of environmental issues into the planning, design, decision-making, implementation and decommissioning of projects and development proposals.

**Box 2: Some principles of sustainable development.**

**Duty of care:** This is also known as the environmental responsibility principle. It imposes the duty of acting with due care so that damage to others and the environment is avoided. Those who make, supply, import or use material are held responsible for providing sufficient information on its manufacture and intended use, so that the risks of such material to health and environment can be evaluated. The "cradle to grave" principle reflects this by stipulating that any entity that generates waste has a final responsibility for ensuring that such waste is safely disposed.

**Polluter pays:** According to this principle, the polluter pays the costs of reducing pollution that does damage to society, or that exceeds an acceptable level. Polluters therefore are required to assume individual responsibility for the environmental impacts that they cause. This also applies to accidental pollution, where the polluter bears strict liability, and is responsible for the safe handling and environmentally sound disposal of any material that is produced.

**User pays:** It requires the user of a natural resource to bear the cost of running down natural capital. Therefore, all costs associated with the use of a resource should, where possible, be included in the price of goods and services developed from such a resource.

**Intragenerational equity:** This is concerned with ensuring a fair distribution of the benefits and impacts of development within a generation, regardless of class, ethnicity, gender or any other social grouping or status.

**Intergenerational equity:** This means that no generation should increase its wealth, or generally benefit, from their utilisation of resources, if this will prejudice the subsequent generations enjoying a similar quality of life.

**Precautionary principle:** This principle promotes a cautious and risk-averse approach to the use of resources especially where scientific information is insufficient to accurately indicate the possible impacts of such use.

**Public trust doctrine:** It places a duty on the State to hold environmental resources in trust for the benefit of the public.

**Subsidiary principle:** Decisions should be made by the communities affected or, on their behalf, by the authorities closest to them. Decisions should preferably rest at the national rather than the international level, and local rather than national level.

**Proximity principle:** This requires the treatment and disposal of hazardous waste to take place at the closest possible location to its source, in order to minimise risks associated with its transport.

## 7.2 Environmental Quality Standards and Criteria

Environmental ambient standards provide numerical limits or threshold values to which industrial operations must be designed, operated and managed. These standards relate to water quality effluent discharge, air emission and/or workplace air quality, noise emissions or exposure, waste disposal (especially waste materials allowed to be dumped) human exposure to dust, toxic chemicals or radioactivity. Criteria are scientifically determined at "no-effect" levels of a pollutant, with a certain safety factor added. Some of these standards and criteria are presented in Table 6.

**Table 6. List of standards and criteria applied**

| Subject  | Standards   | Legislation   |
|--|---|---|
| WATER RESOURCE QUALITY   |   |   |
| Surface water:<br>Water use  | General authorizations and licenses   | National Water Act, 1998  |
| Determination of class of water resource and resource quality objectives | Chapters 3 and 4 of the National Water Act, 1998  | National Water Act, 1998  |
| Water quality, in stream and riparian habitat.<br>Aquatic biota.         | Resource classification and reserve determination. No standards exist. Red data species are generally accepted and applied as standard.   |   |
| Flood and storm water control.   | Regulations of the MPRDA, 2002.<br>Regulations 704 National Water Act, 1998   | MPRDA, 2002<br>National Water Act, 1998                                   |
| Dam safety.  | Regulations MPRDA, 2002: Guideline for the Mandatory Code of Practice for Mine Residue Deposits<br>Chapter 12 National Water Act, 1998 and the regulations pertaining to the use of water for mining and related activities (GN 704 of 4 June 1999) | MPRDA, 2002; Mine Health and Safety Act, 1996<br>National Water Act, 1998 |
| Groundwater:<br>Groundwater quantity.<br>Groundwater quality             | General authorizations and licenses.<br>Resource quality objectives   | National Water Act, 1998<br>National Water Act, 1998                      |

| Subject                              | Standards   | Legislation   |
|--------------------------------------|---|---|
| AIR QUALITY                          | List of scheduled processes.<br>Common pollutants.<br>Particulate matter/Dust fallout (standards as prescribed are based on EPA requirements)   | Atmospheric Pollution Prevention Act, 1965<br>NEMA Air Quality Act (draft Ambient standards)  |
| RADIOACTIVITY                        | License requirement levels  | National Nuclear regulator Act, 1999  |
| NOISE                                | Ambient + 7DbA (Local authorities)<br><br>SABS Codes 0103 and 020.<br>85dBA Mine Health and Safety Act, 1996 regulations (only for health related aspects within the workplace).  | Environment Conservation Act, 1989<br><br>Mine Health and Safety Act, 1996.   |
| NATURAL VEGETATION                   | Protected flora.<br>Red Data species.<br><br>Regulations on weeds and invader species promulgated in terms of the Conservation of Agricultural Resources Act, 1988.   | Conservation of Agricultural Resources Act, 1983<br>NEMA: Biodiversity Act<br>Environment Conservation Act, 1989<br>Provincial ordinances<br>Conservation of Agricultural Resources Act, 1988.                                |
| ANIMAL LIFE                          | Protected fauna<br>Red Data Species.  | NEMA, 1998<br>Environment Conservation Act, 1989.<br>Provincial Ordinances.   |
| SENSITIVE LANDSCAPE/<br>ENVIRONMENTS | Protected areas in terms of national legislation and/ or international conventions.<br>The Department of Environmental Affairs and Tourism has finalized the <i>Environmental Attributes</i> which identifies sensitive areas/landscapes within South Africa via the need to produce Integrated Development Plans.<br>Limited Development Areas.<br>Designated/demarcated areas/features. | Environment Conservation Act, 1989.<br>National Environmental Management Act, 1998.<br>National Monuments Act, 1969.<br>National Heritage Resources Act, 1999.<br>Mountain Catchment Act.<br>Local Government Transition Act. |
| LAND USE/CAPABILITY:                 | Structure Plans and Land Development Objectives   | Physical Planning Act Development Facilitation Act, 1995  |

| Subject                                | Standards  | Legislation  |
|--|--|--|
|  | Classification of agricultural land<br><br>Mining operational requirements in terms of: Distance of mining to structures.<br><br>Subsidence control. | Conservation of Agricultural Resources Act, 1983<br><br>Mine Health and Safety Act, 1996.<br><br>MPRDA, 2002 |
| CULTURAL AND ARCHAEOLOGICAL RESOURCES: | Legislative requirement: Protection of resources 50 years and older.<br>Listed/known resources   | National Monuments Act, 1969.<br>National Heritage Resources Act, 1999.                                      |

## 8. COLLABORATION WITH OTHER DEPARTMENTS

The Department of Minerals and Energy collaborates with other departments in implementing its mandate in addition to fostering coordination between the various branches, Chief Directorates and Directorates of the Department. The mechanisms for collaboration and coordination include memoranda of understanding, interdepartmental committees, and regular meetings within the DME.

### 8.1 Memoranda of Understanding

A Memorandum of Understanding (MOU) exists between DME and DWAF. The purpose of the MOU is to improve the working relationship between the two departments by minimizing potential conflict and ambiguity. The MOU records mutual understanding on the fundamental premises with regard to an Integrated Environmental Management System, the role of such a system and its key success factors and the principles and obligations of both departments regarding participation in the integrated system.

### 8.2 Inter-Departmental Committees

#### 8.2.1 Committee for Environmental Co-ordination

The National Environmental Management Act, 1998, provides for the establishment of a Committee for Environmental Co-ordination (CEC) to promote the integration and co-ordination of environmental functions by organs of State. In particular it is intended to facilitate environmental implementation plans and environmental management plans. The DME is represented on the CEC as well as its sub-committees on Environmental Law Reform and EIPs / EMPs, as well as on various other project steering committees.

### **8.2.2 Government Task Team for Mine Water Management and Closure**

The purpose of the Government Task Team (GTT) is to facilitate solutions and decision-making on water management and related problems as well as the implementation of safe and sustainable mine closure options within mining areas as identified in SA. The GTT is chaired by a representative of DME. Other representatives include DEAT, DWAF, DME Regulation Branch, Policy and Promotion Branch and Mine Health and Safety Inspectorate.

### **8.2.3 Sustainable Development through Mining Committee**

A statutory Sustainable Development through Mining Committee has been established by the Minerals and Mining Development Board to assist the Board and to advise the Minister on matters pertaining to sustainable development and to prepare for reporting by 2010-2011.

### **8.2.4 Research Projects**

The DME participates in various research projects relating to mining environmental management. They include Coaltech 20/20 (Administered by the CSIR) and the Water Research Commission (WRC). Furthermore, the DME is represented on several of the WRC Steering Committee and Technical Task Team of a project on Water Related Impacts of Small Scale Mining which was initiated at the beginning of 2000. With small scale mining playing an important role in the economy, it is imperative that all the implications of small scale mining activities (particularly those that affect the environment) are understood. The project aims to identify and characterize critical aspects of water-related impacts and to recommend appropriate tools for the environmental management of small scale mines. The project will provide an inventory of small scale mining types and sites which will subsequently be developed into priority listed areas that need to be managed. The information will be consolidated into an information database (GIS) which will provide information on the location of the different small scale mines. The study focuses on sand winning, clay mining, gold panning, alluvial diamond digging and artisanal coal mining.

