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REPUBLIC OF SOUTH AFRICA

DISCUSSION DOCUMENT

A STRATEGIC FRAMEWORK FOR IMPLEMENTING SUSTAINABLE DEVELOPMENT IN THE SOUTH AFRICAN MINERALS SECTOR: TOWARDS DEVELOPING SUSTAINABLE DEVELOPMENT POLICY AND MEETING REPORTING COMMITMENTS

INCLUDING:

SUSTAINABLE DEVELOPMENT THROUGH MINING INITIATIVE: DEVELOPMENT OF INDICATORS FOR MONITORING THE CONTRIBUTION OF THE SOUTH AFRICAN MINING AND MINERALS SECTOR TO SUSTAINABLE DEVELOPMENT

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FOREWORD

"The South African Constitution provides that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected for the benefit of present and future generations". This must be achieved through reasonable legislative and other measures that will prevent pollution and ecological degradation, promote conservation and secure sustainable use of natural resources while promoting economic and social development."

This is a cornerstone of the Sustainable Development through Mining Programme (SDM) initiated by the Department of Minerals and Energy (DME) in 2004. The definitive goal of the SDM Programme is that "by 2010 the South African Mining Industry contributes optimally to Sustainable Development".

The world we live and work in today is largely influenced by sustainability imperatives. The mining industry is not immune to these imperatives and is probably more deeply affected than other sectors of the economy. Mining, processing, beneficiation, use, disposal and recycling of minerals have in some instances led to significant local and larger scale environmental and social impacts. Therefore, it is not always apparent that mining brings economic and social benefits to local communities as well as the country as a whole.

The intention of the SDM Programme is to investigate how the South African mining and minerals industry can best contribute to the national and global transition to Sustainable Development (SD). The fundamental question the SDM Programme asks is how could the contribution of the minerals sectors to Sustainable Development be improved and how to develop a more detailed framework for the process. This initiative has been widely acclaimed by the mining industry as well as other stakeholders and interested and affected parties.

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". When the ethos of SD is entrenched as a way of life, it has the potential to lead to wealth creation, poverty eradication, human and social development, without compromising the natural environment.

Since the 1992 World Summit on Sustainable Development (WSSD), there has been a growing need for a more strategic approach towards mine environmental management, for the effective management of the cumulative effects of mine pollution, and to address the tremendous backlog in rehabilitating derelict and ownerless mines in South Africa.

After the 2002 WSSD, resolutions for mining in terms of the WSSD Johannesburg Plan for Implementation (JPOI) furthermore provided specific actions and targets for mining ministries and mining industries throughout the world.

As a result of these and other criteria, the DME set out to create a vision and an enabling framework aimed at ensuring sustainable development and growth through mining for the benefit of all South Africans. The objective and purpose of the SDM Programme is to ensure that the mineral resources utilisation in South Africa contribute to sustainable development, and to prevent or minimise the negative impacts of prospecting and mining through the development and implementation of policies, legislation, strategies and programmes.

Specific programme objectives that will be achieved in support of the SDM vision are:

- Develop a common vision for sustainable development through mining amongst stakeholders.
- Develop a framework and strategy for sustainable development for South Africa.
- To identify and prioritise ownerless and derelict mines for rehabilitation.
- Develop and implement measures to strengthen environmental enforcement.
- Support for socio-economic and human resources development initiatives.
- Develop regional mining and closure strategies built on sustainable development principles.

South Africa, through the DME, is one of the first emerging markets to initiate an authority led Sustainable Development strategy for the mining sector of the country and of this we are justifiably proud. This detailed document forms an important first step in summarising the progress of the SDM Programme to date and to encourage all stakeholders to build on this first report and to play their part, through feedback and interaction, in assisting the movement of the minerals sector towards a Sustainable Development future.

EXECUTIVE SUMMARY

Towards the latter part of 2005, the South African Department of Minerals and Energy (DME) initiated a programme to develop a sustainable development strategy for the South African mining sector and to work towards reporting sustainable development progress to the United Nations in 2010, in terms of the commitments made by South Africa at the Johannesburg World Summit on Sustainable Development. This programme was termed the **Sustainable Development through Mining (SDM) Programme** and this discussion document comprises the first comprehensive reporting deliverable.

This detailed report forms an important first step in summarising the progress the SDM Programme has made to date and to sound a call for discussion based on further work required in the future. It has articulated a **vision** and a number of **goals** for the programme and has illustrated the partial and ongoing attainment of these through "on the ground" projects which are described in summarised detail. As context, the report has also provided a review of, inter alia, existing initiatives and the place and linkages that this strategy fills within them.

The overarching vision that has informed and directed the development of this framework is articulated as:

"By 2010, the SA minerals sector is contributing optimally to sustainable development. This contribution is further articulated into a number of key strategic objectives, goals and projects leading to desired outcomes. "Optimally" is defined as the most effective, efficient and favourable contribution by the minerals and mining sector to sustainable development, taking into account the social, economic, biophysical and governance opportunities and constraints facing the South African minerals and petroleum sector, as determined and endorsed either through stakeholder consensus or the majority stakeholder view".

It has also illustrated links and synergies between sectoral and non-sectoral initiatives including, critically, the National Strategy for Sustainable Development (NSSD) of Department of Environmental and Tourism (DEAT), and has provided a solid platform for further linkages as this programme continues to unfold in the future. Further abbreviated and differentially targeted versions of this report will be circulated in the coming months to consolidate the effort to solicit input and buy-in from stakeholders. The **critical intent** of this report is to update and refine the principles and projects comprising the SDM Programme.

The Key Strategic Objectives (KSO) of the SDM Programme are:

1. That the Sustainable Development strategy of the South African Mining sector is effectively communicated, linked to national and international strategy and that it reflects the priorities, values, principles and aspirations of the country. Furthermore, that Government has the required capacity to ensure outcomes and that cooperative governance is realised.

2. To ensure that the sustainable development strategy and policy transcends, and is valid beyond, the Government of the day and reporting requirements

3. That community empowerment, environmental and social rights are central tenets of the sector and that all those operating within the minerals sector earn a social license to do so.

4. That the Sustainable Development strategy facilitates a shift to the sustainable end states, including a progression from resource to knowledge-based economies and a consideration of life cycle and cumulative aspects within the sector.

5. That the Sustainable Development strategy promotes economic diversification in existing and future mining industries and that the effects of globalisation are fully considered.

6. That the Sustainable Development Policy acknowledges the continued role of the industry in socio-economic empowerment and creates policy conditions to ensure its continuation.

7. That value extraction from the South African minerals sector benefits vulnerable groups and value addition from South African mineral resources are maximised locally.

The Key Goals of the SDM Programme are:

I. Enabling South Africans to make balanced and informed decisions regarding the extraction of mineral resources and their utilisation.

II. Enabling South Africa to measure and assess progress towards sustainable development objectives in the minerals sector.

III. Minimizing the impacts and risks of mineral resource development, use and management on the health and safety of South Africans.

IV. Optimising environmental management in the sector.

V. To develop and improve tools and mechanisms to ensure improved compliance in the sector and to improve regulatory capacity.

VI. Poverty alleviation and mineral resource development.

VII Enabling South African to have a beneficiation strategy which promotes growth and competitiveness and works towards closing the gap between the first and second economies.

This report has been developed for stakeholders to encourage input and participation in finalising the Sustainable Development principles and the projects of the DME which will realise the goals of the programme. As the title of the document implies, it is principally a framework as it has been constructed and proposed as a first building block onto which stakeholders can fit and recommend additional or refined linkages, projects and goals. Framework implies strength and rigidity, but also a degree of openness to be filled as the framework evolves into a fully fledged Sustainable Development strategy as the sector continues operating.

Thus, the principle intention of this document is to (i) request input and comment from industry and stakeholders to be part of the development of a South African minerals sector SD framework and (ii) to request that industry and stakeholders provide examples and descriptions of ongoing SD programmes, projects and initiaves to be part of this document series. These will act as examples and a demonstration of the journey of the South African minerals sector to sustainability.

This document, iterative and 'living", will be updated every year and form the ulitmate reporting tool for, inter alia, the United Nations and the South African SD commitments.

South Africa, through the DME, is one of the first emerging markets to initiate an authority led Sustainable Development strategy for the mining sector of the country and of this – together with existing laudable industry and stakeholder intiative - we can be justifiably proud. The authors of this report encourage all stakeholders to build on this first report and to play their part in assisting the mineral sector in its movement towards a Sustaible Development future.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

AMP	African Mining Partnership
BID	Background Information Document
COM (SA)	Chamber of Mines South Africa
CSMI	Centre for Sustainability in Mining and Industry
DEAT	Department of Environmental Affairs and Tourism
DME	Department of Minerals and Energy
Ecocentric	An environmental /biophysical/"green" focus – an emphasis on the biophysical sphere of the SD model.
EIR	Extractive Industries Review
EMP	Environmental Management Programme
EU	European Union
GDP	Gross Domestic Product
GMD	Global Mining Dialogue
GMI	Global Mining Initiative
GRI	Global Reporting Initiative
HIV	Human Immunodeficiency Virus
ICMM	International Council on Mining and Metals
IDPs	Integrated Development Plans
IGFMMMSD	Inter-Governmental Forum for Mining, Minerals, Metals and Sustainable Development
IUCN	World Conservation Union
JPOI	Johannesburg Plan of Implementation
JSE-SRI	A tradable social responsibility index on the Johannesburg Securities Exchange
LED	Local Economic Development
MDGs	Millennium Development Goals
MHSC	Mine Health and Safety Council
Mining Charter	Broad-based Socio-Economic Charter for the Mining Sector
MMSD	Mining Minerals and Sustainable Development
MPRDA, 2002	Mineral Petroleum Resources Development Act, 2002 (Act No 28 of 2002)
NEMA, 1998	National Environmental Management Act, 1998 (Act No 107 of 1998)
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NSSD	National Strategy for Sustainable Development
OECD	Organisation for Economic Co-operation and Development
REACH	Registration Evaluation and Authorisation of Chemicals
RBTS	Resource-based Technology Strategy
SA	South Africa
SA NFSD	South Africa's National Framework for Sustainable Development
SD	Sustainable Development
SDM	Sustainable Development through Mining
SDFs	Spatial Development Frameworks
ToC	Theory of Constraints
UNCED	United Nations Conference on Environment and Development
UNCSD	United Nations Commission for Sustainable Development United Nations Commission for Sustainable Development
WBCSD	World Business Council for Sustainable Development
WMMF	World Mines Ministries Forum
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation

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1 PURPOSE OF THIS DISCUSSION DOCUMENT

Introduction

This discussion document has been developed as a key deliverable in the "Sustainable Development through Mining Strategy" - project component of the *Sustainable Development through Mining (SDM) Programme* of the DME – the principal reporting and policy development tool for Sustainable Development (Sustainable Development).

This report serves a number of purposes. It aims to:

- Provide a starting point for the development of a South African minerals sector Sustainable Development strategy with developmental participation from stakeholders and industry;
- Summarise and introduce the vision and the concept of sustainable development through mining and the key objectives of the Strategic Framework for Sustainable Development project;
- Provide successive discussion documents which will contain the main research outputs, assumptions and assertions of the framework – presented explicitly for the purpose of stakeholder debate and input. This will ultimately be consolidated into a final version of the document which will spell out the "Strategy for Sustainable Development through Mining", possible policy development and/or incentives and projects for the South African Mining sector;
- Propose a specific Sustainable Development vision for the South African minerals and mining industry, key strategic objectives, goals, outcomes and actions/projects that underpin the initiative. Allow stakeholders to comment and inform the development of Sustainable Development in the SA Minerals and Mining Sector, through participation in the development of this document;
- To detail and frame those projects that have been/will be completed under the *Sustainable Development Through Mining Initiative* banner and to provide detail on their nature, aims and deliverables and critically, how they integrate into the national as well as the broader sustainability prerogatives of the DME;
- To provide a platform for the publication and illustration of stakeholder and industry Sustainable Development programmes, projects and initiatives which provide a positive statement of the South African journey to Sustainable Development;
- To consider and expand on relevant and appropriate components of existing sustainable development initiatives and frameworks of the mining industry and other stakeholders, and to place the DME initiative firmly at their core (e.g. the National Framework for Sustainable Development and the Chamber of Mines National Benchmarking Initiative);
- To facilitate discussion between relevant stakeholders and to assist the Minerals and Mining Board in advising the Minister on the development and implementation of the SDM Programme;
- To form a template for reporting to the UNCSD in terms of sector contributions to Sustainable Development. Figure 1 illustrates the cyclical nature of the process proposed and encapsulated in this discussion;

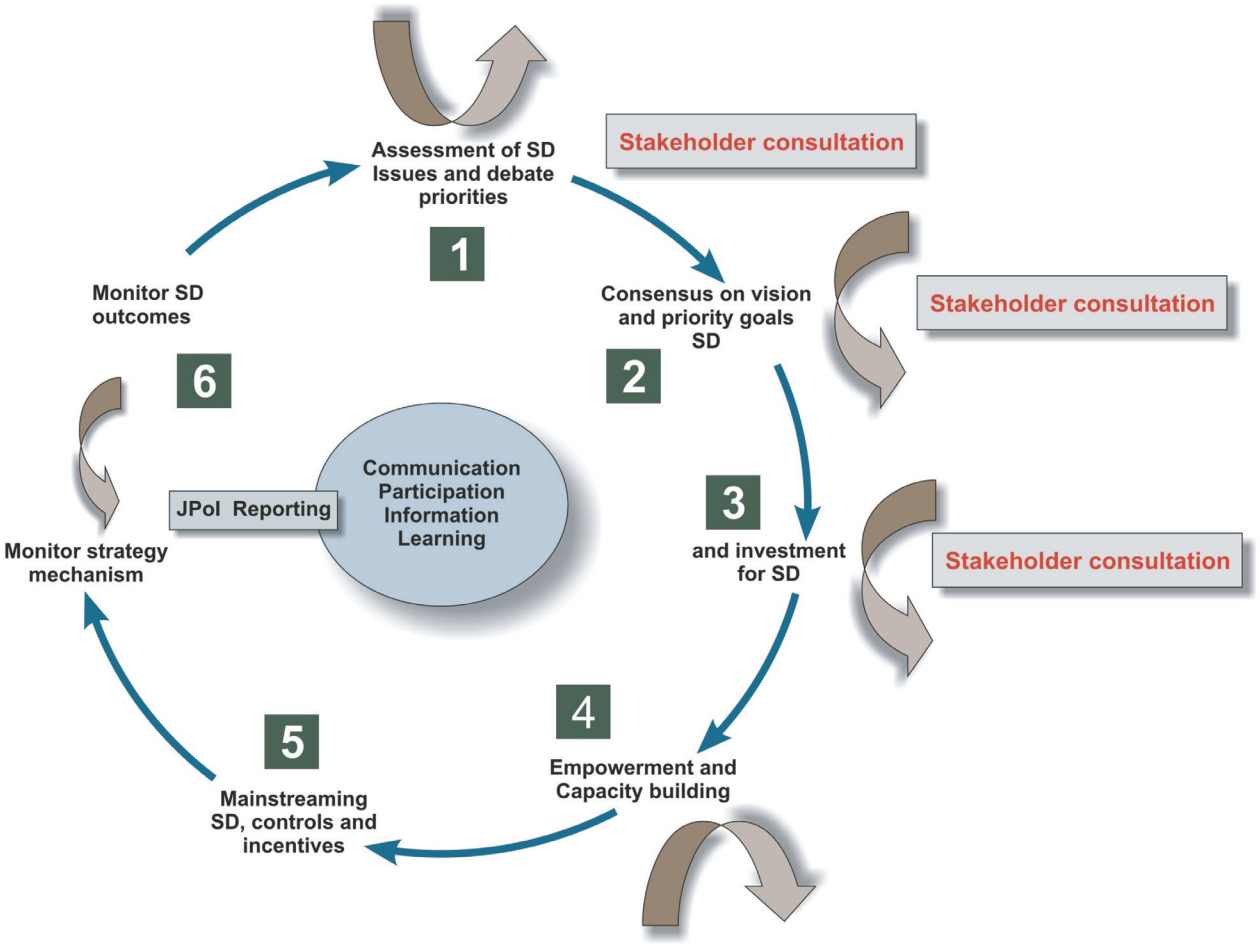

Figure 1: Summary of (cyclical) process followed for development of a Sustainable Development strategy (modified from OECD[6]); document. It is modified from an OECD strategic guide[6] and emphasises the need for the framework (specifically the identification of research and developmental needs) to remain open and "living" to accommodate additions and new perspectives to Sustainable Development.