### **8.2.5 Regional Mineral Development and Environmental Committees**

These statutory committees in terms of MPRDA, 2002 were established within the regions to co-ordinate and promote participation on the approval of EIAs and EMPs as necessary. Some of the committees also deal with small-scale mining, illegal mining and rehabilitation of gold slimes dams, and specific mining related pollution aspects. With regard to illegal mining, certain regional offices have established formal communication structures with the South African Police Services.

## **9. COMPLIANCE WITH POLICIES AND PRINCIPLES**

### **9.1 Procedures for Monitoring Compliance**

The compliance and performance monitoring of the DME's statutes, policies and programmes with the objectives and principles of sustainable development is determined through information, obtained from regional inspections, DME internal Branch Management meetings, multi stakeholder and inter-departmental communication structures, trimester and annual reports, ministerial inquiries or complaints received, EMP reports and EMP compliance reports. The information obtained assists the DME to identify shortcomings in the implementation of these policies and statutes; and, undertake the necessary corrective action.

#### **9.1.1 Regional mining inspections and reporting procedures**

With regard to minerals, the Regional Offices, in cooperation with other relevant authorities, undertake inspections:

- At all mines on an ongoing basis to determine compliance with EMPs, measure performance, and to provide guidance and advice on their implementation.
- At all sites that are the subject of reconnaissance, prospecting and mining applications, in order to consider and evaluate these applications and any draft EMPs submitted for approval.
- To follow-up on complaints from interest and affected parties about negative environmental impacts and degradation at operating mines.
- Before closure of prospecting or mining operations.

### **9.1.2 Internal branch management committees**

Internal Branch Management meetings are held monthly to discuss the implementation of policies, legislation, norms and standards, (including the interpretation of the provisions of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)), and to identify shortcomings in the application of these policies and legislation.

### **9.1.3 Multi-stakeholder and inter-departmental communication structures**

Discussions in multi-stakeholder and inter-departmental communication structures at national and regional level are also a source of information on the implementation of DME policies and statutory environmental obligations.

### **9.1.4 Trimester and annual reports**

The DME has a trimester and annual reporting procedure. Reports from the various directorates and the nine Regional Offices are circulated within the DME for information.

### **9.1.5 Ministerial enquiries or complaints received**

Ministerial enquiries or complaints are received by the DME and are investigated by the Regional Offices. These enquiries and complaints helped to determine the extent of the Department's compliance.

### **9.1.6 EMP Performance Assessment requirements**

In regard to environmental management within the mining sector, a specific reporting procedure was introduced to monitor compliance and measure performance. Regulations R.527 of 2004 for EMP Performance Assessment and Monitoring have been promulgated in terms of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002). They provide the DME with a

mechanism to monitor compliance and performance with all mining environmental management policies and legislative requirements, as well as the DME's compliance and performance with the NEMA principles.

#### **9.1.7 EMP Compliance reports**

The purpose of the annual compliance report is to monitor the implementation of targets and commitments made in the EMP; monitor the implementation of recommendations made in the assessment report; monitor compliance by local authorities with the EMP; and provide information not included in the current Environmental Management Plan.

### **9.2 Compliance with NEMA Principles of Sustainable Development**

Section 2 of NEMA outlines certain principles which are relevant to sustainable development and environmental management. These principles relate broadly to: (i) Sustainable development, (ii) integration, (iii) participation, empowerment and transparency, (iv) environmental justice and equity (v) maintenance of ecological integrity, and (vi) international responsibilities.

Tables 7 – 12 show how the DME applies the above principles in managing activities in the mining and energy sectors. These principles relate to sustainable development, integration, participation, empowerment, and transparency, environmental justice and equity, ecological integrity, and international responsibility.

**Table 7. Compliance relating to sustainable development**

| Relevant clause in NEMA | Principles  | Compliance Indicator  | Performance Indicator   |
|-------------------------|---|---|---|
| Section 2(3)            | Development must be socially, environmentally and economically sustainable. | <p>Within mining, sustainable development is being applied through the enforcement of the cradle to grave principle.</p> <p>Within the Energy Branch policies and programmes are being implemented to change energy consumption patterns.</p> | <p>The DME has adopted the principles of sustainable development in the Minerals and Mining Policy and in the Mineral and Petroleum Resources Development Act, 2002. Sections 2(h), 3(3) of MPRDA, 2002 provides for Minister to "ensure the sustainable development of SA's mineral and petroleum resources within a framework of national environmental policy, norms and standards while promoting economic and social development.</p> <p>A national Sustainable Development through Mining Programme (SDM Programme) supports the implementation of these sections. These SD principles also pertain to impact assessment, management, financial provision, monitoring and EMP performance assessment and mine closure.</p> <p>In terms of Section 37 of the Mineral and Petroleum Resources</p> |

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator  |
|-------------------------|--|---|--|
|                         |  |   | <p>Development Act, 2002, the principles in section 2 of NEMA apply to all prospecting and mining operations and any matter relating to such operation; and serve as guidelines for the implementation of the environmental requirements of the Act.</p> <p>The DME adopted SD and encourages change in energy use by consumers and promotes energy efficiency through the Energy Policy, 1998, White Paper on Renewable Energy Policy for SA, 2003, Radio-active Waste Policy and Strategy, 2005 and the various energy-related conventions, agreements and programmes i.e. Integrated Energy Planning, clean development mechanism, renewable energy strategy, energy efficiency strategy, Paraffin Safety Strategy, SASDA, Integrated National Electrification Strategy, Free Basic Electricity, leCs, Alliance Labeling campaign, gas infrastructure plan, WINSA..</p> |
| Section 2(4)(a)(ii)     | Pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimized and remedied. | The DME has a mandate for regulating and controlling the prevention of pollution and degradation of the environment and supports the implementation of international conventions. | <p>The DME applies a cradle to-grave environmental management process in the mining industry. This includes the rehabilitation of land, pollution control and management of mining waste and the land on which it is disposed. This approach is in accordance with the Mineral and Petroleum Resources Development Act, 2002, the Mine Health and Safety Act, 1996 and the Atmospheric Pollution Prevention Act, 1965 (draft NEMA: Air Quality Stds).</p> <p>Sections 5(4), 16, 17, 18, 18(3)(c), 19(2)(e), 22, 23, 24, 24(3)(c),</p>  |

| Relevant clause in NEMA | Principles                              | Compliance Indicator                             | Performance Indicator  |
|-------------------------|---|--|--|
|                         |   |  | <p>25(2)(e), 27, 27(5)(b), 82(2)(d), 86(2)(d), 37, 38(1) and (2), 39, 41, 42 and Regulations, 43, 44, 45, 48.</p> <p>The DME also supports the implementation of international conventions and protocols, as well as norms and standards aimed at preventing and managing pollution, avoiding the degradation of the environment, minimizing atmospheric and water pollution, and regulating the disposal of mining waste.</p> <p>The DME manages various projects with the objective of protecting the atmosphere, i.e.</p> <ul style="list-style-type: none"> <li>▪ The low smoke fuel project.</li> <li>▪ Monitoring of air quality and dust pollution in collaboration with MINTEK.</li> <li>▪ The rehabilitation of derelict and ownerless asbestos mines and gold mine slimes dams.</li> <li>▪ The preparation of an inventory of greenhouse gasses.</li> <li>▪ The use of cleaner technology in collaboration with DEAT.</li> <li>▪ The DME provides guidance on coal emissions at power stations.</li> </ul> |
| Section                 | The disturbance of landscapes and sites | The DME complies with this principle through the | The identification, investigation, assessment and management of  |

| Relevant clause in NEMA | Principles  | Compliance Indicator   | Performance Indicator   |
|-------------------------|---|--|---|
| 2(4)(a)(iii)            | that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimized and remedied.                                 | environmental management programme/plan required in terms of the Minerals and Petroleum Resources Development Act, 2002.   | prospecting or mining related impacts on cultural and historical resources are included in the environmental management programme. Sections 38(1) and (2), 39.<br>Detailed guidance is to be provided in the MEM Guideline Series.  |
| Section 2(4)(a)(iv)     | Waste is avoided, or where it cannot be altogether avoided, minimized and re used or recycled where possible and otherwise disposed of in a responsible manner. | The DME has an existing mandate for controlling mining waste and supports the implementation of national policies, international conventions and protocols in this regard. | The DME applies a cradle-to-grave environmental management process in the mining industry which includes the minimization and management of mining waste and related impacts including on the land which it is disposed.<br>Section 42 and Regulations. Specific MPRDA regulations for the management, monitoring and closure of mine residue deposits and stockpiles have been promulgated in 2004.<br><br>This is in accordance with the Mineral and Petroleum Resources Development Act, 2002, the Mine Health and Safety Act, 1996 and the Atmospheric Pollution Prevention Act, 1965.<br>The DME also supports the implementation of international conventions and protocols, policy as described in the White Paper for Integrated Pollution and Waste Management, norms and standards with regard to the prevention and management of waste and its disposal. The objectives and principles of these norms and standards have been included in the MPRDA, 2002 |