The discussion document is structured into three sections described below:

- The first section provides an overview of Sustainable Development in the Minerals and Mining sector and the sustainable development challenges facing the sector.
- Secondly, the document provides information on the vision of the SDM Programme, as well as the rationale and process followed in the development of the Strategic Framework for Sustainable Development for the SA mining industry.
- The third section provides a broader perspective of the strategic themes in the SDM Programme, as well as information on the project and objectives of project groupings under the programme.

It is important to note that this discussion document reflects and summarises "work in progress". Notwithstanding these, the document is an important and critical first step in developing Sustainable Development policy and strategy for the SA mining sector. Indeed, it is probably the first authority driven Sustainable Development strategy document of its kind in the developing world and one that we trust will grow from strength to strength.

2 SUSTAINABLE DEVELOPMENT AND MINING: BACKGROUND AND SITUATIONAL ANALYSIS

2.1 The South African Mining Sector: Background

Segal and Malherbe[25] were commissioned by the Chamber of Mines (South Africa) in 2000 to provide an overview of the sector and its relevance to South Africa. The report uses diverse and comprehensive sources to provide a broad picture of the sector – appropriate information pertaining to the sector is summarised here, although information and data sources may be updated in later versions of this report as the information presented here is now seven years old[a].

After more than a century of mining activities in South Africa, the country remains one of the most geologically and mineral rich regions in the world. South Africa boasts more than half of the world reserves of manganese, chromium and platinum group metals in the world. In addition, it has 40% or more of the vanadium, gold and vermiculite reserves[25] worldwide. The mineral legacy of the country is reflected in robust production statistics, the continual emergence of new mining investments, a dynamic mining supplies and services sector, and globally prominent firms.

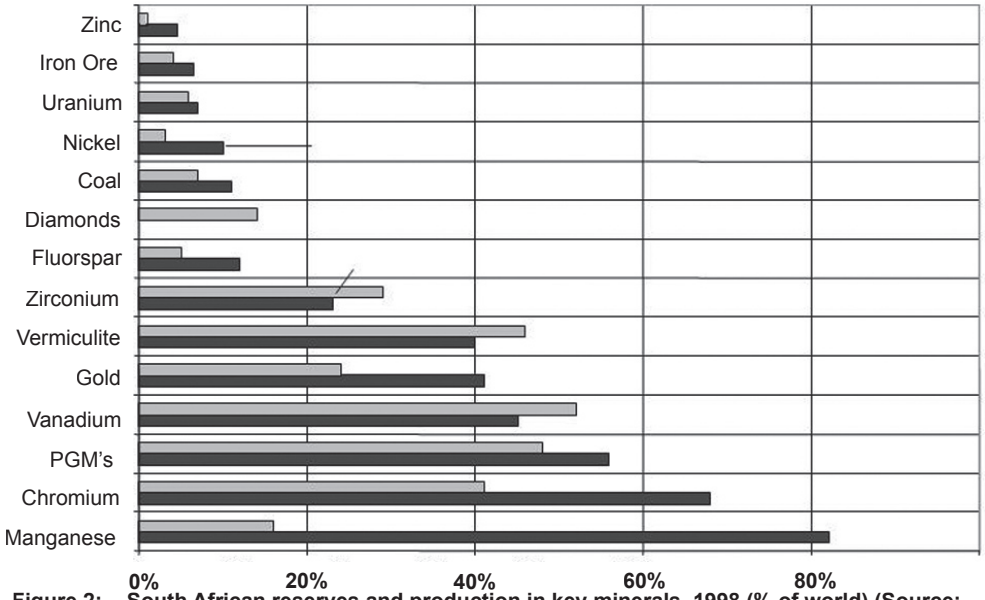

Figure 2: South African reserves and production in key minerals, 1998 (% of world) (Source: Chamber of Mines, cited in Segal and Malherbe[25])

2.2 SA Mining Sector – Status

Mining continues to be the principle earner of foreign exchange of SA, although levels of earning are declining. During the 1990s, mining directly generated 41 % of total exports, approximately the same as the fast-growing manufactured exports sector. In 1997 the value of mineral exports was R51 billion. In that year, for the first time possibly since the start of the 20th century, non-gold mineral exports (at R27 billion) exceeded the value of gold exports, a testimony to the resilience and growth of the non-gold sector. Gold, with exports valued at R25 billion, was responsible for one-sixth of South African export earnings[25]. These statistics undervalue the contribution of the mining sector to export earnings as it does not fully take into account the role of beneficiation and value addition. As an example, if processed mineral products, such as ferroalloys and aluminium were included, the contribution fo the mining sector to exports would be around half of all exports[25].

Global growth in and derived from the Eastern Hemisphere has put a high price and premium on natural resources – particularly affected has been the South African minerals sector. In recent years, the sector has suffered from "Dutch disease", although indications are that symptoms of this economic "affliction" have matured and are declining. "Dutch disease" is the term used to describe the deindustrialization of an economy that occurs when the discovery of a natural resource raises the value of that currency, making manufactured goods less competitive with other nations, increasing imports and decreasing exports. Indications are that while demand for minerals and metals continue to grow and outstrip delivery capacity, pushing resource process to record highs, this growth will reach sustainable levels in the next few years[25]. The recent global boom has had a number of important influences on the South African economy and specifically the minerals sector. This theme and these impacts will be enlarged upon to a greater degree in this document where specialist studies around mining and financial risk have been commissioned and summarised.

Table 1 below provides a breakdown of export sector earnings. Post 1990 contributions are expected to continue to decline in relative proportion but still remain significant in terms of the overall scenario. Segal and Malherbe[25] assert that "....mining's declining share in GDP is chiefly attributable to the falling output of gold and uranium. Between 1980 and 1998, the gold sector contribution to private sector GDP fell 4.3% points, while the mining sector contribution as a whole fell only 3.4 per cent. *This means that the non-gold mining sector grew faster than the rest of the economy between 1980 and 1998.*"

Sector	Average for decade		
	1970s	1980s	1990s
Agriculture and Forestry	6.9%	3.5%	4.2%
Mining	54.0%	61.3%	40.9%
Manufacturing	24.6%	23.6%	40.3%
Electricity, gas and water	0.1%	0.1%	0.1%
Construction	0.0%	0.0%	0.0%
Services	14.4%	11.5%	14.3%

Table 1: Composition by sector of SA export earnings (source Statistics South Africa[25])

2.2.1 A brief consideration of contemporary challenges faced by the sector

Some challenges in the South African mining sector are well known – although the issue of mine closure is well documented and regulated, the issue of sustainable mine closure is an appropriate example of such a challenge. As an example, a comprehensive and appropriate authority/regulatory driven and proposed Sustainable Development strategy, policy and guidance in respect of sustainable mine closure has been largely absent in the country.

This is clearly an overarching problem in the sector and solutions are much needed, not least to meet international and local reporting commitments and imperatives, but also to match, compliment and ensure implementation of laudable Sustainable Development initiatives, largely industry driven and initiated, which have taken and continue to take place (the South African Chamber of Mines is an appropriate example here).

Mining is, and will continue to be for the foreseeable future, a very significant contributor to the South African economy. Operationally, there are also a number of pressing SD issues and constraints in the sector that need to be addressed if we are to ensure that the sector operates and is regulated more appropriately than it has been to date.

The SD challenges are numerous, and some other examples include the fact that the developmental needs of industry are often not (yet should be) inter linked with regional and local community needs. For instance, integration of the mining social and labour plans must, in terms of the MPRDA, 2002 and its supporting Regulations, fall in line with the municipal Integrated Development Plans (IDPs), Spatial Development Frameworks (SDF), Local Economic Development Plans (LED) among others.

In terms of the Mineral and Petroleum Resources Development Act, 2002, (Act No 28 of 2002) (MPRDA, 2002) social and labour plans need to be submitted for mining applications. Adherence to this by industry is one of the positive ways that industry in particular are already contributing to sustainable development in South Africa

The objectives of the Social and Labour Plan are to:

(a) Promote employment and advance the social and economic welfare of all South Africans;

(b) Contribute to the transformation of the mining industry; and

(c) Ensure that holders of mining or production rights contribute towards the socio-economic development of the areas in which they are operating as well as the areas from which the majority of the work force is sourced.

The above is provided as an example of a situational problem within SD in the minerals sector, and an example of one of many drivers initiating and informing the SDM Programme and this document series. More clarity will emerge as a consequence of the process being undertaken in, specifically, later revisions of this discussion document.

General Sustainable Development background and definition

The Brundtland Commission's definition of Sustainable Development states: "Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their needs[1]". 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 resources, by ensuring equitable and sustainable use of natural resources now and in the future;
- Creating equitable and viable economic systems with an ethical basis by ensuring economic growth with greater equity and self-reliance; and
- Acknowledging and guiding social and cultural systems and values towards greater equity, responsibility and human well being by improving health, income and living conditions of the poor majority.

The model described above is a classical model of Sustainable Development. Work in recent years has centred around building on this model and taking it further and this is elaborated on in Section 3. The Sustainable Development model proposed for the purposes of the SDM Programme is an amalgam (dialectic) between that adopted by DEAT in its draft framework report[41] (critically important in that the SDM framework sits "under" DEAT's initiative) and the five capitals model. Further elaboration is provided in Section 3.

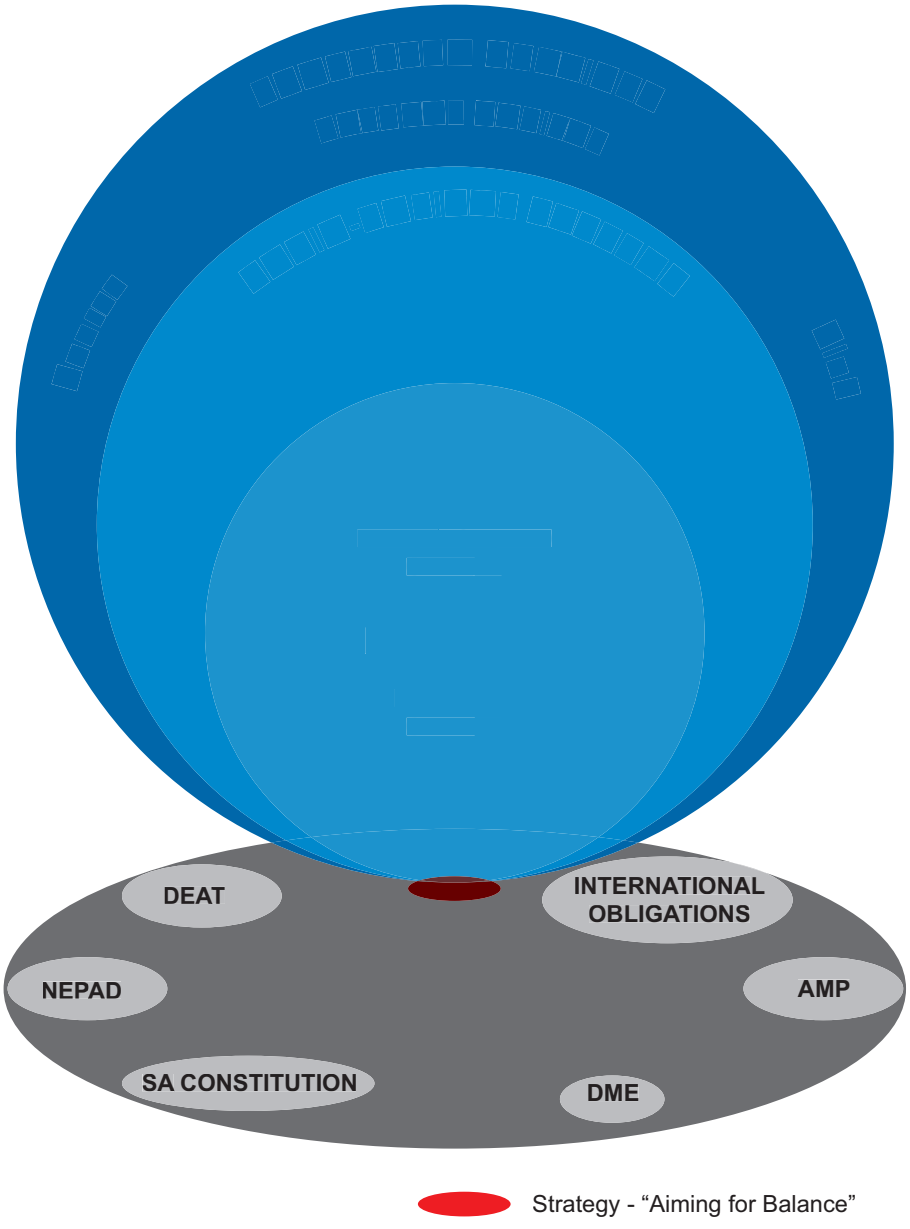

Figure 3. A Sustainable Development model proposed for the SA mining sector. Bi-directional capital flow between the spheres and exemplar divisions in the diagram is implicit and not marked. The "convergence point" denoted by the red oval is the area in which the SDM Programme aims to operate.

2.3 Initial Emergences of Sustainable Development in the SA mining sector

Limpitlaw *et al*[23] summarise that the Sustainable Development issues became most notably prominent during the First Round Table Conference on Mining and Environment, held in Berlin in June 1991, shortly before the Earth Summit in Rio de Janeiro in 1992.

The Earth Summit placed SD firmly on the global agenda and promoted an appreciation of environmental degradation, not just as a problem for industrialised countries, but also as an issue of survival for developing nations[24]. A "need for balance" ethic was emerging and in June 1994, a World Bank Conference in Washington DC had "Development, Environment and Mining" as the theme – a hitherto inconceivable linkage[23].

Most recently, strategy planning around sustainable development has been either guided or influenced by the outcomes of the World Summit on Sustainable Development (WSSD, Johannesburg, 2002). These outcomes were influenced over a period of time by several high level initiatives and detailed information on these developments can be accessed elsewhere. What is relevant is that earlier initiatives and influences such as Agenda 21 (resulting from the UN Conference on Environment and Development, Rio de Janeiro, 1992) did not specifically address minerals or mining related matters. As a result these issues were not initially included in the UN Commission on Sustainable Development (CSD). This changed when the 8th session of the CSD listed *"minerals, metals and rehabilitation in the context of sustainable development"* as a priority for future endeavours.

The WSSD brought worldwide consideration of sustainable development issues to the fore and also resulted in recognition that mining and related sectors had a potentially significant contribution to make towards achieving sustainable development, particularly when considering linkages and flows between developing and developed countries.

2.3.1 The National Context: The South African Mining Sector and responses to existing Sustainable Development initiatives

The South African minerals and mining sector, has in recent years, responded largely positively in principle to sustainability challenges. This response has been slightly skewed, however, with the majority of emphasis on responding to sustainability prerogatives, challenges and developing sustainable development frameworks coming from established industry[17;18;19] and consultantancies[14;15;16]. Much positive work has been done in this realm, most notably starting with the highly accredited MMSD project[13], and continuing through the work of the Chamber of Mines[20;21] and the CSMI[22;23] (Centre for Sustainability in Mining and Industry). Specific sustainability "work" by NGO's, communities and small-scale miners is less well reported but the argument can be made that these organisations, by their very nature and mandate, have sustainability agendas[b].

The South African Government, under the leadership of DEAT, has also recently published a National Framework for Sustainable Development for public comment[c] and the DME has initiated the development of a Programme for Sustainable Development through Mining (SDM).

2.3.2 Sector specific Sustainable Development strategies and Initiatives

Limpitlaw[7] provides a useful summary of the appropriate and key SD initiatives that have taken place around mining.

- The EIR (Extractive Industries Review): a World Bank review of its investment in mining that focused on community and environmental issues. It was critical of the possible contribution of mining to Sustainable Development and recommended no further World Bank investment in certain extractive projects, such as coal mining.

- The MMSD – an industry initiated project to scope the potential contribution of mining to sustainable development globally. This report and the derivation of strategic direction contained herein use this report and its contents to a large degree.

- The GRI – an organisation promoting uniformity and completeness in Sustainable Development reporting. It is not restricted to the minerals sector, but has developed a "minerals sector supplement" that proposes certain appropriate high level indicators for the minerals sector.

- ICMM (International Council on Mining and Metals) – an industry association originating in the same initiative as the MMSD. The ICMM has provided a collective platform for addressing several key issues, notably protection of biodiversity, mining in protected areas, social impacts and management of health and safety in

the sector. Its members are largely multinational companies.

- The ICMM-IUCN dialogue on protected areas.
- JSE-SRI – a tradeable social responsibility index on the Johannesburg Securities Exchange, created to help investors to distinguish between companies on the basis of their triple bottom line performance.
- The South African MPRDA, 2002 and the Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry (referred to as the Mining Charter) has been developed in accordance with section 100(2)(a) of the MPDRA, 2002. It establishes a framework, targets and a time-table for effecting the entry of historically disadvantaged South Africans into the mining industry.

2.3.3 Other relevant (non-sectoral) initiatives

Other initiatives that do not necessarily have a Sustainable Development focus but are nonetheless pivotal to mining in South Africa and the consideration of Sustainable Development and its dimensions are summarised. It is important to make sure that any Sustainable Development strategy for the SA mining sector "speaks to" and is indeed informed by appropriate national and regional strategies that may not have had Sustainable Development as a central theme. The development backlog and the urgent need for poverty alleviation give sustainable development in Southern Africa a particular urgency – given the importance of the minerals sector to the economy of South Africa, the need for Sustainable Development strategies, policies and work plans is self-evident.

2.3.3.1 The National Treasury

In its draft policy on *A framework for considering market-based instruments to support environmental fiscal reform in South Africa*, the National Treasury acknowledges that:

"As the South African economy continues to develop, it is increasingly important to ensure that it does so in a sustainable way and that, at the same time, issues of poverty and inequality are effectively addressed. It is, therefore, important to appreciate that it's not just the quantity of growth that matters, but also its quality."

The sentiments articulated in the extract resonate strongly with the objectives and intent of the SDM Programme and works to ensure that the growth and development of the minerals sector will be of the requisite "quality".

2.3.3.2 The Department of Trade and Industry

The National Industrial Policy Framework of the Department of Trade and Industry (DTI) does not have explicit sectional references to Sustainable Development, but an overview of the frameworks vision for the industrialisation trajectory of SA embodies many of the same principles that this document speaks to – most notably perhaps diversification explicit in the beneficiation arena.

The National Industrial Policy Framework (NIPF) vision for South Africa's industrialisation trajectory is[44]:

- To facilitate diversification beyond current reliance on traditional commodities and non-tradable services of SA. This requires the promotion of increased value addition per capita characterised particularly by movement into non-traditional tradable goods and services that compete in export markets as well as against imports.
- The long-term intensification of the South African industrialisation process and movement towards a **knowledge economy** [see link to the SDM Programme, box at right].
- The promotion of a more labour-absorbing industrial path with a particular emphasis on tradeable labour absorbing goods and services and economic linkages that catalyse employment creation.
- The promotion of a broader based industrialisation path characterised by greater levels of participation of historically disadvantaged people and marginalised regions in the mainstream of the industrial economy.

The SDM Programmes 3rd KSO

That the Sustainable Development strategy facilitates the transition from finite resource - based industries and economies to sustainable **knowledge - based economies** *and that building and accounting for social and natural capital is implicit.*

- Contributing to industrial development on the African continent with a strong emphasis on building its productive capabilities.

2.3.3.3 Chemical sector Sustainable Development initiatives relevant to the Minerals Sector

Registration Evaluation and Authorisation of Chemicals (REACH).

Future legislation proposed by the EU Commission is termed REACH. Its overriding goal is to respect environmental concerns and sustainable development issues by ensuring both a high level of protection of human health and the environment and the competitiveness of the chemicals industry, within the framework of the Single Market. The specific objectives of REACH are:

- Protection of human health and the environment;
- Maintenance and enhancement of the competitiveness of the EU chemical industry ;
- Prevent fragmentation of the internal market;
- Increased transparency;
- Integration with international efforts;
- Promotion of non-animal testing; and
- Conformity with EU international obligations under the WTO.

The impacts of REACH on African countries are cause for serious concern. REACH poses a major challenge to the mining industry in the short-medium term, especially where mining is the foundation industry for the economy. The links between Africa and the EU are especially strong in the trade of minerals and mineral commodities.

2.3.3.4 Resource Based Technology Strategy Programme (RBTS)

The main objective of this initiative is to aid in policy and other levers that facilitate the development of a sustainable minerals-based capital goods, technologies and services cluster in South Africa. The main focus is on the promotion of input industries and the 'lateral' linkages that arise from the initial expertise in mineral extraction and processing.

2.3.4 Other statutory considerations and initiatives

MPRDA, 2002

The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) came into effect on 1 May 2004. The MPRDA, 2002 makes provision for equitable access to, and the sustainable development of, the mineral resources of the nation. The preamble emphasises the following:

- Recognises that minerals and petroleum are non-renewable natural resources;
- Acknowledges that the mineral and petroleum resources of SA belong to the nation and that the State is the custodian thereof;
- Affirms the obligation of the State 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;
- Recognises the need to promote local and rural development and the social upliftment of communities affected by mining;
- Reaffirms the commitment of the State to reform and to bring about equitable access to the mineral and petroleum resources of SA;
- Is committed to eradicating all forms of discriminatory practices in the mineral and petroleum industries;

- Considers the obligation of the State under the Constitution to take legislative and other measures to redress the results of past racial discrimination;
- Reaffirms the commitment of the State to guaranteeing security of tenure in respect of prospecting and mining operations; and
- Emphasises the need to create an internationally competitive and efficient administrative and regulatory regime.

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; 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.

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

The Mine Health and Safety Act, 1996 (MHSA, 1996) is administered by the DME through its 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 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 objectives of the MHSA, 1996 are captured in more detail below:

- Protect the health and safety of persons at mines.
- Require employers and employees to identify hazards and eliminate, control and minimise 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 enquiries to improve the health and safety at mines.
- Promote a culture of and training in health and safety in the mining industry and co-operation and consultation on health and safety between the State, employers, employees and their representatives

Precious Metals and Diamond Amendment Acts

The Diamond Amendment Act (NOTE: please insert the year I don't know what it is) 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 the South African economy. The DME has also published draft Regulations in terms of the Precious Metals Act, 2005 (Act No. 37 of 2005) for comment.

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 MPRDA, 2002. It establishes a framework, targets and a time-table for effecting 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 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.

2.4 The National Sustainable Development landscape and the role of the mining sector

2.4.1 National Framework for Sustainable Development

The team responsible for developing this Sustainable Development strategy document has provided comprehensive comment and opinion on the National Framework for Sustainable Development (NFSD). Thus, Sustainable Development in the mining sector and its critical linkage with NFSD has been recognised and the necessary integration will be implemented.

A critical aspect to remember when considering the effective and productive interplay between the two is that the NFSD is a non-sector-based framework and only speaks of Sustainable Development at a broad, national level, effectively setting the stage for sector-based strategy, with this document being the beginning of one such sector specific strategy.

The NFSD does not generally speak in terms of specifics, rather it articulates broad, high level principles of Sustainable Development and places them within a South African context. The DME strategy is designed to embellish and detail the principles that the NFSD proposes and manifests these in demonstrable projects.

It details actual initiatives with firm and measurable outputs/outcomes that have been developed around Sustainable Development in the sector. It does this while first establishing and “talking to” contemporary, relevant Sustainable Development thought and existing Sustainable Development strategy and policy.

2.4.1.1 Background and Status Quo

Pursuant to the WSSD in 2002 and the Johannesburg Plan of Implementation (JPOI) as well as the Millennium Development Goals (MDG’s) whose target is to ‘integrate the principles of Sustainable Development into the country policies and programmes’, South Africa has taken many steps to meet global goals and targets[29]. As mentioned above, the National Department of Environmental Affairs and Tourism (DEAT) has introduced a National Framework for Sustainable Development. This resulted after engaging with various stakeholders for a period of two years.

2.4.1.2 The Historical Mining Environment and its affect on National Sustainable Development.

What sort of potential negative effects could mining have that a strategy such as the NFSD and SDM may seek to offset? A few examples are provided below:

- Mining tends to attract labour from afar resulting in haphazard settlements in mining towns or areas adjacent thereto.
- Mining has also historically contributed to social and health impacts such as increasing the risk of contracting and spreading HIV/AIDS due to single sex living arrangements e.g. hostel dwellings.
- Mining has not often necessarily contributed significantly to rural development in ‘labour migratory areas’, although this does not undermine its contribution to income and improved quality of life for families whose members are employed by the mines.
- Due to its extractive nature, mining can lead to negative impacts on the environment such as land degradation, water and air quality deterioration, to name a few.
- Mining has not always resulted in appropriate economic benefits and spin-offs for rural communities, although legislation such as the MPRDA, 2002. and the introduction of ancillary Social and Labour Plans seek to address some of these concerns[29].

2.4.2 Linking the SDM initiative with NFSD (DEAT)

The NFSD is important in the context of mining in South Africa. It is critical that there are clear linkages between the strategic framework of the DME for implementing Sustainable Development in the South African Minerals Sector as well the South African Sustainable Development vision as articulated by DEAT[42]. The Sustainable Development through Mining (SDM) Programme of the DME places itself firmly under the NFSD “umbrella”.

THE NFSD VISION[42]

South Africa aspires to be a sustainable, economically prosperous and self-reliant nation state that safeguards its democracy by meeting the fundamental human needs of its people, by managing its limited ecological resources responsibly for current and future generations, and by advancing efficient and effective integrated planning and governance through national, regional and global collaboration.

As the vision of the SDM Programme is underpinned by a number of Key Strategic Objectives, so too is the NFSD (DEAT) vision underpinned by a number of principles. These are detailed below and although all principles fit well with the SDM strategy, there are a number which have particular resonance. These are highlighted below:

THE PRINCIPLES OF NFSD

The "first order" or fundamental principles relate to those fundamental human rights that are guaranteed in the Constitution, and underpin the very nature of our society and system of governance. These principles affirm the democratic values of:

- **Human dignity and social equity**
- **Justice and fairness**
- **Democratic governance**

The "substantive principles" address the content or conditions that must be met in order to have a sustainable society and are based on principles already enshrined in legislation and policies. The principles underscore a cyclical and systems approach to achieving sustainable development and are as follows:

- **Efficient and sustainable use of natural resources**
- **Socio-economic systems are embedded within, and dependant upon, ecosystems**
- **Basic human needs must be met to ensure resources necessary for long-term survival are not destroyed for short-term gain**

The "process principles" establish a few clear principles that apply specifically to the implementation of the national strategic framework for sustainable development. The most important in this regard are:

- **Integration and innovation**
- **Consultation and participation**
- **Implementation in a phased manner**

Where the SDM strategy is, certainly in its latter parts, focused on implementation, the NFSD identifies a number of pathways to sustainable development – these are closely correlated with both the Key Strategic Objectives of the SDM Programme(see Section 6.3) and specific goals (section 6.3.1):

PATHWAYS TO SUSTAINABLE DEVELOPMENT[42]

- **Enhancing systems for integrated planning and implementation**
- **Sustaining our ecosystems and using resources sustainably**
- **Investing in sustainable economic development and infrastructure**
- **Creating sustainable human settlements**
- **Responding appropriately to emerging human development, economic and environmental challenges**

2.4.3 Related regional strategies - linking the Sustainable Development mandate of the DME with NEPAD, AMP and others

The strategic framework for the SDM Programme of the DME is clear in that the initiative has two departure points, being that it is both a sector-based as well as a governance-based initiative. With this in mind, any strategic framework for the South African mining sector must be well-informed by and interface with other sector-based initiatives as well as other governance initiatives as illustrated in Figure 4 below.

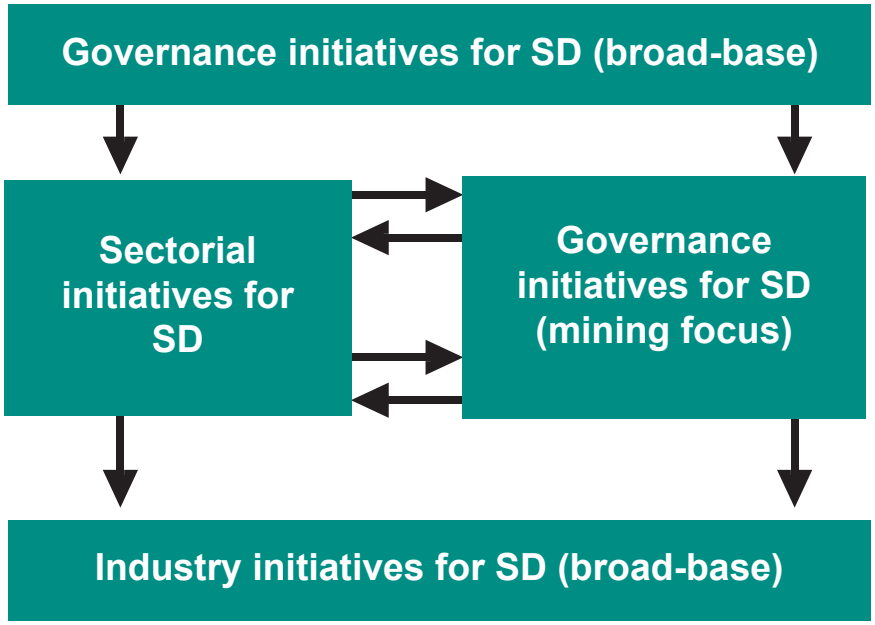

Figure 4: Key framework considerations for ensuring success from sustainable development strategy initiatives.

2.4.3.1 The New Partnership for Africa's Development (NEPAD)

The New Partnership for Africa's Development (NEPAD) is described as both a vision and strategic framework for Africa's renewal. It is a strategy built around a vision for the future of Africa, based on good governance and sustainable growth and development. It seeks to bring Africa and African countries onto the global stage, on a level playing field, through enabling Africa's competitiveness.

The NEPAD report (October, 2001) identifies Africa's strong position as a natural resource base on a global level and its mineral deposits as a significant component of this wealth (Paras 9, 10, NEPAD, 2001). NEPAD seeks to define a strategy for "nurturing these resources and using them for the development of the African continent while, at the same time preserving them for all humanity" (Para 12, NEPAD). Clearly implicit in this "preservation" requirement is the need for the South African Minerals sector to increase its contribution to sustainable development.

Specific objectives and actions for each priority area are defined by the NEPAD programme of action. Worth noting are particular references to the minerals sector in the programme. These include:

- Para 143: "Expand geoscience research to enhance the exploitation of the mineral wealth of the African continent"
- Para 153: "Value added in agro-processing and mineral beneficiation must be increased"
- Para 156: defines specific objectives and actions for the mining sector:

Other NEPAD Objectives and Actions

- To improve the quality of mineral resource information;
- To create a regulatory framework that is conducive to the development of the mining sector;
- To establish best practices that will ensure efficient extraction of natural resources and minerals of high quality.

At the African level:

- Harmonise policies and regulations to ensure compliance with minimum levels of operational practices
- Harmonise commitments to reduce the perceived investment risk in Africa;
- Harmonise information sources on business opportunities for investments;
- Enhance collaboration with a view to knowledge-sharing and value addition to natural resources;
- Enforce principles of value addition (beneficiation) for investments in the African mining sector;
- Establish an African School of Mining System for the development and production of education, skills and training at all levels. This could be achieved through collaboration among existing schools.

2.4.3.2 The African Mining Partnership (AMP)

NEPAD's encouragement of economic development, along with highlighting the potential contribution of Africa's rich mineral wealth to this development, necessitated more detailed focus on the means and approach to ensuring that the minerals sector would contribute to NEPAD's vision and objectives. These considerations resulted in the formation of the African Mining Partnership in 2004.

The AMP is an interGovernmental partnership of African States specifically involved in the mining sector and its aim is to further NEPAD's focus on economic development through and in support of mining and minerals initiatives. In February 2006, AMP comprised involvement of at least 23 Government Ministries with the executive committee comprising eight member states with Ghana acting as chair and South Africa as the Secretariat.