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator   |
|-------------------------|--|---|---|
|                         |  |   | <p>The SABS Code of Practice for Mine Residue Deposits was adopted in terms of the Mine Health and Safety Act, 1996.</p> <p>The Energy Branch promotes the efficient utilization of non-renewable primary energy sources, such as oil and coal to minimize harmful impact on the environment. Energy Efficiency is one of the key aspects detailed in the Energy White Paper.</p> |
| Section 2(4)(a)(v)      | The use and exploitation of non renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource.          | In the Minerals and Mining Policy, DME recognizes that mineral resources are a non renewable national asset which must be developed to its full potential, responsibly and safely and within the framework of sustainable development for the benefit of present and future generations. DME must ensure equitable access to all the mineral resources. | <p>Application of objectives and principles of SD. Sections 2(h) and 3(3) MPRDA, 2002.</p> <p>The provisions of the Mineral and Petroleum Resources Development Act, 2002, and the Mine Health and Safety Act, 1996 ensure that mineral resources are developed responsibly and safely.</p>   |
| Section 2(4)(a)(vi)     | The development, use and exploitation of renewable resources and the ecosystems of which they form part do not exceed the level beyond which their integrity is jeopardized. | The DME promotes the careful use, development and exploitation of renewable resources.  | <p>The Energy Branch promotes the use of new and renewable sources of energy that are compatible with the environment.</p> <p>Allocation of sections 2(h), 3(3), 37, 38(1) and (2), 39, 45, 46 and 48.</p> <p>The Department promotes forestry programmes to ensure sustainability of woodlands and forests.</p>  |
| Section 2(4)(a)(vii)    | A risk averse and cautious approach is applied, which takes into account the   | Through the White paper on Minerals and Mining, the DME has adopted a risk averse and cautious approach   | In the Mineral and Petroleum Resources Development Act, 2002, the cautious approach specifically applies to actions relating to prospecting   |

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator   |
|-------------------------|--|---|---|
|                         | limits of current knowledge about the consequences of decisions and actions.   | in decision-making that recognizes the limits of current environmental expertise. Where there is uncertainty, action is required to be taken to limit the risk. This will include the consideration of the "no-go" option.  | <p>and mining operations regulated in terms of this Act, and will serve as a general framework and guide for the implementation of the regulatory requirements for environmental management and remediation of environmental damage required by this Act.</p> <p>All the sections apply as referred to on pages 19 – 21 of the Dept EMP.</p> <p>The intention of the EMP is to identify the nature, source and scope of potentially significant impacts of prospecting or mining operations on the environment, to identify the potential risks arising from the uncertainty and to propose the necessary mitigatory and management measures/options to avoid and/or minimize the environmental consequences.</p> |
| Section 2(4)(a)(viii)   | Negative impacts on the environment and on people's environmental rights are anticipated and prevented, and where they cannot be altogether prevented, are minimized and remedied. | <p>The DME applies a cradle-to-grave environmental management process in respect of the mining industry with the objective of preventing, minimizing, managing and remedying negative environmental impacts emanating from prospecting or mining operations.</p> <p>The DME has also formulated a policy on energy efficiency and the use of alternative energy sources to minimize negative environmental, health and safety</p> | <p>Through the EMP, negative impacts on the environment and on people's environmental rights are prevented, minimized, managed and remedied. The environmental management requirements include monitoring, EMP performance assessment, corrective action and continual improvement. MPRDA, 2002 also regulates mining and petroleum resource development from planning, decision-making, implementation, monitoring, auditing, closure to post closure stage.</p> <p>The DME has also done pioneering work in the rehabilitation of derelict and ownerless mines since 1986. The DME, however, also recognizes the legacies of the past and the large backlog in addressing these.</p>                            |

| Relevant clause in NEMA | Principles   | Compliance Indicator   | Performance Indicator  |
|-------------------------|--|--|--|
|                         |  | impacts.   | The energy efficiency policy aims to minimize the overall negative impact on the environment. The Department is engaged in a number of low-smoke fuel projects to reduce negative impact on air quality and associated health and safety.        |
| Section 2(4)(i)         | Social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment. | The DME applies a cradle to grave environmental management process in the mining industry, which includes social, economic and environmental impacts and benefits. | Socio-economic and environmental impacts and benefits are addressed in detail in the social and labour plans and EM Plans and EM Programmes, which is based on an EIA, as required in the Mineral and Petroleum Resources Development Act, 2002. |

Table 8. Compliance relating to integration

| Relevant clause in NEMA | Principles  | Compliance Indicator  | Performance Indicator   |
|-------------------------|---|---|---|
| Section 2(4)(b)         | Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option. | The DME accepts DEAT as the lead agent for the environment and will, in support of the lead agent and in accordance with national principles, norms and standards, develop and apply the necessary policies and measures to ensure that the mining industry's compliance to and integration with national policy on environmental management norms and standards. | <p>The EMP is a cradle to grave system, which specifically ensures that all elements of the environment are linked and interrelated.</p> <p>Environmental impact assessment, management, monitoring and performance assessment requirements in the Mineral and Petroleum Resources Development Act, 2002, also ensure that all elements of the environment are linked and interrelated.</p> <p>Section 40(1) of the Mineral and Petroleum Resources Development Act, 2002, requires the Director of Mineral Development to consult with all relevant departments prior to the approval of the EMP. This provides a mechanism to ensure that all elements of the environment are covered in an EMP and prior to the issuance of a prospecting permit or mining authorization in terms the Act.</p> <p>Section 10 of the Act requires the Regional Manager to publicize the receipt of an application for a prospecting</p> |

| Relevant clause in NEMA | Principles   | Compliance Indicator   | Performance Indicator   |
|-------------------------|--|--|---|
|                         |  |  | right, mining right or mining permit, and to request interested and affected persons to submit their comments regarding the application.  |
| Section 2(4)(l)         | There must be inter governmental co ordination and harmonization of policies, legislation and actions relating to the environment. | The DME complies with the principles and requirements of co operative governance in the Constitution and in NEMA, 1998. In this regard, the DME has accepted through the White Paper for Minerals and Mining that it will, in support of the lead agent for environmental issues (i.e. DEAT) and in accordance with national principles, norms and standards, develop and apply policies and measures to ensure the mining industry's compliance with national policy on environmental management and other relevant policies such as the national water policy. | <p>The EMP provides for an omnibus instrument where all requirements relating to mining environmental management are included in an integrated manner. Environmental quality standards and criteria are also being implemented.</p> <p>The environmental management requirements in relevant legislation, integrate all national norms and standards, which relate to the environment.</p> <p>The DME participates in the structures and mechanisms established by the Government to co-ordinate and harmonize policies, legislation and actions relating to the environment. It also has its own formal communication structures / mechanisms.</p> |
| Section 2(4)(m)         | Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.       | The DME adheres to the principle of co operative governance in terms of the Constitution and the different Acts administered by DME makes provision for conflict resolution procedures.  | The Mineral and Petroleum Resources Development Act, 2002, Mine Health and Safety Act, 1996, the Energy Policy, the National Nuclear Act, 1999, and the National  |

| Relevant<br>clause in<br>NEMA | Principles | Compliance Indicator | Performance Indicator   |
|-------------------------------|------------|----------------------|---|
|                               |            |                      | <p>Nuclear Regulator Act, 1999, stipulate actions on procedures to be followed for conflict resolution.</p> <p>The legislative requirements for consultation with authorities or other interested and affected parties prior to decision making provide a mechanism to resolve conflict pertaining to decisions made regarding mineral development.</p> |

Table 9. NEMA principles on participation, empowerment, transparency in decisions

| Relevant clause in NEMA | Principles  | Compliance Indicator   | Performance Indicator   |
|-------------------------|---|--|---|
| Section 2(4)(f)         | The participation of all interested and affected parties (I&APs) in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured. | The DME requires I&APs to participate in environmental policy making and governance. Legislation, communication structures and mechanisms for participation are established and are known to the public. | The following structures and mechanisms have been established within the MPRDA, 2002 to ensure participation:<br>Sections 10 and 40 to support the right of I&APs to comment on an application for a prospecting right, mining right or mining permit and the approval of the |