Several primary areas of focus were defined and member countries were assigned projects in the areas of:

- Beneficiation
- Facilitation of artisan and small-scale mining development
- Environment / sustainable development
- Human resource development
- Promoting foreign investment and indigenous / local partnership in mining ventures

2.4.3.3 The InterGovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)

While the AMP focuses on supporting NEPAD initiatives from a mining sector base, a separate initiative, viz. the **Global Dialogue on Mining/Metals and Sustainable Development (GD)** was initiated at the 2002 World Summit on Sustainable Development in Johannesburg to link Government mining initiatives to the WSSD Johannesburg Plan of Implementation. The GD initiative was sponsored by Canada and South Africa as a high-level, interGovernmental forum of Governments with an interest in the mining, minerals and metals sector. The motivation for this initiative spoke directly to paragraph 46 of the Johannesburg Plan of Implementation (JPOI). While many of the activities proposed in this paragraph fell within areas that are primarily the responsibility of national Governments, it was believed that the initiatives could often be most effectively advanced through consideration at the global level with subsequent implementation at the national level. The GD thus sought to consider sustainable development issues relevant to the mining and minerals sector that would benefit from consideration at the global scale.

The IGFMMMSD has thus far defined terms of reference, a framework for the programme of work and draft rules of procedures. The current proposals for a programme of work outline an overarching focus on enhancing the capacity for governance in the sector across all life-cycle stages. Under this overarching theme of governance, several sub-themes were defined based on the outcomes of the inaugural meeting:

- The overall national policy and administrative framework for natural resources management and development;
- Creating the conditions to promote the development of local communities;
- Creating conditions to improve the circumstances and contribution of small-scale miners;
- Creating conditions to promote effective post-closure planning and implementation for present and future mining sites; and
- Enhancing the life cycle contribution of the sector to sustainable development.

The IGFMMMSD has sought to be inclusive and take account of existing regional networks of Governments interested in mining and sustainable development and in this regard invited participation from the AMP at the inaugural meeting of the Forum. The Forum has also sought to build on other sector specific initiatives such as the industry led Global Mining Initiative (GMI) and the Mining, Minerals and Sustainable Development Project (MMSD).

At the meeting held in October 2006, at the Palais de Nations, Geneve, Switzerland members agreed to establish an Investment Outlook Committee to keep members informed on developments that can influence mining investment in their country. They also established a Sustainable Development Committee to prepare a way forward to the 2010-2011 UNCSD meetings that will review progress on addressing mining/metal related priorities identified in the WSSD Johannesburg Plan of Implementation.

3 THE SUSTAINABLE DEVELOPMENT THROUGH MINING PROGRAMME: AIMING FOR BALANCE

3.1 Programme Background

Following on from the World Summit on Sustainable Development (WSSD) in 2002, the DME initiated a programme to develop a national strategic framework to guide the mining and minerals sector in South Africa towards Sustainable Development. This SDM Programme embraces initiatives and policies emanating from the United Nations Johannesburg Plan of Implementation (JPOI), the UN Global Impact, the MPRDA, 2002, the Business Charter for Sustainable Development (BCSD) and the Mining, Minerals and Sustainable Development Initiative (MMSDI) among others.

As stated previously, 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 own needs”. The DME has integrated this philosophy through the articulation of its vision of the SDM Programme which states “by 2010 the SA mining sector will contribute optimally to sustainable development”.

From 2010 to 2011 the UNCSD progress reporting will specifically focus on “Mining” and “Waste Management”. However, during 2006-2007 and 2008-2009, UNCSD reporting will focus on cross-cutting issues which relate to mining i.e. air pollution, climate change, sustainable development for Africa and rural development.

The overall objective of the DME is to ensure that the extraction of mineral and petroleum resources in South Africa contribute optimally to sustainable development, and to prevent or minimise the negative impacts of prospecting and mining through the development and implementation of policies, legislation, strategies and programmes.

Some of the specific objectives outlined by the DME in pursuit of its vision are:

- To develop a common vision for sustainable development through mining among stakeholders
- To create a strategic framework for sustainable development through mining in South Africa
- To identify and prioritise derelict and ownerless mines for rehabilitation
- Develop effective measures and systems to strengthen environmental enforcement that will prevent future derelict and ownerless mines
- To facilitate capacity building, community projects as well as the promotion of women in mining

Since 2002 and even before, much consideration has been given to incorporating sustainable development perspectives into many aspects of policy, process and planning from national to industry levels. With the acknowledgement that the mining sector has the potential to make a significant contribution in this arena, the DME’s SDM Programme of the DME is an important one and relates directly to the WSSD Johannesburg Plan of Implementation.

From a much broader perspective however, Sustainable Development issues in mining also relate to a number of other chapters in the JPOI – these include:

- *Chapter 2* - Poverty eradication;
- *Chapter 3* - Changing unsustainable patterns of consumption and production
- *Chapter 4* - Protecting and managing the natural resource base of economic and social development
- *Chapter 5* - SD in a globalising world
- *Chapter 6* - Health and Sustainable Development;
- *Chapter 8* - SD in Africa
- *Chapter 10* - Means of implementation

- *Chapter 11* - Institutional framework for SD

  - adopting an open, transparent and inclusive approach to minerals development,

  - applying the highest standards of environmental management,

  - communicating regularly with all interested parties and stakeholders,

  - ensuring benefits are distributed equitably,

  - ensuring optimal use of raw materials,

  - reducing energy consumption and waste generation,

  - recycling and developing new products from 'waste' materials, and

  - early and proactive planning for closure.

3.2 A model for integrating sustainable development initiatives in the mining and minerals sector

The SDM Programme, being a national level initiative, should be influenced by and take guidance from regional, global and interGovernmental initiatives. In this regard SDM's ability to find beneficial interfaces with the IGFMMSD and the AMP will be key to its success. It will also be critically important that SDM finds ways to input into and influence broader regional and global thinking. The primary linkages between SDM and other initiatives at the various levels and areas of influence are summarised in Figure 4. The details of the linkages, the influencers and enablers form a key part of the SDM project and are in the process of being developed.

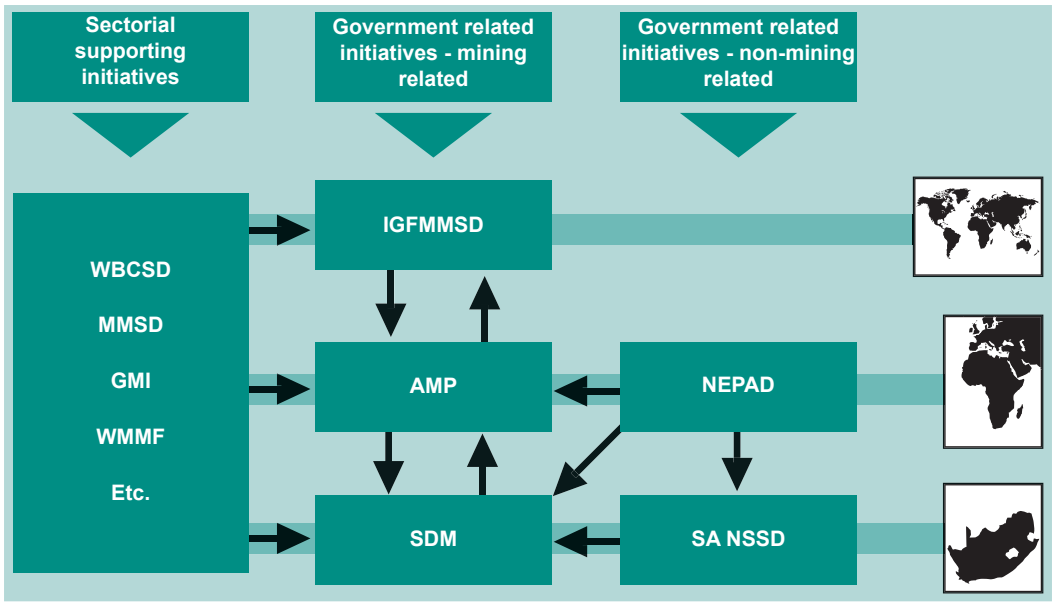

Figure 4: Key linkages and influences between international, Africa-regional and national initiatives influencing sustainable development considerations.

Creating a Strategic framework for Sustainable Development in the Minerals and mining Sector

The classical vision of SD as it lies at the nexus of biophysical, social and economic realms and is supported within a framework of good governance, is presented in Figure 5 below,

Sustainable Development, the understanding thereof and the move towards more sustainable practices within the minerals and mining sector, has been historically characterised by an ecocentric focus, where a disproportionate amount of emphasis has been placed on "righting" the biophysical impacts of mining. This is understandable and is, in some sense, logical because sustainable development had its birth within the environmental movement and has continued to be viewed as wearing those "colours". Without diminishing or under emphasising the need for action in the biophysical sphere, there is broad consensus that in order for mining to be practised more sustainably, actions and interventions in the social, economic and governance realms must take place.

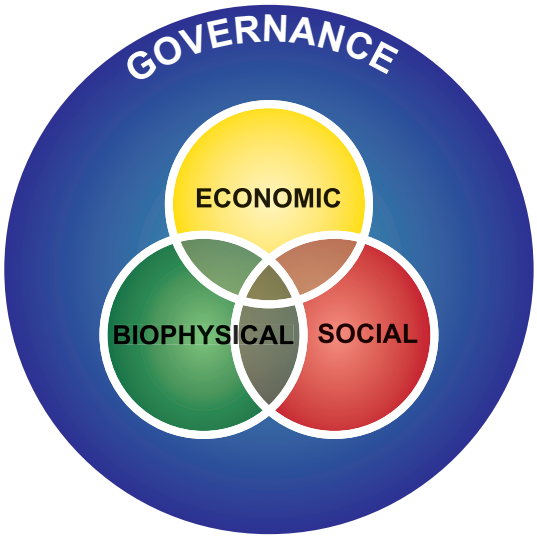

Figure 5: The concept of sustainable development – its trifocal spheres and the supporting "matrix" of good governance

Existing and contextual models for understanding Sustainable Development in the SA Mining sector

Two models of sustainable development are presented here to provide the broad readership of this report with an introduction to the concept and specifically how it pertains to the SA mining sector. This information is provide mainly for context reasons – the proposed model for SD is presented in Figure 2 in section 2, earlier on in the report. A detailed consideration of these concepts, although appropriate, is beyond the scope of this report.

Looking at these concepts from an overview perspective, they both speak of a "desired' end state and a form of balance (as opposed to equality) that will denote a more sustainable (yet dynamic) system. The trifocal model is more generic and proposes the need for parity of effort in fostering economic growth, use of resources and improvement of living conditions all under effective and just governance. Applying this to the mining sector, it becomes easy to see how the sector "operates" (or has an effect) in all three spheres. For instance, while the economic benefits and growth associated with the sector is obvious; it also has influence in the other spheres by improving (or negatively affecting) social and biophysical conditions.

The 5 capitals model articulates a slightly different view as it focuses on the creation, transformation and flow of "capital" between and within environmental, societal and economic realms and a sustainable state. The mining and minerals sector creates economic capital (from the sale of beneficiated gold for instance) and has a direct relationship with the transformation of natural capital (e.g. the disturbance and rehabilitation of land) and societal capital in order to achieve this. The 5 capitals model is slightly more complex as it considers further delineations between manufactured capital and financial capital (within economic capital) - as an example - and the flows between these subsets. Further detail and delineations are provided in Figure 6.

In order for the SA minerals and mining sector to therefore contribute optimally to sustainable development, a broad framework is needed with guiding principles. The absence of a strategic framework can lead to a short term reactive focus on current problems (such as acid mine drainage in sensitive areas and mine closure priorities) without a clear, longer term, broad strategic response to sustainable development imperatives. While a focus on contemporary issues and problems is vital for the DME, there is a definite need to take a strategic view of the sector, into the future, in order to enhance its contribution to sustainable development.

DEAT's SD model (as envisioned in their national Sustainable Development discussion documents) emphasises governance as a key supportive element of Sustainable development, this is an aspect under emphasised in the trifocal and 5 capital models. As such, the model proposed for the SDM (Figure 2) project takes the SD (Figure 7) model of DEAT and overlays the key principles of the trifocal and 5 capitals models to form an optimised amalgam appropriate for the minerals sector.

Figure 6. A visualization of the 5 capitals model. (Source: Incite Sustainability)[31]

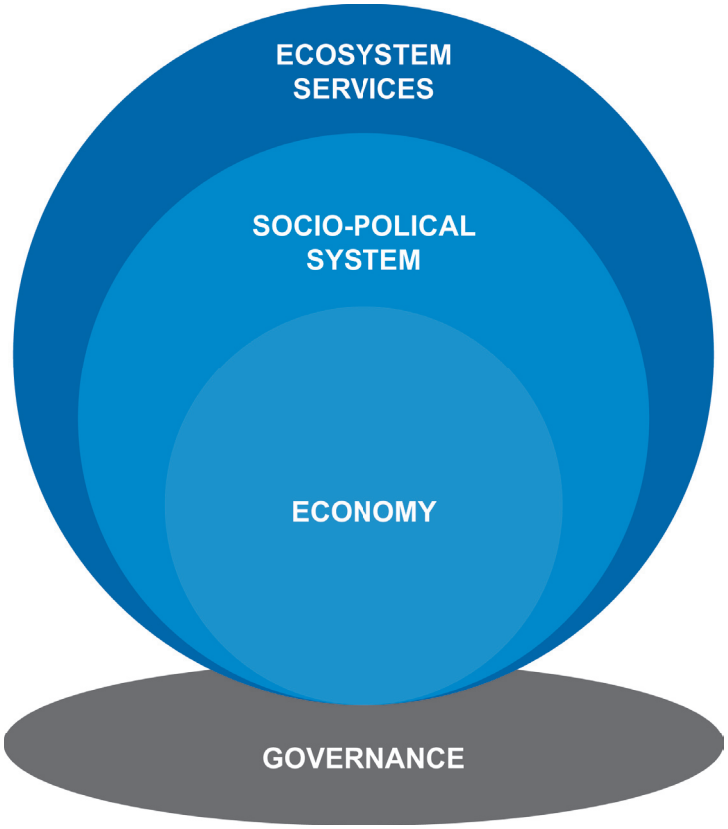

Figure 7. SD model of DEAT, as depicted in discussion documents around the NSSD[41].

The overall aim of the SDM Programme is to move from this unbalanced picture to a more inclusive one where social, economic, biophysical and governance actions move the sector towards balance. Defining and motivating the need for this move towards balance is a central theme of this document and provides detail on the existing conditions of the mining and minerals sector in SA.

3.3 The Strategic Framework for Sustainable Development in the Mining and Minerals sector.

The framework aims to achieve a vision for the mining sector to contribute optimally to sustainable development - this framework identifies and provides direction regarding, amongst others:

- Institutional structures (at Government and business sector level)
- Policy, planning and legal aspects
- Competency and capacity building
- Financial resources
- Research priorities
- Infrastructure and technology requirements
- Monitoring, evaluation and reporting

4 DEVELOPING THE SUSTAINABLE DEVELOPMENT STRATEGIC FRAMEWORK

4.1 Why a strategic framework?

The absence of a strategic framework could lead to a short term reactive focus on immediate problems without a clear, longer term, broad strategic response to sustainable development imperatives. While a focus on contemporary issues and problems is vital for the DME, there is a definite need to take a long-term strategic view of the sector in order to enhance its contribution to sustainable development.

Sustainable Development, in this context, 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 that will be adopted in developing the strategic framework will be to identify key obstacles to achieving the vision and to develop strategies and plans to overcome these obstacles.

The overarching aims of the strategic framework will be to ultimately, through scoping, research, pre-implementation and implementation project phases, give effect to the fulfilment of the commitments of the DME in terms of the JPOI.

4.2 Approach

The approach adopted in developing and proposing this strategy takes into consideration the various initiatives that are taking place, or have taken place, around sustainable development in the mining industry. Some of these are, the Mining, Minerals and Sustainable Development (MMSD) project, the International Council on Mining and Metals (ICMM) principles on sustainable development, Global Reporting Initiative (GRI), the African Mining Partnership (AMP) and the Global Mining Dialogue.

It moves from these as base and considers the drivers of development in the country to ensure alignment with them. Examples such as these are the Millennium Development Goals (MDGs) and the contribution to the 6% national growth target by 2014.

Critically, the approach adopted looks at some of the international milestones such as the JPOI of the WSSD which has set specific targets for the minerals industry to report on, as well as the NFSD.

4.2.1 Consultation

There was broad, high level consultation among a representative sample of stakeholders who constitute interested and affected parties within the minerals industry for example Government departments, the mining industry, non-Governmental organisations and financial institutions. This was undertaken largely to understand existing initiatives with regard to sustainable development within the specific industries and sub-sectors, as well as to understand constraints to achieving sustainable development, as perceived and experienced by active stakeholders in the minerals sector.

It must be stressed that this initial consultation formed a beginning for this discussion document and is very much still ongoing – the rounds of consultation and interviews that formed the initial stages of the development of this document were intended merely to initiate the process[ed].

A statutory Sustainable Development Committee has been established by the Minerals and Mining Development Board to, inter alia:

- Assist the Board in advising the Minister on the development and implementation of the SDM Programme;
- Positively engage all stakeholders as well as other interested and affected parties to participate in and contribute individually and collectively to the SDM Programme;
- Take specific actions, develop projects with deliverables and targets, and to integrate existing projects/ actions; and

- Facilitate effective reporting to the UNCSD and to place Sustainable Development high on the agenda.

4.2.2 Specialist studies

Some specialist studies were commissioned in order to apply specialist and focused knowledge and experience to understanding key Sustainable Development constraints in the South African minerals sector. These constraints are summarised in Appendix 1 of the document.

These studies of which some are still ongoing and recorded in this document as such, considered the minerals sector specific realms of economics, governance, sociology, beneficiation, minerals taxonomy amongst others, and the Sustainable Development constraints within each.

5 SUSTAINABLE DEVELOPMENT CONSTRAINTS IN THE SA MINING SECTOR

Understanding deficiencies: specialist studies behind the framework development

5.1 Introduction

As mentioned, a number of specialist studies were commissioned in order to understand key constraints in the sector. Some of these are still ongoing but summarised outputs from selected studies are provided. They are presented here to stimulate initial discussion, debate and formal feedback from stakeholders who may wish to add to them or suggest other specialist studies they feel may be required.

5.2 The Governance sphere: perspectives and capital deficiencies in the SA mining sector

Effective governance is essential to sustainable development as it provides a framework and a mechanism to develop open, accountable and participatory decision-making processes with regard to the allocation, use and distribution of mineral resources, and the wise management of the environment(s)[e] in which these resources occur. Governance refers then to the traditions, institutions and mechanisms by which authority in the sector is exercised at the levels of community, institutional, industry and Government.

Good governance, as defined in a range of legislation, for example the MPRDA, 2002, the Constitution, the King II Report and the Mining Charter, is considered to include the principles of:

- Accountability (for actions taken now and in the future).
- Social and corporate responsibility for people and communities. This implies that all stakeholders – Government, business and communities – have a role to play in managing environmental resources responsibly.
- Transparency in relation to information provided for decision-making and the decision-making process itself.
- Equity in relation to representation, as well as dealing with and addressing historical and future disadvantage.
- Fairness in terms of due process in relation to decision-making and implementation.
- Reporting in terms of monitoring compliance and progress in implementation.

The governance process provides a space to explore possible mechanisms and forms of engagement that can lead to balanced decisions about growth and development. An appropriate governance framework for sustainable development in the sector would focus on two key questions:

- “Who gets what, when and how?”

A range of regulatory frameworks focused on defining the terms for the distribution of voice, authority and resources, (NOTE: please insert the year I don’t know what it is) have been developed including the King II Governance Reporting framework, the Black Economic Empowerment Act, the MPRDA, 2002, the Public Finance Management Act (NOTE: please insert the year I don’t know what it is), and a number of other related processes such as employment equity and environmental legislation. All of these processes together provide a complex framework of actors, legislation and reporting requirements which to some extent determine and limit the ‘who gets what, when and how’ process. These can act as constraints and opportunities in terms of access to decision-making about sustainable development.

- “Who sets what rules, when and how?”

A focus on the setting of rules implies paying attention to process and power dynamics in implementation. In particular, it requires an understanding of the way in which people acquire the skills not only for social survival in different contexts, but for participation in the processes and practices which structure their living and working contexts. Often, effective participation is constrained by people’s (perceived or actual) location in social relationships (race, class or gender, for example) or an inability to access the “language” being used (communities at technical meetings, for example). These constraints tend to operate informally, are often unseen and follow the path of the most vocal or empowered stakeholder. A lack of clarity on who actually sets the rules and how, can lead to poor reporting lines, conflicting accountabilities, blame transfer, a lack of transparency in decision-making and usually a replication of power relations in favour of the privileged few.

Within this space, governance in terms of sustainable development requires more extended measures than those traditionally used. Access to the decision-making process is not sufficient to ensure that those speaking do so with sufficient authority to be heard, acknowledged and engaged in a meaningful way.

In practical terms, this would involve at different levels and in different processes increasing levels of decision-making access, participation and control for a range of stakeholders over the distribution of resources. This process is represented in the table below[f]:

Institutionalisation Realigned power relations reflected in regulatory frameworks and respect for all stakeholders as well as the balance between people, planet and prosperity.
Shared Control Greater influence from different stakeholder over the decision-making about the distribution of resources.
Participation Real participation in decision-making and planning through social mobilisation and civic engagement.
Articulation Readiness and ability of stakeholders to make their own decisions about the use of shared resources.

Table 2: Improving governance principles

Conditions for ensuring the development of a sustainable governance process would include:

- The management and distribution of communication and accountability between different stakeholders and processes.
- The maintenance of political stability, committed leadership and the absence of violence.
- Government effectiveness in terms of the capacity to monitor and ensure compliance.
- Regulatory quality and the ability of the industry to trade the costs of compliance with long-term sustainability.
- Rule of law and respect for the processes required to plan for and ensure sustainability.
- Control of corruption.

5.3 Women in Mining: constraints to sustainability[g]

While legislation compels mining companies to employ women at all levels in the sector, including senior positions, there are many barriers to women's participation in mining.

Women account for about 5% of employees in the formal mining sector and are concentrated mostly in clerical occupations. It is not clear how many women are among the estimated 20,000 small-scale and artisanal miners, but women seem to be clustered in artisanal mining.

Barriers to women in mining, which is a constraint to the long-term sustainability of the sector, have not been adequately researched but available information suggests that major issues include low levels of education, lack of technical education, unsupportive work cultures and organisations, lack of mentors and facilities for women in the work place, the physical requirements of mining and poor attention to ergonomics in mining.

Greater appreciation of the circumstances of women in mining, in particular barriers to entry and advancement, could improve opportunities for women in the sector, and assist in achieving the targets set out in legislation.

A research project on women in mining is being developed by the Centre for Sustainability in Mining and Industry at the University of the Witwatersrand – this exciting and innovative project will generate and add to our understanding of, in particular, sustainable development constraints in this arena.

5.4 Artisinal Mining: constraints to sustainability

Small-scale and artisanal mining involves minimal or no machinery and can be undertaken by individuals, families, groups in which some individuals are employees, and co-operatives. Many miners work informally outside of the legal sector.

Most often, poverty drives small-scale and artisanal mining. Mining may be seasonal or may supplement other economic activities such as subsistence agriculture. About 20,000 small-scale and artisanal miners are active in the country many of whom are women[36]. Six thousand[37] of the total population of small-scale and artisanal miners, mostly on the small-scale mining end of the spectrum, are estimated to operate within the legal framework for mining.

There are significant risks and social costs associated with small-scale and artisanal mining, including occupational health and safety risks, water and soil pollution, public health risks such as sanitation, and environmental degradation[38]. Nonetheless artisanal and small-scale mining can play a crucial role in poverty alleviation, by providing employment and stimulating local economies by creating demands for goods and services. Small-scale and artisanal mining is likely to continue for "as long as poverty makes them necessary"[39].

Not all small-scale and artisanal mining activities are economically viable. Care should be taken to ensure that only viable mining projects are supported. Where mining activities are not viable, other interventions are required from Government. These interventions could involve alternate livelihoods, mitigating the impacts of small-scale and artisanal mining, and social welfare. Although small-scale and artisanal mines may not be net contributors to sustainable development they could operate more consistently with sustainable development principles.

Greater appreciation of the circumstances of small-scale and artisanal miners could support further development of policy and intervention strategies. Lessons from the many initiatives, undertaken in the various provinces of the country to support small-scale miners, could form the basis for a more consistent and systemic approach to small-scale and artisanal mining. However there is a need for further quantitative surveys and information to inform policy development.

5.5 Occupational Health and Safety (OHS) sustainability challenges

Occupational health and safety risks affect people and the economy and can also affect the environment. These effects on people, the economy and the environment link the OHS and sustainable development agendas. Total costs of occupational health and safety incidents/accidents, as well as disease have been estimated at between 1 and 3 percent of GDP in various countries.

In most mining countries, the accident and ill-health experience of mining compares poorly to that of other economic sectors such as manufacturing, construction and rail, leading to the reputation of the mining as the most hazardous industrial sector. The safety performance of South African mines has improved over the years, but not at the same rate as that of other major mining countries such as Australia, Canada and the USA. In 2006, 190 miners died in mine accidents corresponding to a rate of 0.19 deaths per million hours worked. In contrast, the safety rate for Australian mines was 0.05 deaths per million hours worked in 2003 (corresponding to the deaths of 12 miners). The available data suggest there is a huge burden of occupational disease amongst miners past and present. Major concerns are silica exposure, noise induced hearing loss, TB and HIV/AIDS. In 2004, there were approximately 4000 cases of noise induced hearing loss and approximately R75 million was paid out in compensation.

The tripartite stakeholders (employers, Government and labour) in mining agreed to targets and milestones at the Mine Health and Safety Summit of 2003, which are aimed at addressing the major health and safety concerns in the sector.

The Mine Health and Safety Act, 1996 is enabling rather than prescriptive, and smaller companies may have difficulty in interpreting performance standards and in undertaking risk assessments. Their needs for more guidance should be addressed.

Both safety and health hazards, and therefore sector specific sustainable development constraints, can be addressed by correctly identifying and addressing the underlying and direct factors that contribute to occupational risks. A major shortcoming in the sector overall is the lack of competence associated with risk management. This can be addressed by sharing the best practices already developed in the sector, improving training, and strict adherence to risk management principles.

The targets and milestones initiative should be supported and monitored by stakeholders within and outside of the mining sector.

Specific interventions are required to ensure that contract workers, who are now employed in significant numbers in mining, enjoy the same level of OHS protection as permanent workers.

To reduce TB on mines, silica dust exposures and HIV infection must be controlled. A major intervention involving isoniazid preventative therapy (IPT) for TB is underway in the gold mining sector and has the potential to reduce the risk of TB among miners. Mining stakeholders can act to support the progress of this study.

5.6 Beneficiation: constraints to sustainability[h]

5.6.1 Broad Based Black Economic Empowerment: sustainability challenges

Research outputs pending.

5.7 The economic sphere: perspectives and capital deficiencies in the SA mining sector

The extraction of non-renewable resources appears to contradict the concept of sustainable development in two ways; firstly, the extraction of these resources implies that they will not be available to future generations, and secondly, external costs arising from mining activities adversely affect the environment, thereby indirectly affecting the quality of life of future generations. This report sub section is concerned largely with reviewing the mechanisms that are available for ensuring that resource depletion and environmental externalities are dealt with in such a way that mining activities become sustainable.

It will be seen that the problem of resource depletion does not necessarily imply that mining activities are unsustainable. Given the requirements of sustainable development discussed in this document, it is evident that mining may be sustainable as long as the rents associated with mining activities are captured and reinvested in alternative forms of capital. Externalities, which refer to costs that are borne by society as a result of mining activities, and that are not taken into account in the economic decision-making of the private mining company, can be dealt with by ensuring that these external costs are internalised. Thus, economic analysis reveals that mining activities need not contradict the notion of sustainable development. Economists can inform policy makers as to the appropriate policy tools that can be implemented for ensuring that mining activities are sustainable.

5.8 Beneficiation

The DME, in co-operation with Mintek, are best placed to develop appropriate policies, strategies and incentives. to promote beneficiation in SA and to set specific norms and standards in this regard. Furthermore they are equally well placed to understand the constraints and deficiencies in this particular area of the SA mining landscape due to their long and diverse experience, and as such detailed attention is not paid to this research area in this document. In future versions of this document, there will be information on beneficiation and the specific challenges it poses to Sustainable Development.

5.9 Mining and Financial Risk

Research outputs pending.

5.10 The biophysical sphere: perspectives and capital deficiencies in the SA mining sector

Biophysical environmental impacts are seldom considered in combination across the full minerals and mining cycle; i.e. consideration of all sectoral phases of activity. More typically, they are considered on a phase-by-phase basis and, as a consequence, the significance of cumulative impacts is rarely considered. Unforeseen impact thresholds may, therefore, become exceeded as multiple sets of sub-threshold sectoral impacts combine in an additive or more complex manner.

Exceeding thresholds applies to many aspects of the environment. For example, terrestrial ecosystem decay occurs as there is cumulative loss and fragmentation of ecosystem by sectoral activities, up to the point where system composition, structure and function collapse. In the case of freshwater resources, both ecological and equity thresholds i.e. the quantity and quality requirements of both sectoral and non-sectoral water users – including ecosystems, can become exceeded as sectoral developments progress from initial to later phases of activity. Key issues and exemplar biophysical constraints provided in Table 3.

Key issue	Biophysical environmental constraint
Decision-making based on full cost accounting – including costs to the affected biophysical environmental resource base	Sectoral decision-making focuses on maximization of short-term economic benefit without accounting for the full suite of biophysical environmental externality costs.
Unsustainable use of water resources (freshwater and marine)	Conflict exists between the sector's demand for water and other user demands (i.e. in terms of equity of resource allocation), which is aggravated by the sector's impact on water quality.
Direct ecosystem impacts attributable to the minerals and mining sector	Biotic and abiotic ecosystem services are compromised by sectoral activities as a result of ecosystem elimination and fragmentation and pollution effects.
Governance and division of institutional responsibilities	Poorly defined, or understood, boundaries of institutional responsibility and accountability reduce the effectiveness of decision-making by lead authorities, thereby compromising the country's/region's biophysical environmental resource base.
Atmospheric impacts attributable to the minerals and mining sector	Atmospheric emissions (e.g. greenhouse gases, metal vapours, dust) produced by, or in support of, the sector result in contamination of the air, water and soil media, which compromises the capacity of the biophysical environment to provide essential ecosystem services.
Legacy environmental impacts	Inadequate provision is made for rehabilitation of the biophysical environment affected by the minerals and mining sector

Table 3: Biophysical environmental constraints to the minerals and mining sector's optimal contribution to sustainable development

As a first step in directing the change in allegiance that is advocated, it is necessary to re-state the constraints in the form of *sustainability objectives* that are aligned with an enlightened interpretation of sustainable development. This re-statement is presented in Table 4 below.

Key issue	Conservative implications for SDs	Enlightened implications for SD
	Biophysical environmental constraints	Biophysical environmental sustainability objectives
Decision-making based on full cost accounting – including costs to the affected biophysical environmental resource base	Sectoral decision-making focuses on maximization of short-term economic benefit without accounting for the full suite of biophysical environmental externality costs.	Sectoral decisions take full cognizance of the strategic significance of the country's minerals resource base and the potential for beneficiation, and are informed by credible accounting of the full suite of biophysical environmental externality costs associated with such decisions.
Unsustainable use of water resources	Conflict exists between the sector's demand for water and other user demands (i.e. in terms of equity of resource allocation), which is aggravated by the sector's impact on water quality.	The sector uses water effectively and efficiently and has minimal impact on the country's/region's water resources.
Direct ecosystem impacts attributable to the minerals and mining sector	Biotic and abiotic ecosystem services are compromised by sectoral activities as a result of ecosystem elimination and fragmentation and pollution effects.	Sectoral impacts on ecosystems are understood and quantified, and effective controls are in place to manage (avoid, mitigate) these impacts within acceptable limits.
Governance and division of institutional responsibilities	Poorly defined, or understood, boundaries of institutional responsibility and accountability compromises effective decision-making by lead authorities, thereby compromising the country's/region's biophysical environmental resource base.	Institutional responsibilities are clear and broadly accepted governance structures guide cooperative and effective authority decision-making.
Atmospheric impacts attributable to the minerals and mining sector	Atmospheric emissions (e.g. greenhouse gases, metal vapours, dust) produced by, or in support of, the sector result in contamination of the air, water and soil media, which compromises the capacity of the biophysical environment to provide essential ecosystem services.	Atmospheric emissions produced by, or in support of, the sector's activities are within acceptable limits.
Legacy environmental impacts	Inadequate provision is made for rehabilitation of the biophysical environment affected by the minerals and mining sector	The sector conforms to environmental performance standards that eliminate the risk of legacy environmental impacts.