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator   |
|-------------------------|--|---|---|
| Section 2(4)(g)         | Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge. |   | <p>EM Plans and EM Programmes as required in terms of section 39 of the Act.</p> <p>Statutory communication structures at regional offices (Regional Mineral Development and Environmental Committees exist).</p> <p>A database of I&amp;APs.</p> <p>The involvement of local communities in the rehabilitation of derelict and ownerless asbestos mines and the creation of job opportunities.</p> <p>The development of the Energy White Paper through a widely consultative process including energy sector companies, associated institutions and NGOs.</p> |
| Section 2(4)(q)         | The vital role of women and youth in environment related matters and development must be recognized and their full participation therein must be promoted.   | The DME recognizes the constitutional right of women as full citizens of the country to make decisions on matters relating to mining environmental management and energy. | <p>A transformation and gender unit has been established within the DME to promote the advancement of women and previously disadvantaged groups. A gender policy has been finalized to <i>inter alia</i> achieve equality in all aspects pertaining to the governance of minerals and energy.</p> <p>Section 12 MPRDA, 2002 provides for assistance to HDSAs and vulnerable groups to access mineral</p>  |

| Relevant clause in NEMA | Principles  | Compliance Indicator   | Performance Indicator  |
|-------------------------|---|--|--|
|                         |   |  | <p>resources.</p> <p>The DME recognizes the role of women in the rehabilitation of derelict and ownerless asbestos mine/dumps. In this regard, preference is given to women in the rehabilitation of asbestos mines/dumps creating awareness and promoting education and employment.</p> <p>Women groups and youth groups have been involved in a number of energy-related environmental projects. The project on low smoke fuels was particularly targeted to women as primary users of energy i.e. the Qalabotjha low smoke fuel trials and test projects are a case in point.</p> |
| Section 2(4)(k)         | Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law. | The DME complies with the principles of transparency in decision making and access to information as required in the Constitution. Legislation in terms of the Mineral and Petroleum Resources Development Act, 2002, are in place to ensure that decisions with regard to mining environmental management are open and transparent. | <p>Section 40 of the Mineral and Petroleum Resources Development Act, 2002, requires relevant authorities to be consulted prior to the approval of EMP, and Section 10 gives I&amp;APs the right to comment on an application for a prospecting right, mining right or mining permit and the EMP.</p> <p>Section 40 MPRDA, 2002 requires consultation with all Government departments with a jurisdiction/function</p>   |

| Relevant clause in NEMA | Principles  | Compliance Indicator  | Performance Indicator   |
|-------------------------|---|---|---|
|                         |   |   | <p>pertaining to the environment. on EIA EM Plans, EMPs prior to approval.</p> <p>Regional Mineral Development and Environmental Committees have been established in terms of MPRDA, 2002 in the nine regions to facilitate the approval of EMPs and to resolve any conflicts.</p> <p>The <i>audi alteram partem</i> (hear the other side) rule applies to all decision making in terms of the Mineral and Petroleum Resources Development Act, 2002. The Act also provides for appeal of decisions.</p> <p>The National Nuclear Regulator Act, 1999, stipulates that the decision to construct nuclear power stations should be taken within the Integrated Energy Policy Planning process with due consideration given to all relevant legislation subject to participation and consultation with all stakeholders.</p> |
| Section 2(4)(h)         | Community well being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means. | The DME promotes the participation and involvement of the local community in minerals and energy policy making as well as in various projects relating to mineral development and energy. | <p>The DME promotes the involvement of local communities in the rehabilitation of derelict and ownerless asbestos mines/dumps.</p> <p>The social and labour plans required ito MPRDA, 2002 integrates with local IDPs and addresses training and</p>  |

| Relevant clause in NEMA | Principles | Compliance Indicator  | Performance Indicator   |
|-------------------------|------------|---|---|
|                         |            | Community well being, empowerment, education and awareness are encouraged through different energy related projects and activities. | <p>skills development of workers.</p> <p>The DME also promotes the participation of local communities in the development of low smoke fuel projects.</p> <p>The Energy Branch promotes the involvement of local communities in the development of projects that promote environmental rehabilitation and the use of new and renewable energy sources. i.e. woodland and reforestation projects.</p> |

Table 10. Compliance relating to environmental justice, and equity between and within generations

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator  |
|-------------------------|--|---|--|
| Section 2(2)            | Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.                             | MPRDA, 2002<br>Mining Charter   | Social and Labour Plan required to MPRDA, 2002.<br>Objectives of the Mining Charter.<br>Legislative framework provided for SD to MPRDA, 2002.  |
| Section 2(4)(c)         | Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons. | Various Acts and control measures administered by DME ensure that environmental justice is pursued to avoid, minimize or remedy the distribution of negative environmental impacts from mining and energy related impacts to vulnerable or disadvantaged persons. | Communication, participation and transparency prior to decisions being made to MPRDA, 2002.<br>The DME applies a cradle to grave environmental management process in the mining industry. This process allows negative impacts to be avoided, minimized, managed and/or remedied. This is in accordance with the Mineral and Petroleum Resources Development Act, 2002, the Mine Health and Safety Act, 1996 and the Atmospheric Pollution Prevention Act (NEMA Air Quality Act). The DME, however, also recognizes the legacies of the past and the large backlog in addressing the impacts in this regard.<br><br>Various energy programmes which deal with environmental health and safety aspects, e.g. indoor and outdoor air pollution from coal and wood use, fires, burns and poisoning from |

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator   |
|-------------------------|--|---|---|
|                         |  |   | <p>household fuels, environmental impacts of bulk energy supply, vehicle emissions, are being implemented.</p> <p>The National Nuclear Regulator Act, 1999, requires the Regulator to conclude cooperative agreements with relevant organizations to ensure that the monitoring and control of radioactive material or exposure is recognized.</p>  |
| Section 2(4)(e)         | Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle. | Policy objectives and statutes administered by DME ensure that environmental health and safety consequences of mining and energy related aspects are addressed. | <p>The DME applies a cradle to grave environmental management, process in the mining industry. This process allows negative impacts to be avoided, minimized, managed and/or remedied in terms of the Mineral and Petroleum Resources Development Act, 2002, the Mine Health and Safety Act, 1996 and the Atmospheric Pollution Prevention Act, 1965 (NEMA Air Quality Act).</p> <p>Various strategies and programmes have also been initiated to address this matter.</p> <p>Various energy policy programmes are being implemented which relate to environmental health and safety aspects i.e. indoor and outdoor air pollution from coal and wood use, fires, burns and poisoning from household fuels, environmental</p> |

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator  |
|-------------------------|--|---|--|
|                         |  |   | impacts of bulk energy supply, vehicle emissions.  |
| Section 2(4)(j)         | The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.  | This principle is required in terms of the Mine Health and Safety Act, 1996,  | This principle is required in terms of the Mine Health and Safety Act, 1996, and the Mineral and Petroleum Resources Development Act, 2002.  |
| Section 2(4)(d)         | Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination. | The DME has adopted the policy to encourage and facilitate the sustainable development of small scale mining in order to ensure the optimal exploitation of small mineral deposits and to enable this sector to make a positive contribution to the national, provincial and local economy. | <p>Section 12 MPRDA, 2002 ensures equitable access to HDSAs and vulnerable groups regarding mineral resources.</p> <p>Information on mineral rights and mineral deposits available for development will be made accessible, particularly for the benefit of small scale miners.</p> <p>The DME, in consultation with the mining industry, organized labour, NGOs, tertiary education institutions, research organizations and foreign aid agencies, will investigate possibilities for the establishment of training facilities for small scale miners in South Africa as well as within the region.</p> <p>All the environmental policy principles will apply to small scale miners. The DME supports skills development for small scale miners in environmental management.</p> <p>Intensive environmental management guidance will be provided in areas where there are a large number of small scale miners.</p> |
| Section 2(4)(o)         | The environment is held in public trust for the people, the beneficial use of environmental resources must serve the   | The DME has adopted the principle of transparency and no go option in policies and  | Refer to various sections in MPRDA, 2002 (Sections 10, 40) to ensure transparency prior to decisions being made to issue   |

| Relevant clause in NEMA | Principles  | Compliance Indicator   | Performance Indicator  |
|-------------------------|---|--|--|
|                         | public interest and the environment must be protected as the people's common heritage.  | legislation.   | permits or grant rights to MPRDA, 2002.<br>Refer to no-go option being adopted in policy, and alternatives being applied in the consideration of prospecting or mining applications (section 38).  |
| Section 2(4)(p)         | The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment. | The DME has adopted this principle in the White Paper for Minerals and Mining in South Africa and has incorporated practical implementation measures into legislation. | The 'polluter pays' principle has been adopted in the White Paper for Minerals and Mining and is being applied in the regulation and enforcement of environmental management through the Mineral and Petroleum Resources Development Act, 2002. The mining entrepreneur is responsible for all costs pertaining to the impact of the operation on the environment.<br><br>The polluter pays principle has also been adopted in the current EMP system with specific requirements for financial provision and closure. However, DME recognizes the legacies of the past and the environmental damage and adverse health effects caused. |

Table 11. Compliance relating to maintaining ecological integrity

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator  |
|-------------------------|--|---|--|
| Section 2(4)(a)(i)      | The disturbance of ecosystems and loss of biological diversity should be avoided, or, where they cannot be altogether avoided, are minimized and remedied. | The DME integrates the requirements relating to the conservation of biodiversity as required in international agreements and conventions, the national policy on the conservation and sustainable use of biological diversity and other legislation within mineral development to minimize and remedy the disturbance of ecosystems and loss of biological diversity. | <p>Section 48 provides for restrictions or prohibition of prospecting/mining on certain land.</p> <p>With regard to onshore prospecting and mining activities, the implementation of international conventions on biodiversity form part of the requirements for mineral development. In this regard the DME supports the requirements of the Convention on Biological Diversity, CITES, the Bonn Convention and Ramsar Convention.</p> <p>NEMA: Biodiversity Act, provisions on the Conservation of Agricultural Resources, the Environment Conservation Act, 1989 and Provincial Ordinances apply and form part of the overall requirements for mineral development</p> <p>Section 3 of the Mineral and Petroleum Resources Development Act, 2002 requires the Minister for Minerals and Energy to ensure the sustainable development of mineral and petroleum resources within a framework of national environmental policy, norms and standards while promoting economic and social development.</p> |

| Relevant clause in NEMA | Principles   | Compliance Indicator   | Performance Indicator   |
|-------------------------|--|--|---|
|                         |  |  | <p>Information required for the Environmental Management Programme Reports (EMPRs) on "vegetation" and "animal life" enhances the baseline information on biodiversity for decision making.</p> <p>Prior to the approval of EMPs, the Regional Manager is required to consult with Provincial Environmental Departments, where applicable.</p>  |
| Section 2(4)(r)         | Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure. | The DME participated in the development of a coastal management policy and the implementation of policies, legislative requirements and non legislative criteria pertaining to sensitive environments, vulnerable or highly stressed areas/ecosystems. | <p>The DME supports the implementation of the national coastal management policy and environmental frameworks/attributes as provided for by DEAT. This has been integrated within the Mineral and Petroleum Resources Development Act, 2002, and the MEM Guideline Series.</p> <p>Prior to the approval of EMPs, the Directors: of Mineral Development must, <i>inter alia</i>, consult with Provincial Environmental Departments, which provides an additional measure for the protection of sensitive/vulnerable/stressed environments, areas or ecosystems.)</p> |

Table 12. Compliance relating to international responsibilities

| Relevant clause in NEMA | Principles   | Compliance Indicator  | Performance Indicator  |
|-------------------------|--|---|--|
| Section 2(4)(n)         | Global and international responsibilities relating to the environment must be discharged in the national interest. | The DME fulfils its global and international responsibilities relating to the environment as required in the Constitution in that international agreements, international law and international customary law are binding on the Republic of South Africa, unless it is inconsistent with the Constitution or an Act of Parliament. The DME also participates in international and sub-regional structures in the co-coordinating mining environmental management and energy matters. | <p>The DME established a Directorate: International Co ordination to promote international communication and co ordination and to render a support service in this regard.</p> <p>With regard to the consideration of offshore oil and gas operations as well as marine diamond mining, international agreements and international law applies and forms part of the overall requirements of offshore applications and/or operations.</p> <p>The DME participates in the SADC Energy and the Mining and Environment Sectors and is responsible for various projects in this regard.</p> <p>The DME adheres to the environmental conventions and agreements administered by DEAT.</p> <p>The DME adheres to energy-related conventions and agreements. Refer to international conventions/agreements in document.</p> |

|  |  |  |  |
|--|--|--|--|
|  |  |  | <p>The South African government must comply with the requirements of the nuclear non proliferation treaty and a host of other energy-related conventions and protocols/agreements.</p> |
|--|--|--|--|

### 9.3 Promotion of Sustainable Development by the Mining Industry

#### *South African Mining Industry Sustainability and Transformation Report*

In 2005, the South African mining industry developed a "report card" for sustainable development which indicates progress. The report, among others, notes that many mining companies are pursuing ISO 14001 certification to ensure compliance with environmental performance and pollution prevention requirements.

With regard to social and community issues, all companies are required to report annually on their progress towards implementing the requirements of the Mineral and Petroleum Resources Development Act. Mines currently fund and assist many local projects and many mining companies have integrated Charter requirements into their social and labour plans. It is estimated that mines spend over R400 million per year on social development. With regard to closure and legacy issues, including with respect to rehabilitation, available information indicates that estimates of rehabilitation costs and the associated financial provision have increased.

With regard to biodiversity, the contribution that mining houses have made is primarily in the conservation and protection of areas and species, including by contributing to research and the development of guidelines (e.g. participation in the development of guidelines for biodiversity assessment).

The mining industry has also participated in the development of the Energy Efficiency Strategy. The Energy Efficiency Accord which is based on the strategy commits the industry to achieving a 15 percent reduction in energy demand by 2015.

The mining industry has entered a Memorandum of Understanding with the Department of Environmental Affairs and Tourism on the development of a Sustainable National Greenhouse Gas Inventory which will form part of the air quality information system.

Many mining companies have water management plans aimed at recycling water use in various processes to decrease freshwater consumption. The report indicates that about a third of the companies surveyed for the report demonstrated an absolute reduction in water use.

Table 13 shows the distribution of prospecting and mining applications received by the Department. The table illustrates that there is a high rate of approvals. Most prospecting currently takes place in Limpopo and the Northern Cape while mining largely takes place in the Northern Cape and North-West. There is no data on unauthorized mining, i.e. activities that are not compliant with statutory requirements.

**Table 13. Mining industry compliance with statutory environmental requirements**

| Item                                      | EC | FS | GP | KZN | LIP | MP | NC  | NW  | WC | Total |
|---|----|----|----|-----|-----|----|-----|-----|----|-------|
| Prospecting applications received         | 2  | 58 | 11 | 14  | 206 | 93 | 147 | 81  | 12 | 624   |
| Prospecting permits / rights granted      | 3  | 78 | 11 | 10  | 116 | 57 | 149 | 77  | 11 | 512   |
| Mining applications received              | 34 | 35 | 37 | 68  | 47  | 36 | 130 | 223 | 23 | 633   |
| Mining authorizations / rights granted    | 58 | 31 | 67 | 58  | 45  | 46 | 259 | 180 | 50 | 794   |
| EMPRs / EM Plans / EM Programmes received | 96 | 43 | 66 | 54  | 153 | 80 | 216 | 308 | 32 | 1048  |
| EMPRs / EM Plans / EM Programmes approved | 43 | 30 | 50 | 34  | 77  | 55 | 296 | 291 | 24 | 900   |
| Performance Assessment Reports received   | 4  | 0  | 22 | 3   | 0   | 12 | 9   | 3   | 23 | 76    |
| Performance Assessment Reports approved   | 0  | 0  | 0  | 3   | 0   | 5  | 0   | 0   | 23 | 30    |
| Closure applications received             | 4  | 15 | 11 | 29  | 47  | 24 | 89  | 25  | 12 | 256   |
| Closure certificates granted              | 18 | 27 | 3  | 30  | 16  | 0  | 24  | 8   | 3  | 129   |

Source: DME Annual EMP Compliance Report, 2004/2005

Statistics obtained from the 2005/06 financial year the DME received about 6 785 applications, of which 1225 were rejected mainly for being incomplete, 1384 rights were granted (therefore EMPs were also approved), 1007 permits were issued, 191 were withdrawn by the applicants and 927 were refused for non-compliance with the MPRDA, 2002.

#### 9.4 Measures to improve Environmental Compliance

##### *Revision of Legislation, Procedures and Guidelines*

The DME is in the process to amend the MPRDA, 2002 to make procedures more effective and to harmonise EIA procedures with the NEMA EIA Regulations. Guideline documents are also being finalised as discussed above.