Table 4: Re-statement of biophysical environmental constraints as sustainability objectives aligned with an enlightened interpretation of sustainable development (SD) at the level of implementation

The biophysical environmental sustainability objectives listed above aim to support the minerals and mining sector's optimal contribution to sustainable development. However, there are a number of key determinants and controls (policies, institutional structures, environmental performance standards, etc.), which can be defined as elements of an enabling strategic framework that will influence the realisation of these objectives.

5.11 The Social Sphere: perspectives and capital deficiencies in the SA mining sector

There are a number of key areas falling within the social sphere where a large volume of information and interpretative assessment already exists. Much good work has already been done in these areas and, in some cases, this work needs to be augmented and updated. Examples of organisations which are active in this area and that are well qualified to provide information on constraints include Coaltech (having recently completed a study on women in mining); the Mine, Health and Safety Council and Centre for Sustainability in Mining and Industry, Wits University (expertise and information around Health, Safety and HIV), amongst others.

Later versions of this document will include information in this respect.

Stakeholder consultation and understanding constraints: initial findings

5.12 Introduction

In parallel with the specialist studies, appropriate stakeholder consultation was undertaken to understand and extract additional perspectives on what constitutes constraints in the sector. This section presents, in highly summarised format, the results of this exercise. Input from the circulation of this discussion document will add to this information to provide a more complete picture of constraints and SD challenges in the sector, and to inform the development of the SD strategy going forward.

5.13 Applying the Theory of Constraints (ToC) Methodology

5.13.1 Background to the ToC

Since its roots 20 years ago as a manufacturing scheduling method, the Theory of Constraints (ToC) methodology has now developed into a systems methodology that links elements of both soft and hard system methods. The development of "Theory of Constraints" is credited to Dr. Eliyahu M. Goldratt.[8-11]

The ToC has evolved over the past 20 years from a production scheduling technique to a systems methodology which is primarily concerned with managing change. Originally it was developed to devise a systematic approach to identifying what was preventing a company or organisation from achieving its goals. The approach was first used in a manufacturing environment and reported at a conference in 1980.

The theory of constraints methodology strives to ensure that any changes undertaken as part of an ongoing process of improvement will benefit the system as a whole, rather than just part of the system. At its most basic level, ToC provides a set of tools that guide the user to find answers to the basic questions relating to change, namely:

- What to change?
- What to change to?
- How to cause the change?

It is in this context that it has been used to understand the constraints facing the minerals sector in South Africa. As alluded in the introductory sections of the report, this process is not yet complete and is, out of necessity, open ended to continue to receive inputs around constraints in the mining sector. One of the principal purposes of this report is the solicitation of further and additional inputs relating to constraints in this sector

5.14 Stakeholder consultation

At the initiation of this project, a stakeholder consultation process was undertaken to identify constraints affecting the mining sector, the aim being to develop these into opportunities and research areas for improvement in an SD context (see ToC description above). A database was developed with approximately 350 individuals representing a broad range of stakeholders affecting and affected by the mining sector in South Africa. These ranged from artisinal/small-scale mining representatives through to mining companies, mining technical consultants and financial institutions who work in the industry. Government departments and regional DME consultation is ongoing.

While an electronic mail and Background Information Document (BID) was sent out to each individual on the contact database, it was not feasible to engage/interview each representative on their specific opinions regarding constraints in the sector. Selected representatives from appropriate sectors were targeted and interviewed. This was undertaken with a degree of subjectivity and based on perceived activity and experience within the sector. These interviews took the form of a discussion that centred on constraints facing the mining sector that rested within the specific individuals' area of competency. The results of these interviews were then recorded and collated, together with the inputs from the broader based electronic mail consultation.

Table 5 summarises the stakeholder groupings which were consulted during the course of the initial stakeholder consultation and the relevant extend of feedback.

No.	Stakeholder grouping/consultation type	Number of consultations
1	Direct emails (BID) soliciting input from the stakeholder database[i]	307[j]
2	Mining consultants (including environmental consultants specialising in the mining and energy sector)	8
3	Academic and research institutions	3
4	NGOs (incl. small-scale mining representatives and community organisations)	4
5	Industry (including representative bodies)	9
6	Financing institutions	4
7	Mining forums[k]	3
8	Government departments (non – DME)	5
9	Regional DME representatives	Pending

Table 5: Summary of the stakeholder consultation groupings to date

5.14.1 Summarised results of this consultation process

The outputs of this initial round of consultation are presented in Appendix 1. Again, it must be emphasised that this listing is entirely provisional and open ended, in the sense that the purpose of the circulation of this report is to add to this listing and correct perceived shortcomings. The constraints will then be used to further inform and develop research areas.

In terms of the research areas, it must be said that when the SDM Programme was initially developed, a number of research needs were highlighted as important and projects were developed around these[l] . These projects are listed in this report. The ideal would have been to have a multi-stakeholder agreed vision and objectives up front and work from there to develop research areas and projects around them.

This in no way denigrates the existing, completed and in progress projects as they all fit a definite and required SD constraint and research area. In addition, they all fit neatly in the proposed framework and vision articulated in this report.

6 FORMULATING THE VISION AND KEY STRATEGIC OBJECTIVES

6.1 The SDM Programme's vision for Sustainable Development in the minerals sector

The overarching objective or vision that has informed and directed the development of this framework is articulated as:

"By 2010, the SA minerals sector is contributing optimally to sustainable development. This contribution is further articulated into a number of key strategic objectives, goals and projects leading to desired outcomes . "Optimally" is defined as the most effective, efficient and favourable contribution by the minerals and mining sector to sustainable development, taking into account the social, economic, biophysical and governance opportunities and constraints facing the South African minerals and petroleum sector, as determined and endorsed either through stakeholder consensus or the majority stakeholder view".

Figure 6 provides a conceptual view on the definition of and relationship between the objectives, goals and outcome subsets of the vision and the positioning of the projects described in Sections 7 to 12 of this report.

6.2 Unlocking the vision

The mineral wealth of SA - and the transformation of that wealth - has contributed to a positive and enviable economic climate in the country, a climate to be maintained with due deference and attention to the positive industry and human drivers, as well as the many negative legacy outcomes associated with mining. With this firmly in mind "the vision", articulated above, should aim to ensure that SA is a leader in sustainable development and the extraction, use, beneficiation, management and regulation of mineral resources through expertise in minerals regulation and policy administration, resource science and technology, social empowerment and economics. It should further improve mineral resource competitiveness, specifically in terms of creating access and opportunities for Historically Disadvantaged Individuals (HDI's) and formulate and implement principles, practices and knowledge bases for sustainable development of mineral resources for the health, safety, environmental protection and prosperity of all South Africans.

A number of key strategic objectives have been developed out of this vision, the provisional listing of seven; forms a basis for debate and consideration. For each strategic objective, a number of goals have been derived, then outcomes and project definitions to ensure the attainment of the vision and aim of this Sustainable Development initiative.

Actions/projects are critically linked to monitoring and implementation timetables. Responsibilities and resources, including financial, are also assigned. Monitoring and implementation matrices and timetables have not been attached to this report and will follow in subsequent versions.

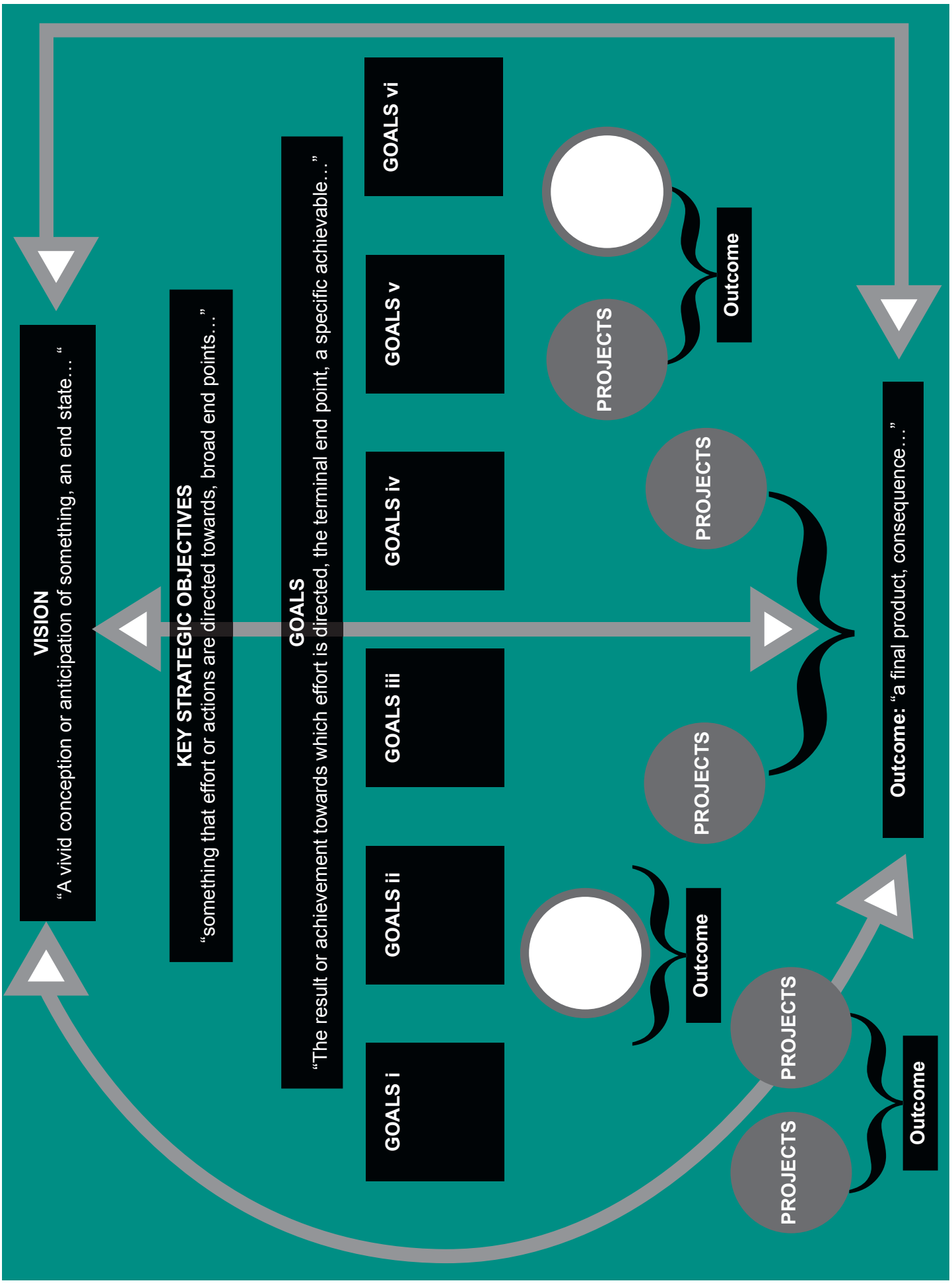

Figure 8: A diagram representing the typology, definition and flow of the vision-objectives-goals-projects and outcome methodology underpinning the development of this strategic framework (the purpose of this diagram is largely conceptual and not all detail has been included)

6.3 Key Strategic Objectives (KSO's) of the SDM Programme

1. That the South African Mining sector's Sustainable Development strategy is effectively communicated, linked to national and international strategy and that it reflects the priorities, values, principles and aspirations of the country. Furthermore, that Government has the required capacity to ensure outcomes and that cooperative governance is realised.

2. To ensure that sustainable development strategy and policy transcends, and is valid beyond, the Government of the day and reporting requirements

3. That community empowerment, environmental and social rights are central tenets of the sector and that all those operating within the minerals sector earn a social license to do so.

4. That Sustainable Development strategy facilitates a shift to sustainable end states, including a progression from resource to knowledge-based economies and a consideration of life cycle and cumulative aspects within the sector.

5. That Sustainable Development strategy promotes economic diversification in existing and future mining industries and that the effects of globalisation are fully considered.

6. That Sustainable Development Policy acknowledges the continued role of industry in socio-economic empowerment and creates policy conditions to ensure its continuation.

7. That value extraction from the minerals sector of South Africa benefits vulnerable groups and value addition from the mineral resources of South Africa are maximised locally.

6.3.1 SDM Strategic Framework Goals

A number of goals have been developed out of the objectives listed above and these are proposed below. Each goal is in turn tied to a specific outcome relating to SD improvement, after which research and development projects are associated with these goals. Sections 7 through 12 hold up each of these goals separately and present the outcomes and research projects associated with them.

In the descriptions provided in these sections, individual projects are discussed and elaborated on with a view to understanding how each of them link to the overall vision and specifically the objectives and goals under which they have been grouped. While their link may be implicit given their placing in a specific section, in some cases more detail is provided in the text.

Strategic Framework Goals

I. Enable South Africans to make balanced and informed decisions regarding the extraction of mineral resources and their utilisation.

II. Enable South Africa to measure and assess progress towards sustainable development objectives in the minerals sector.

III. Minimise the impacts and risks of mineral resource development, use and management on the health and safety of South Africans.

IV. Optimise environmental management in the sector.

V. Develop and improve tools and mechanisms to ensure improved compliance in the sector and to improve regulatory capacity.

VI. Poverty alleviation and mineral resource development.

VII South Africa will have a beneficiation strategy that promotes growth and competitiveness towards closing the gap between the first and second economies.

In later versions of this report, once stakeholder comment and input has been assessed and collated and the SDM Programme enjoys general consensus, more comprehensive assessment, review and comparison of projects, as they link to the vision, objectives and goals will take place.

6.3.2 A SDM Roadmap going forward

As elaborated on in earlier sections of this report, one of the principle objectives of this document is to solicit input and guidance from industry and stakeholders around not only goals and objectives for the SDM Programme, but also to collect detail on existing SD projects and initiatives which fit under existing (or new) goals and outcomes described in the following sections.

Figure 9 provides a road map indicating the origins and derivative processes followed to date in developing this SD framework and also points industry and stakeholders in the direction of additional information requirements. Annexure I provides a template/information request for details and information around SD projects which are contributing to the SD and the attainment a SD vision of South Africa.