#### 9.5 Challenges with Ensuring Compliance

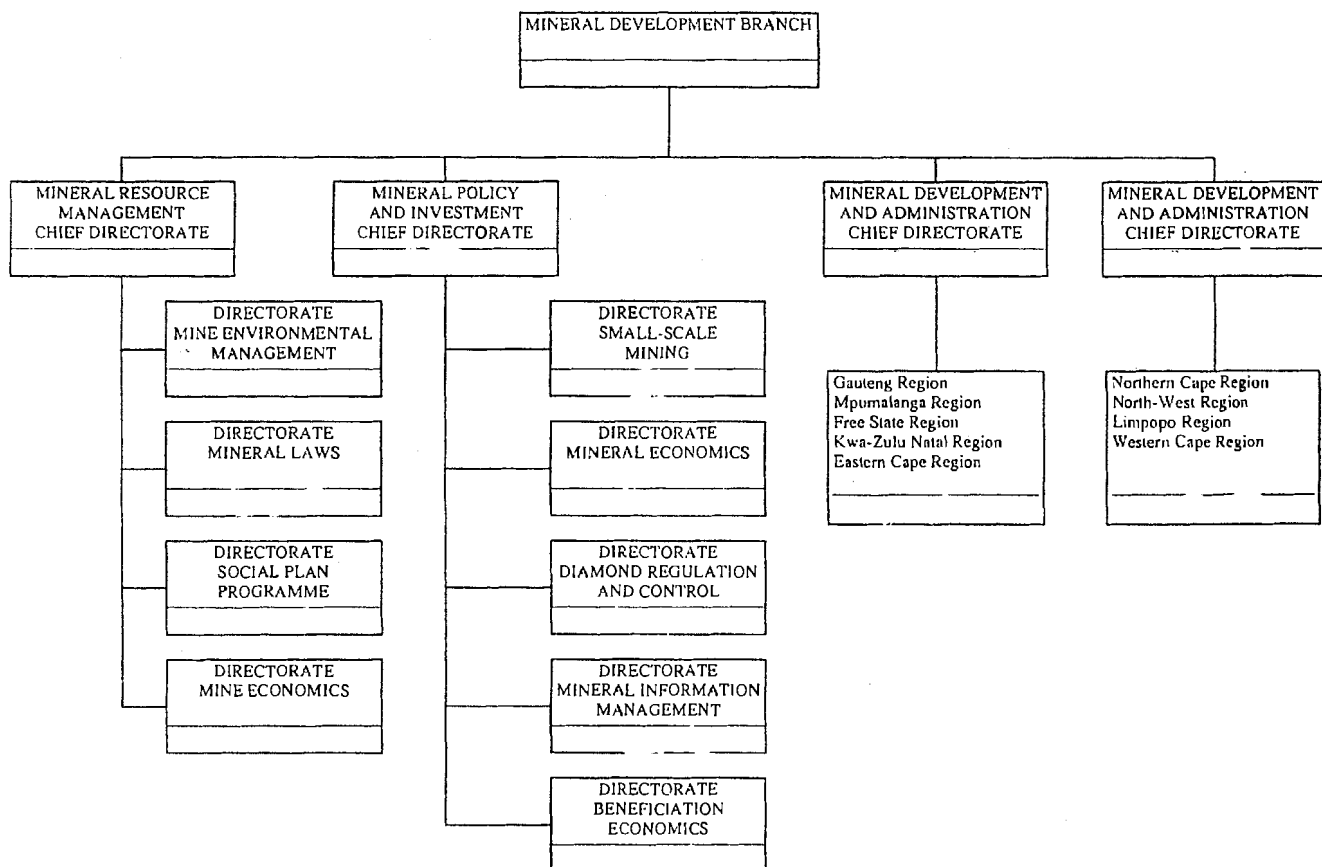
The following factors affect on the DME's ability to improve compliance of the mining and energy with environmental policies, legislation.

##### **Minerals**

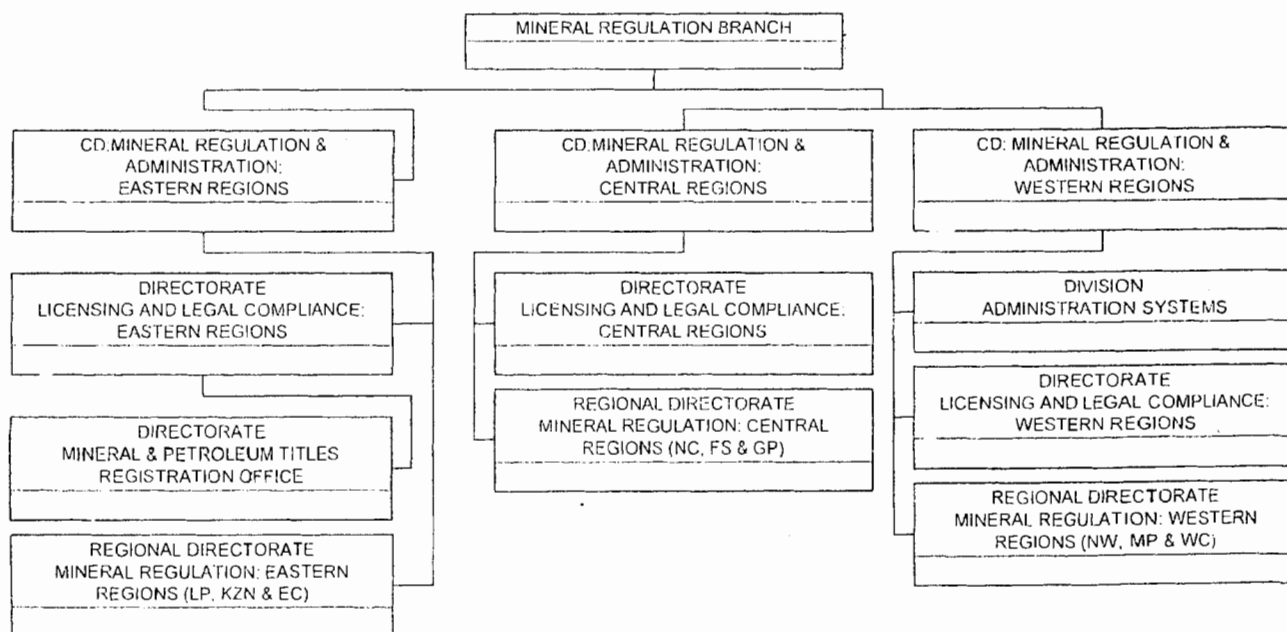
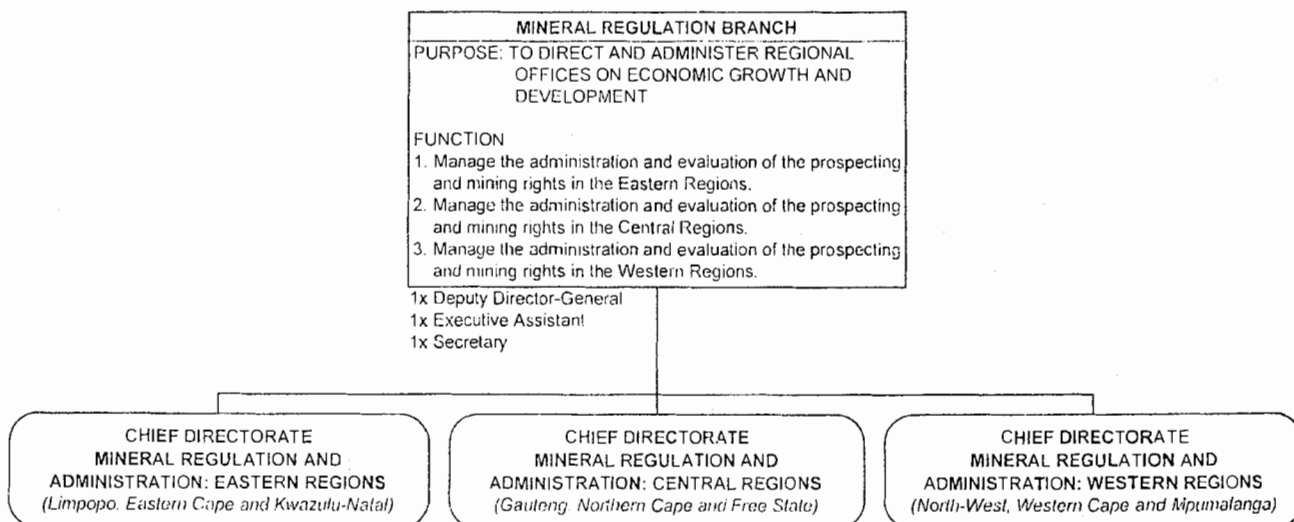
- The "organized" mining industry in South Africa is more than 100 years old and environmental legislation addressing the impacts of mining was only implemented in 1992. Major legacies and cumulative impacts that need to be addressed.
- Turn-around of personnel and capacity constraints in the regional offices.
- Some inconsistency in the application of regulatory measures and policies within the regions.
- The lack of capacity and skills with regard to small-scale mining.
- Illegal mining.

##### **Energy**

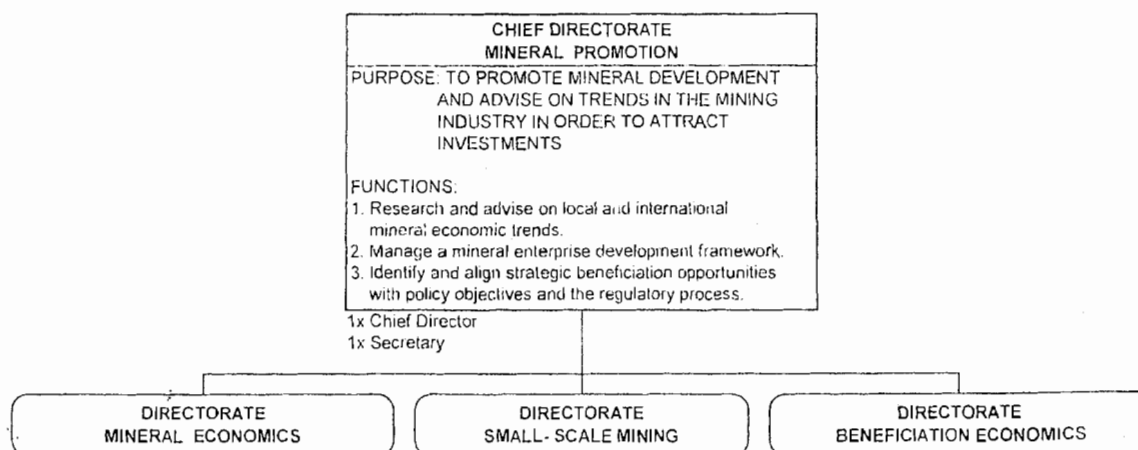
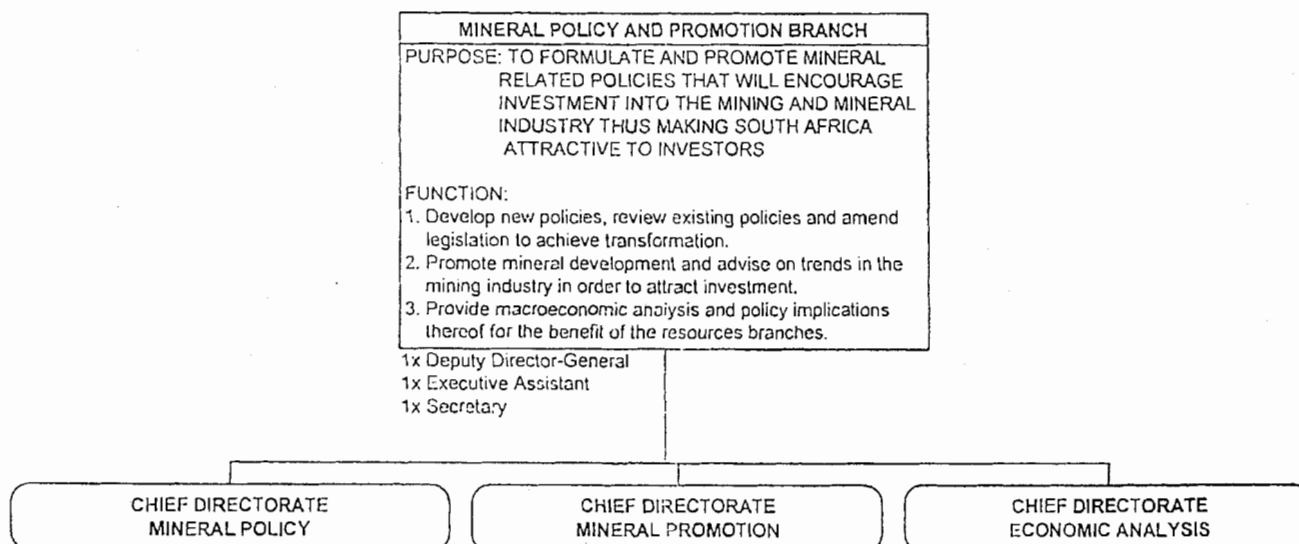
- The legislation for managing the energy sector is fragmented:
- Lack of legislative mandate to control and manage all aspects of energy development:
- Lack of a coherent framework for the Government departments to integrate the economic benefits and social challenges of energy development with the objectives of environmentally sustainable development:
- Shortage of specialised technical skills in the Department, including the Regional Offices and in the industry:
- Poor retention of staff:
- Inability to impact sufficiently on communities:
- Inadequate funding which impacts negatively on other resources:

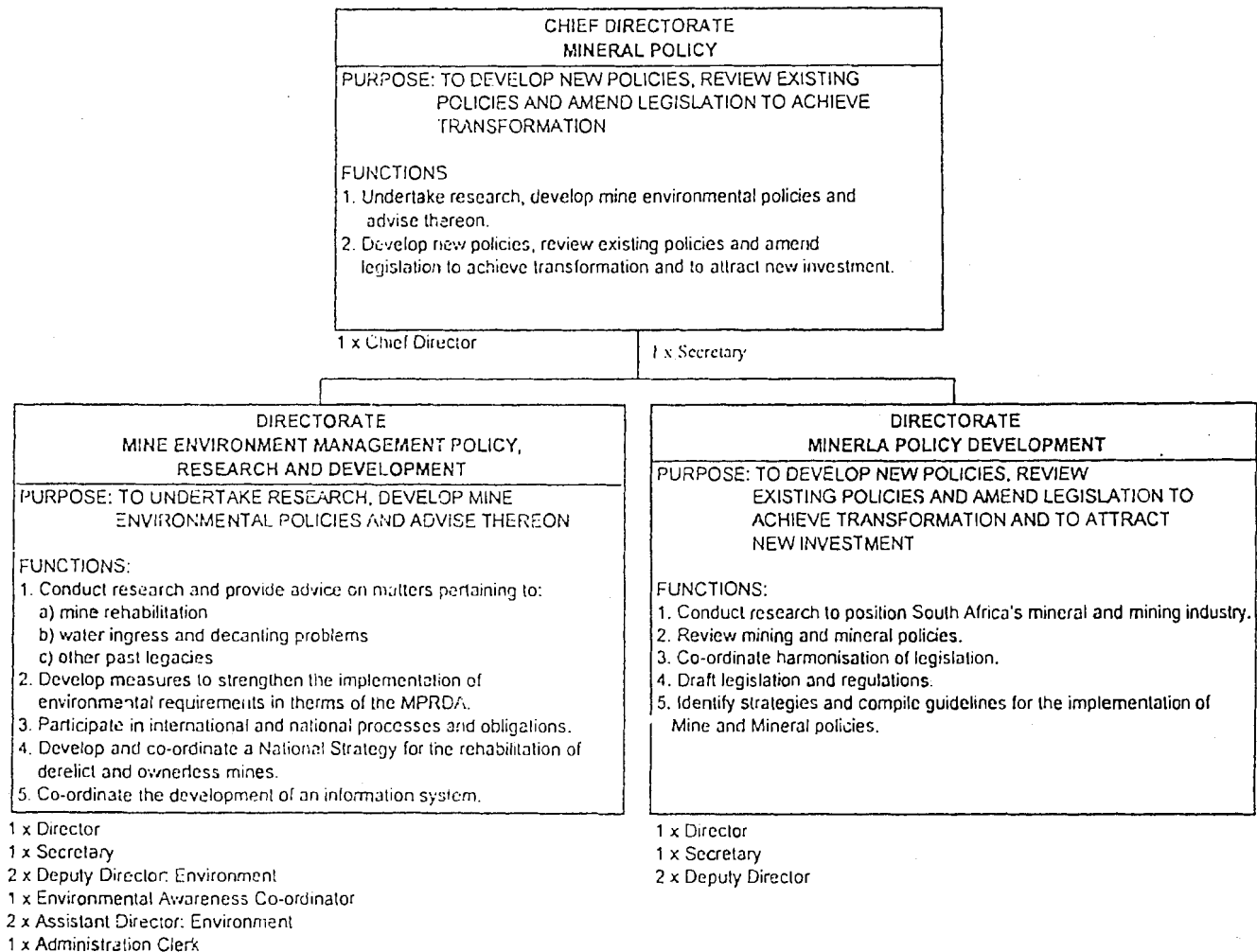
**APPENDIX A: ORGANIZATIONAL STRUCTURE AND FUNCTIONS OF MINERAL DEVELOPMENT  
BRANCH**