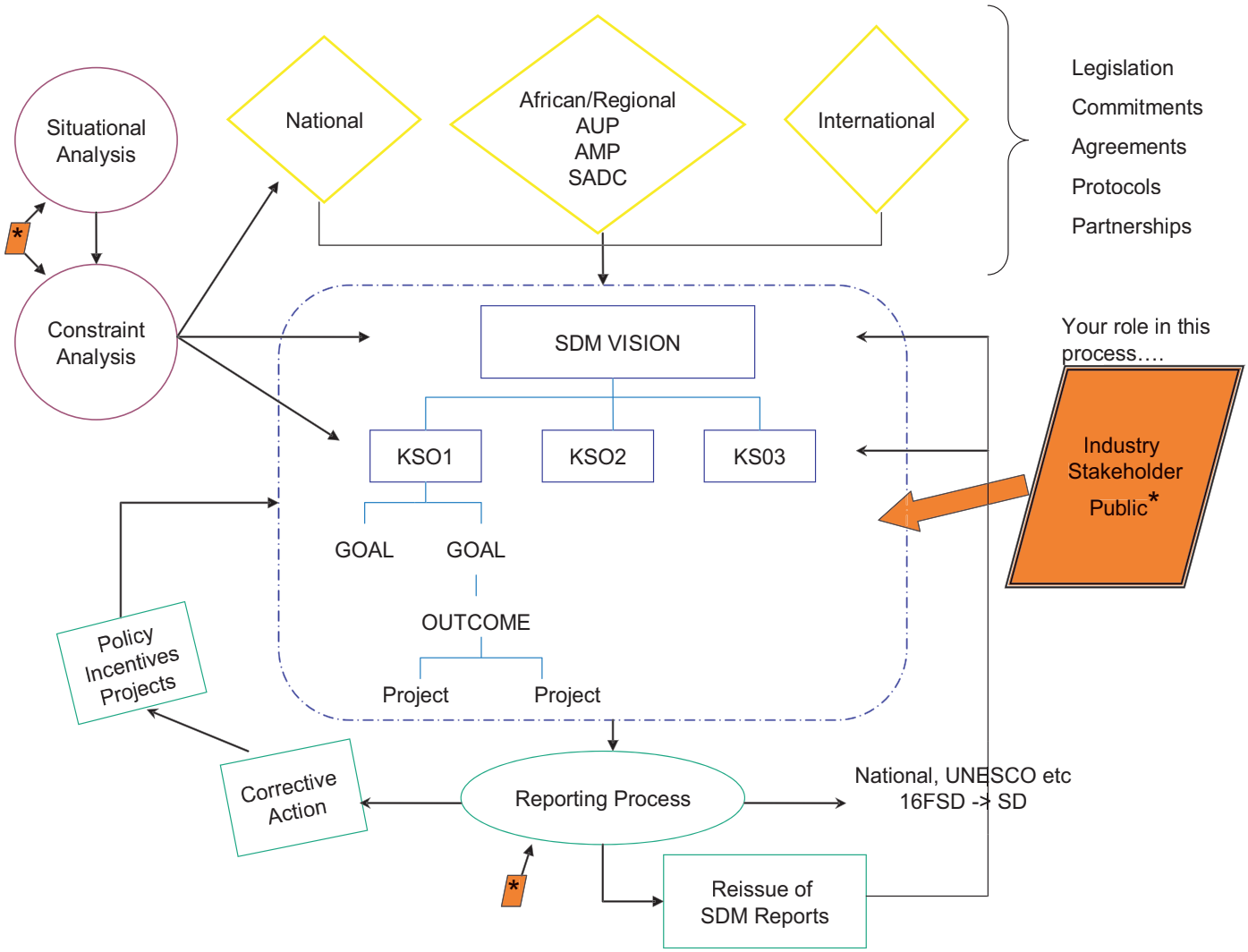

Figure 9. Roadmap for taking this proposed strategy forward, including industry/stakeholder roles, reporting points and feedback loops.

7 GOAL: TO ENABLE SOUTH AFRICANS TO MAKE BALANCED AND INFORMED DECISIONS REGARDING THE EXTRACTION OF MINERAL RESOURCES AND THEIR UTILISATION

Outcome:

To create an easily accessible and integrated knowledge base of the mineral resources of South Africa and the economic, environmental and social dimensions of their extraction and use across the value chain.

7.1 SDM Projects (for in detail information and industry and stakeholder initiatives see Appendix B):

This project aims to address aspects of the governance and biophysical spheres of sustainable development and is closely linked to all Key Strategic Objectives (KSO's), but more specifically KSO III and VII.

7.1.1 Creation of a database for derelict and ownerless mines and ranking system

The South African mining industry is more than a century old, and has many mines that were improperly closed and abandoned. Some of these mines are ownerless, and for Government and industry to move towards and attain sustainability, the need for understanding the location, status and impact of these old operations is strategically important.

The project to create a database for derelict and ownerless mines has, as its objective, to understand the number of mines that are abandoned and ownerless and their impact on the environment, economy and the social spheres. Understanding these impacts will therefore assist with developing a proper strategy and an implementation plan for correct closure and rehabilitation of these mines. This strategy is called the "National Strategy for Rehabilitation of Derelict and Ownerless Mines".

Linking the database for derelict and ownerless mines and the South African Mineral Deposits Database (SAMINDABA) currently hosted by the Council for Geoscience (CGS), a complete picture of the South African mineral deposits, their locations (now and previously) is being created, which would help in moving the industry towards an understanding of challenges that need to be resolved in order for it to contribute optimally to sustainable development. The knowledge created from this database will also be essential to the understanding needed for new areas of explorations and rate of extractions.

7.1.2 Development of Regional Mining and Closure Strategies

In order for South Africans to benefit from the mining of its mineral resources, it is important that mining should be conducted within a regional development context. The regional development context implies that mining activity in any region or area should be integrated into the developmental plans of that region as agreed by various regional stakeholders. This approach will prevent the phenomena currently known as "ghost towns" when mines close, and will serve to move mining closer to sustainable development. It is important to also understand that the developmental issues do not only imply economic contribution of the mine to the region but also equally important is the prevention of irreparable environmental and social damage to the region.

This project aims to identify and assess existing mining problems caused by past and current poor mining practices and to develop technologies and methodologies to mitigate critical problem areas within a region. The project also places an emphasis on the socio-economic development contribution and the overall economic and biophysical impact of the industry on the region. Critically important for the project is the understanding of the economic, social and biophysical capacity of the region, in order to ensure that mineral extraction is conducted within the limits of the region. The project also ensures protection of sites of importance such as heritage sites, sacred sites and protection of endangered species.

The information generated from these strategies will assist in decision-making regarding the granting of permission or licences for new mining areas, evaluation of Environmental Impact Assessments (EIA) and Environmental Management Plans (EMP), social and labour plans, closure and rehabilitation plans, in order to ensure that they are conducted in a manner that contributes to the sustainability of the region.

7.1.3 Mineral Value Addition and Utilisation

In order for the South African minerals industry to be sustainable, a concerted effort in ensuring value addition of the extracted minerals within the country is needed.

Mintek, the most appropriate organisation to work in this area, is currently finalising strategic policy and projects which will be directed towards mineral value addition and utilisation.

More information will be provided in later revisions of this report.

7.2 Industry and Stakeholder Projects (for in detail information and industry and stakeholder initiatives see Appendix B):

8 GOAL: TO ENABLE SOUTH AFRICA TO MEASURE AND ASSESS PROGRESS TOWARDS SD OBJECTIVES IN THE MINERALS SECTOR

Outcome:

To develop, according to international best practice, a set of indicators that will consider and measure progress towards sustainability objectives and targets, as articulated in the National Strategic Framework for SD in the Minerals Sector. These indicators will have as definitive reference point existing international indicator and reporting initiatives such as the GRI.

8.1 SDM Projects:

8.1.1 Development of SD Indicators (For in detail information and industry and stakeholder initiatives see Appendix C)

The SDM Programme is a long-term, multi-stakeholder programme that has a number of bold and ambitious objectives at its core. Progress towards these must be effectively measured. At the same time, the DME recognises the worldwide trend towards reporting on sustainability and its role in regulating industry with respect to reporting sustainability performance. The development of the SD indicators project has three primary objectives:

(i) To measure and report on progress within the SDM Programme and the country as a whole in relation to moving the mining sector towards improved sustainability;

(ii) To build onto existing reporting guidelines such as the recently launched third generation GRI guidelines to ensure the sector as a whole and the industries that operate within it report adequately and in terms of best international practice; and

(iii) To become one of the first public agencies to adopt, refine (w.r.t developing uniquely South African indicators) and implement reporting according to established frameworks such as the GRI.

The intention of this project is not to “reinvent the wheel”. The project team responsible for the development of the SD indicators recognise the wealth of indicator related information that exists and the established guidelines that have been implemented, as well as the resources committed by industry in particular to meeting these. The project aims to understand how measuring the unique South African SD environment might require refinement of existing indicator information and from that, develop a set for authority and utility use. The project will work closely with stakeholders and experts in the field with respect to the development of SD indicators.

A “priciples - criteria” report has been drafted and is indicated in this report. This forms the first phase of the indicators project and is intended to solicit input from stakeholders. We actively encourage interested parties and stakeholders to read, assess and comment to inform and develop an indicator set.

8.2 Industry and Stakeholder Projects

9 GOAL: MINIMIZING THE IMPACTS AND RISKS OF MINERAL RESOURCE DEVELOPMENT, USE AND MANAGEMENT ON THE HEALTH AND SAFETY OF SOUTH AFRICANS

OUTCOME:

Safeguarding South Africans from health and safety hazards and the risks associated with mineral resource extraction development, use and mine closure.

9.1 SDM Projects (For in detail information and industry and stakeholder initiatives see Appendix D)

9.1.1 Development of Regional Mining and Closure strategies

One of the outcomes of the regional closure strategies is the assessment of the impact of mining to health and safety of regions.

Institutions such as the Mine Health and Safety Council and the National Institute for Occupational Health (NIOH) are extremely competent in understanding and providing details of the impact of mining to health and safety especially in the area of occupational health and safety. Interaction between the SDM initiative and these institutions is vital to ensure that within a region all aspects that contribute to sustainability are addressed.

However the programme will cover issues that may have adverse impact on both occupational and especially public health, issues such as addressing acid mine drainage, understanding and managing the decant of contaminated water from mines, impact of slimes dams to health and safety and providing alternative methods of construction, location and maintenance and rehabilitation of slimes dams. Other indirect impacts of mining to health and safety will be further addressed by understanding the impact of mining on the biophysical environment.

9.2 Industry and Stakeholder Projects (For in detail information see Appendix D)

10 GOAL: OPTIMISING ENVIRONMENTAL MANAGEMENT IN THE SA MINERALS SECTOR

OUTCOME:

The mining sector ensures the protection and safeguarding of biodiversity in areas affected by mining and that the rehabilitation and remediation of affected land is undertaken to appropriate levels. Also it will ensure protection of the environment affected by mining, using best international practice management interventions with respect to the current situation, specific focus being on closure and post closure aspects.

10.1 SDM Projects (for in detail information and industry and stakeholder initiatives see Appendix E)

Strengthening environmental enforcement projects include (see Section 11):

- Site Assistant Inspection Tool (SIAT), GIS and Decision Support Systems (DSS).
- Best Practice guideline development for, as an example, on and offshore mining.
- Witwatersrand Water Ingress Project (WWIP).

10.2 Industry and Stakeholder Projects (for in detail information see Appendix E)

11 GOAL: TO DEVELOP AND IMPROVE TOOLS AND MECHANISMS TO ENSURE IMPROVED COMPLIANCE IN THE SECTOR AND TO IMPROVE REGULATORY CAPACITY

OUTCOME

A mining industry that has good governance at all levels with improved compliance to sustainable development parameters, with all relevant monitoring and evaluation systems.

11.1 SDM Projects

11.1.1 Development of a Decision Support System (DSS)

Success or failure of any sustainable development initiative hinges heavily on governance as outlined in the early part of this report. The development of the Decision Support System(DSS) aims at enabling Government and other parties to monitor the compliance of the mining industry with the sustainable development framework for mines. The DSS will support data capture, storage, retrieval and reporting per mine, mine sector and region. The system will be able to be interfaced with the National Mining and Promotion System (NMPS) of the DME. Data and information from all the projects within the programme will be consolidated through the DSS to ensure that it is available when decisions need to be taken.

Crucial decisions would include among others:

- Evaluations of applications for mining and/or prospecting
- Evaluations of the EMPs
- Assessing social and labour plans
- Closure plans.

The regional mining and closure strategies project provides the bulk of the information needed to assist in decision-making.

11.1.2 Development of Mine Environmental Management Series Guidelines

Three guidelines are being developed; the purpose of which is to assist the meaningful implementation of the environmental requirements of the MPRDA, 2002 through clear guidance on DME requirements and environmental standards. As such, these guidelines are aimed at applicants for rights engaging in prospecting, mining, and related activities that fall under the ambit of the MPRDA, 2002. The guidelines include:

- Mine Closure Guidelines
- Monitoring and Performance Assessment Guideline
- Scoping, EIA and EMP Guideline

The guidelines are aimed at ensuring that there is full transparency pertaining to the requirements of the MPRDA, 2002 and as such all relevant stakeholders have reference guides to all activities, from mining to post rehabilitation monitoring.

11.1.3 Development of a Site Inspection Assistant Tool (SIAT)

The purpose of this tool is to develop a system to facilitate mine audits by DME and the transfer of this data to the DSS. This system is called the Site Inspection Assistance Tool (SIAT). The SIAT assists the officer by automation of data capturing during the inspection process with a hand held PDA device. The tool will ensure that the environmental officer is able to verify the information contained in the EMPs. It will be able to also provide a template according to which the inspections can be conducted. It will ultimately replace the instruction book and cellular phone of the environmental officer with one tool with added features such as GPS and camera. A key component of this area is in assisting the DME when taking decisions especially those decisions that are related to socio-economic and environmental impacts.

11.2 Industry and Stakeholder Projects - See Appendix F

Pending

12 GOAL: POVERTY ALLEVIATION AND MINERAL RESOURCE DEVELOPMENT

OUTCOME

To ensure that mineral resource development contributes optimally to poverty alleviation in South Africa.

12.1 SDM Projects

12.1.1 Training and Skills development

This project involved the recruitment and training of young graduates in the fields of sustainable development (through the three science councils involved in the SDM Programme. Active training and development took place principally by sending the interns on short courses to develop technical and business skills and the assignment of mentors for the duration of their stay at the council concerned. Practical project exposure and skills development for women in areas where mining takes place is a principle focus of this project.

12.2 Industry and Stakeholder Projects - See Appendix G

13 GOAL: SOUTH AFRICA WILL HAVE A BENEFICIATION STRATEGY THAT PROMOTES GROWTH AND COMPETITIVENESS TOWARDS CLOSING THE GAP BETWEEN THE FIRST AND SECOND ECONOMIES

Outcome

Measurable, commodity specific benefication strategies are developed

13.1 SDM Projects (see Appendix H for in detail project information)

Information pending (Mintek).

13.2 Industry and Stakeholder Projects

Information pending.

14 CONCLUDING REMARKS

This document summarises a proposed framework and platform for the South African Minerals Sector to pursue Sustainable Development. Critically, the DME as national custodian cannot do this alone and requires input from as diverse a range of industry and stakeholder representatives as possible. This is the first report of a number of envisaged revisions as the South African Minerals Sector Sustainable Development strategy develops and grows. This report (later variations of it) will be used to both present the South African Sustainable Development vision, goals and achievements to the UN as well as report on progress towards attaining them.

This report forms an important first step in summarising the progress of the Sustainable Development through Mining (SDM) Programme of the DME has made to date, and to sound a call for discussion based on further work that may be required in the future. It has articulated a vision and a number of goals for the programme and has illustrated the partial and ongoing attainment of these through real projects. Furthermore, it has illustrated links and synergies between sectoral and non-sectoral initiatives (including, the National Framework for Sustainable Development of DEAT) and has provided a solid platform for further linkages as this programme continues to unfold in the future.

Further abbreviated and differentially targeted versions of this report will be circulated in the coming months to consolidate the effort to solicit input and buy-in from different stakeholder groups. The critical intent of this report is to update and refine the principles and projects comprising the SDM Programme on an ongoing, iterative basis - as stakeholder input is received.

The project team behind this report and specifically the DME are confident that you the reader will heed this call and request for participation. We look forward to your engagement in the coming months.

“Comments until the end of the year 2007 are invited and encouraged.”