## APPENDIX B: ORGANIZATIONAL STRUCTURE AND FUNCTIONS OF MINERAL REGULATION BRANCH

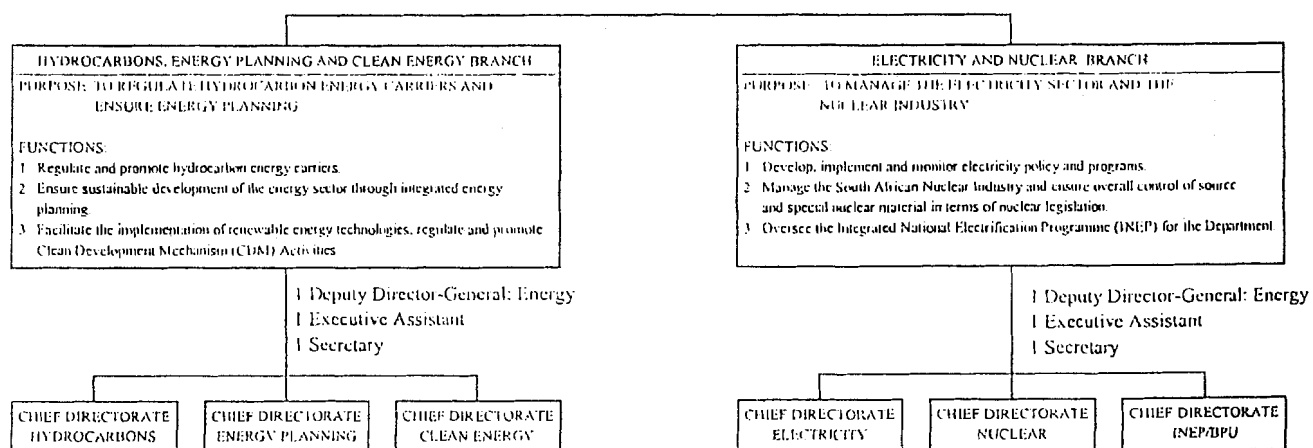


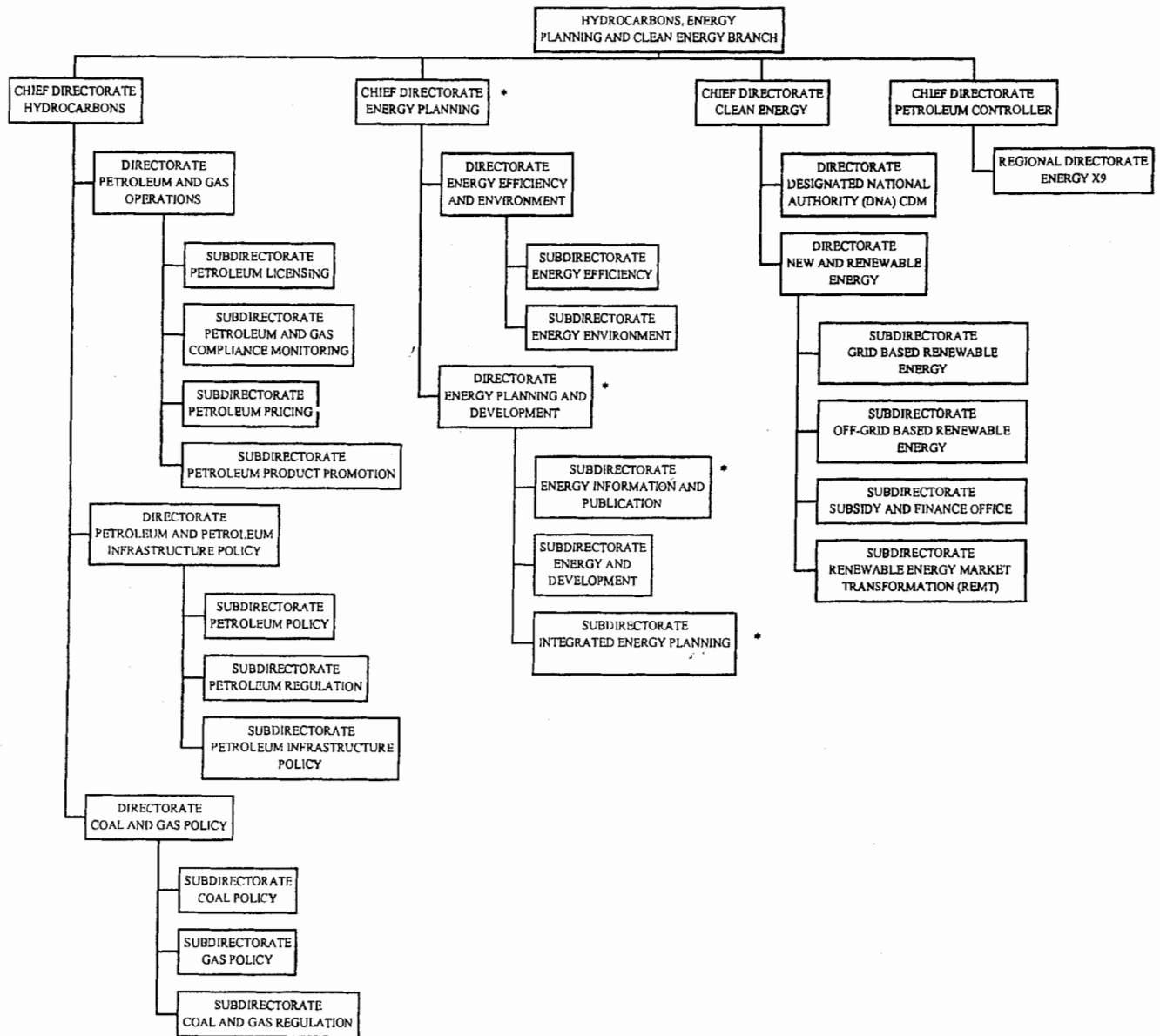
## APPENDIX C: ORGANIZATIONAL STRUCTURE AND FUNCTIONS OF MINERAL POLICY AND PROMOTION BRANCH

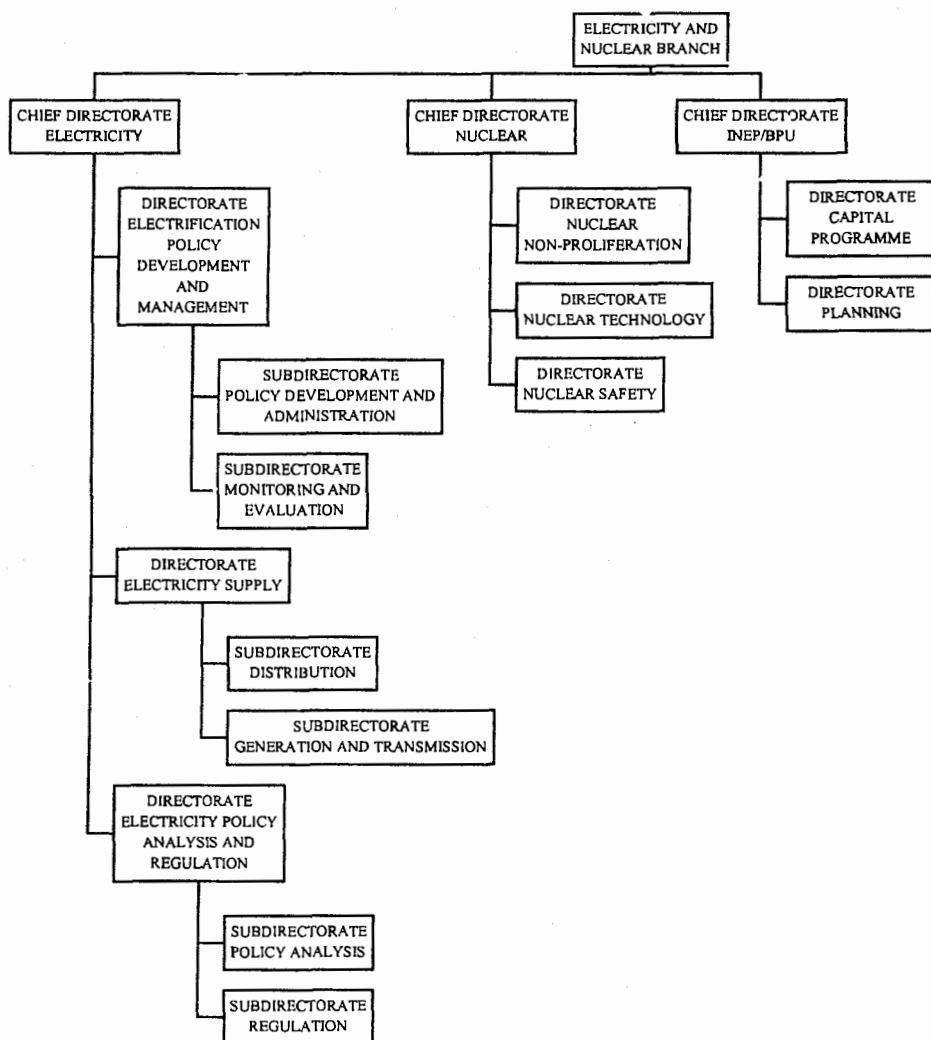




## APPENDIX D: ORGANIZATIONAL STRUCTURE AND FUNCTIONS OF THE HYDROCARBONS, ENERGY PLANNING AND CLEAN ENERGY BRANCH





**APPENDIX E: ORGANIZATIONAL STRUCTURE AND FUNCTIONS OF THE ELECTRICITY AND NUCLEAR BRANCH**

**APPENDIX F: ACKNOWLEDGEMENTS**

1. DME officials:
  - Ms E Swart (Director: Mine Environmental Policy Research and Development)
  - Mr L LaBuschagne (Assistant Director: Environment)
  - Ms M Erasmus, Ms S Mudau, Mr O Rankhumize and Ms D Olivier
2. DME Branches:
  - Mineral Policy and Promotion
  - Mineral Regulation
  - Hydrocarbons, Energy Planning and Clean Energy
  - Electricity and Nuclear
3. Council for Geoscience, CSIR and Mintek

**APPENDIX G: REFERENCES**

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