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16 APPENDIX A

Table A1 (red = high; orange = medium; yellow = low)

No.	CONSTRAINT/OBSTACLE	FREQ. OF ISSUE BEING RAISED
	Governance	
1	Lack of a clear definition and common understanding of sustainable development (SD)	
2	Lack of co-operation and commitment to SD, particularly w.r.t coordination and implementation of SD, on both a inter and intra Government level	
3	Capacity (HR) and competency (training) inadequacies within Government with respect to SD	
4	Lack of a neutral Government department to oversee SD in SA	
5	No common framework for SD	
6	Absence of formal indicators for Government to measure attainment of SD in sector	
7	Inability to make/request/understand trade-offs with respect to SD	
8	Low levels of inclusive decision-making within Government hamper SD	
9	Complex regulatory/governance structures confers images of non transparency, and susceptibility to corruption	
10	Technical, inaccessible nature of the sector requires high level of understanding for the lay person to engage with Government on SD.	
11	Perceptions of preferential treatment of larger industries by Government in terms of allowing industry to “get away with” poor SD practice and reporting	
12	Low salaries offered by Government generally for junior and mid level posts attract often attract inexperienced personnel who are unable to function at the level they are supposed to	
13	Non-optimal staff retention strategies and career planning within the DME hamper the consistent and long-term implementation of SD in the authority	
	Economic	
13	Incomplete cost accounting in the sector does not take into account externalities adequately	
14	Currency fluctuations (particularly negative trends) lead to poor SD, particularly within the economic and social realms	
15	The formal mining economy does not integrate the small-scale/informal/artisinal sector adequately	
16	Regulatory compliance requirements are onerous and increase the cost of business, there by impacting negatively on SD	
	Legal	
17	Time frames, as stipulated in the MPRD, are inadequate for sustainable functioning of the consulting sector (exacerbated by DME response times)	
18	Lack of prescriptive guidance with respect to new legislation (for instance the aide memoir is too generic a template)	
19	Conversion time for converting old mining licenses to mining rights is seriously impacting on the sustainability of the industry	
20	Lack of performance assessments being carried out, impacting negatively on the sustainability of operating mines particularly	
21	Perceptions that the DME is highly politicised and that this is leading to ineffectiveness of MPRD as a mechanism for SD.	
	Biophysical	
22	Incomplete accounting of full suite of biophysical externality costs (due to the sector focusing on short term economic benefits)	
23	Water use vs. demand conflicts, coupled with the sectors impact on water quality, comprise ecosystem services and negatively affect SD – generally poor water management	
24	Atmospheric emissions are strongly associated with the sector and are produced by, and in support of, the sector’s activities. Large scale potential and realised inter linked contamination is compromising SD.	
25	Generally poor rehabilitation provision in the sector (by industry) has a negative impact on SD	
	Social	
27	The stakeholder engagement process (for instance the requirement for social and labour plans) is viewed as negative by many mines – this hampers SD	
28	Mining charter was developed primarily in response to inputs from large industry – not suitably representative of the small-scale sector and the diverse social groupings it supports	
	Mining financial	
29	Existing banking financing requirements do not support small-scale mining, requirements onerous and very difficult to meet.	
30	Rehabilitation guarantee requirements are unrealistic for many small-scale mining	

31	Delays in the conversions of mining rights are severely hampering sustainability of industry	
32	Non finalisation of royalty aspects and has problematic for assessment and granting of finance (projected cash flow assessment)	
33	Opinion shapers (e.g CEOs) are generally not educated w.r.t sustainable development	
34	BBE and mining: perception that BBE companies are allowed to disregard SD issues because of economic imperatives.	
35	Risk associated with mining sustainability is poorly understood and is likely to have important relationship to SD	
	Occupational health and safety (incl. HIV issues)	
	Pending	
	Women in mining and general transformation, including BBE	
	Pending	
	OTHER CONSTRAINT AREAS	
	Pending	

17 APPENDIX B

Project level detail: "Creating a database of derelict and ownerless mines"

17.1.1.1 The project in detail: linking SDM vision, objectives and goals

As a result of its long history of mining, South Africa has numerous derelict mine sites (IIED, 2002)[34]. Where such derelict sites are found to be ownerless, in that legal review has failed to trace the last owner or the owner has ceased to exist[33], the responsibility for rehabilitation is assumed by the South African Government. The large number of such sites, combined with the expense of rehabilitation, means that the public sector will realistically never have sufficient resources to rehabilitate all of the derelict and ownerless mines in South Africa. It was therefore important to develop a process that would ensure that remediation efforts are focused on rehabilitating sites that pose the greatest risk and that will yield the greatest benefits in the most cost-effective manner. Thus, some method of ranking sites in order of priority was required.

In setting priorities for action that will result in the rehabilitation of derelict mines, regulatory authorities needed to consider a broad range of specific technical, scientific and other criteria on which to base decisions[35]. The goal is to develop a co-ordinated, systematic approach to assess and prioritise risks associated with derelict mine sites and to establish priorities for mitigation on the basis of human health and environmental risks, as well as other key criteria. This will ultimately result in the rehabilitation of derelict mine sites in the most efficient and effective manner possible. This philosophy was adopted as the basis on which to develop a prioritisation system for the derelict mine sites in South Africa.

The scope of the project encompassed a wide variety of requirements to successfully meet the intended goal. A ranking system had to be developed that not only dealt with the full spectrum of commodities mined in South Africa, which includes some 200 different mineral types, but also catered for all types of mining operations and covered the entire geographic region of the country. It was clear from the outset that the only feasible approach would be to develop a tiered/ hierarchical system which could be designed to permit relatively rapid and cost effective initial implementation at a desktop level and produce a coarse first tier ranking of sites that could be used as the basis for undertaking a more detailed second tier ranking focused on the highest priority sites identified during the desktop assessment.

Apart from having to accommodate a multi-level structure, the ranking system faced additional challenges. These included the variable nature (qualitative vs. quantitative) of the different types of inputs considered, the differing levels of availability of data for different areas/sites and a need to be rigorous, transparent and defendable. A review of existing ranking systems, both locally and internationally, revealed that none successfully addressed all of these issues. The decision was therefore made to develop a custom designed system for prioritising the derelict mine sites of South Africa, rather than adopt or import an existing system.

This system has been called Mine Rank. Additional information is available on www.sdmining.co.za/

17.1.1.2 Specific Terms of Reference

- To undertake a background desk top study of ranking systems used in the rest of the world;
- To solicit and consider input from specialist fields to develop a system suitable for the South African situation; and
- To develop a ranking system that can be used for prioritisation of derelict and ownerless mines.

17.1.1.3 Deliverable

To produce a ranking/prioritisation system that can be used to establish which mines need prioritization for rehabilitation. This will allow evaluation and comparison of derelict mining sites in terms of the risk they pose to human and ecological health and safety, their impact on the surrounding environment, their potential for deterioration, and associated rehabilitation cost efficiency. This all will enable decision regarding rehabilitation and closure priorities to be made on a scientific basis.

17.1.2 Rehabilitating derelict and ownerless mines: work to date

Within 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.

The rehabilitation of derelict and ownerless mines are undertaken in accordance with a priority index.

17.1.2.1 Overall Aim and Linkages - Summary

To develop a ranking/prioritisation system for derelict and ownerless mines in South Africa, this system is primarily based on a modified Risk Assessment process, where sites are assigned to Rehabilitation Urgency classes based on the combination of human and ecological Risk and Impact levels associated with the site. Additional considerations include an assessment of the potential remediation benefit in terms of cost and commensurate gain as well as public perception.

18 APPENDIX C

Indicators

The attached “principles - criteria report” forms an initial output of this project. It is included in this document for stakeholders/interested party review and comment.

19 APPENDIX D

Health and Safety

Outputs pending - see later revisions of this report.

20 APPENDIX E

20.1 Optimising Environmental management: SDM projects

20.1.1 Database for derelict and ownerless mines

As elaborated earlier, 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.

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.

Based on the current environmental state, these are used to inform future development options for the study area, as well as commissioning specialist studies. 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. 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 in excess of five thousand ownerless and derelict mines have been identified throughout the country. Some 3000 smaller shafts, trenches and operations have also been identified which are being verified.

Maps and graphics related to this aspect are available on www.sdmining.co.za/

20.1.2 Regional Mine Closure Strategies

This is a highly summarised version of a discussion on regional mine closure strategies in the context of the SDM Programme. The full text can be accessed at www.sdmining.co.za/

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 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 and 2007/2008 financial years.

According to the report the Development of Appropriate Procedures towards and after Closure of Underground Gold Mines from a Water Management Perspective[40] 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.

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"[40]. 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.

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.

Regional mine closure strategies 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 Carletonville in the west of South Africa).

The consequences of a single operation's decision, taken in isolation from its neighbouring 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 casual 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 mine employees and the broader public who 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 regions for the development of such Regional Mine Closure Strategies are grouped as follows. A graphic depicting the gold mining areas of South Africa is available at www.sdmining.co.za

- The Witwatersrand Gold Fields
- Free State Gold Fields
- KOSH gold mining area
- The Far West Rand Gold Fields
- West Rand Basin
- Central Basin
- Eastern Basin
- Evander Gold Fields
- The Rietfontein Gold Fields
- The South Rand Gold Fields
- The Venterskroon Gold Fields

Gold outside the Witwatersrand Gold Fields:

- Pilgrim 's Rest Gold Fields
- Barberton Gold Fields
- Kwazulu-Natal (Klipwal)
- The Giyani Greenstone Belt
- The Murchison Greenstone Belt
- The Amalia-Kraaipan Gold Fields
- The Pietersburg Gold Fields
- Other isolated gold mines e.g. Millwood

20.1.2.1 The difference between a mine closure strategy and a mine closure plan

A Regional Mine Closure strategy is 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 the Interested and Affected Parties (IandAP's) that fall within that region. Due to the urgent need to develop these strategies, it is proposed at this point in time 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 IandAPs 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" (e.g. mine shafts, ventilation shafts, headgears, adits, waste rock dumps, sand dumps and slimes dams).
- 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 socio-economic profile of the region must be established and consultations must be held with local Government officials in order to develop an integrated socio-economic profile and to define the profile and the 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 a thorough 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 on developing a clear understanding of the following water related issues:
    - Construct a 3-dimensional model of all the underground workings for all the mines in the region.
    - Define all confirmed and potential hydraulic interconnections between mines.
    - Define the anticipated remaining life for each mine and shaft.
    - Develop a regional-scale groundwater model capable of quantifying major water ingress points, rates of flooding and inter-mine flow rates.
    - Undertake regional-scale geochemical sampling programmes and screening-level kinetic geochemical modelling.
    - 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.
    - Establish surface and groundwater impacts associated with surface features (e.g. waste rock dumps, tailings dams, pollution control dams and metallurgical plant footprints).
    - With reference to the applicable Catchment Management Plan, establish the acceptable volumes and contaminant loads and negotiate and agree with authorities.
    - Apportion acceptable load to each mine within region and reach agreement between mines and authorities.
    - Develop and implement regional monitoring programmes to provide data to validate the basis of the regional mine closure strategy.

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

- 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 suitability 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 different Government departments, institutions, mining companies and consultants in this region. Unnecessary duplication of work should be avoided. In this regard, the DME is finalizing various Memoranda of Understanding with other Government departments (national, provincial, local) and 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.

20.1.2.2 Witwatersrand Water Ingress Project (WWIP)

The DME initiated the 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.

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 of decant water.
- Where mining can still continue in the short to medium term (5-10 years), 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 and need to be established for the other basins.
- 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.

Water management options which developed out of the assessment presented above are summarised at www.sdmining.co.za/

20.1.2.3 Rehabilitation of unsafe shafts and holes within the Witwatersrand gold mining area

The DME initiated a project in 2005 to close and rehabilitate the unsafe shafts and holings within the Witwatersrand area. The Council for Geoscience were appointed to assist DME in this task. About 600 mine openings, shafts or holings 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 and door-to-door visits were undertaken in co-operation with the Ward Councillors of the relevant local authorities.

More information is available at www.sdmining.co.za/

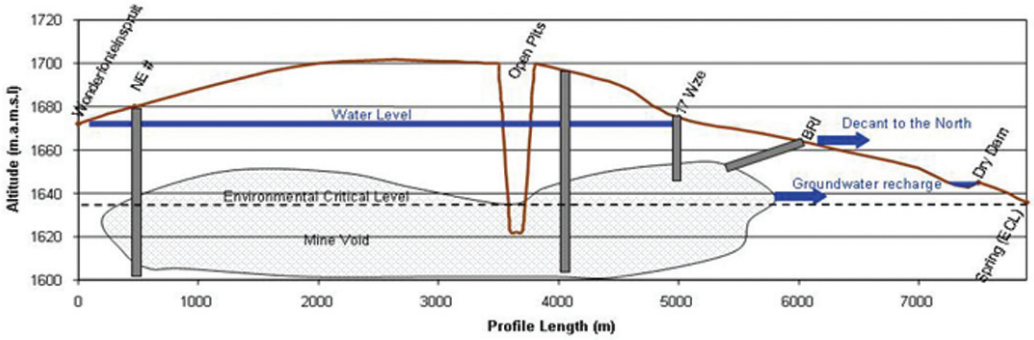

Figure 10: A north-south section across the Western Basin, showing the current water level, the ECL, the shaft positions and the decant and recharge areas.

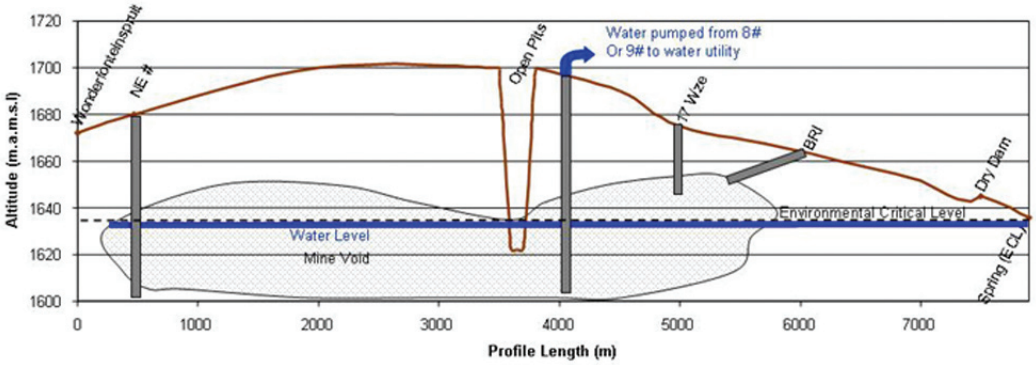

Figure 11: A north-south section across the Western Basin, showing the effect that pumping water to lower the void water level to around or below the ECL would have.

20.2 Optimising Environmental management: Industry and Stakeholder projects

Outputs pending

21 APPENDIX F

GOAL: TO DEVELOP AND IMPROVE TOOLS AND MECHANISMS TO ENSURE IMPROVED COMPLIANCE IN THE SECTOR AND TO IMPROVE REGULATORY CAPACITY

21.1 Improved compliace in the sector and regulatory capacity: SDM projects

See section 11.1

21.2 Improved compliance in the sector and regulatory capacity: Industry and Stakeholder projects

Outputs pending

22 APPENDIX G

POVERTY ALLEVIATION AND MINERAL RESOURCE DEVELOPMENT

22.1: SDM projects

See section 12 (additional inputs in later revisons of this report).

22.2: Industry and Stakeholder projects

Outputs pending

23 APPENDIX H

South Africa will have a beneficiation strategy that promotes growth and competitiveness towards closing the gap between the first and second economies

23.1: SDM projects

Outputs pending (later report revisions)

23.2: Industry and Stakeholder projects

Outputs pending

24 APPENDIX I - SUGGESTED TEMPLATE/INFORMATION REQUIREMENTS FOR SD PROJECT LISTING

SUGGESTED TEMPLATE/INFORMATION REQUIREMENTS FOR SD PROJECT LISTING

1. Name of Organisation/Stakeholder.....
2. Sector (e.g coal, NGO, academia etc).....
3. Title of SD project/initaive.....
4. Goal and Outcome description*.....
   .....
5. Description of Project (including how it contributes to sustainable development) .....
   .....
6. Start and completion dates.....
7. Key deliverables.....
8. Contact person and details for further information.....
9. Pictures/photographs.....

the dme

Department:
Minerals and Energy
REPUBLIC OF SOUTH AFRICA

SUSTAINABLE DEVELOPMENT THROUGH MINING INITIATIVE:

DEVELOPMENT OF INDICATORS FOR MONITORING THE CONTRIBUTION OF THE SOUTH AFRICAN MINING AND MINERALS SECTOR TO SUSTAINABLE DEVELOPMENT

DISCUSSION DOCUMENT

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BACKGROUND: PRELIMINARY PRINCIPLES AND CRITERIA (P&C)

Introduction

Following the World Summit on Sustainable Development in 2002, the Department of Minerals and Energy (DME) initiated a programme to develop a strategic framework for sustainable development. The vision, embodied in this framework, is that: "by 2010, the South African minerals and petroleum sector is able to contribute optimally to sustainable development." The CSIR, Mintek and Council for Geoscience have been tasked by the DME to assist in developing a strategy, and an associated monitoring system, to achieve this vision.

It is well recognised that progress toward sustainable development requires increased information for decision-making. One way in which this can be translated in practice, is through the use of indicators. The regular measurement of indicators allows one to track trends through time, providing information for more informed choices, as well as allowing for continuous improvement.

The aim of this monitoring system is therefore to report on the contribution to sustainable development made by the South African mining and minerals sector, to aid relevant decision makers and track progress over time.

The monitoring system for the mining and minerals sector will be structured using the Principles-Criteria-Indicators (PCI) approach. The identified indicators can be used as a tool for performance assessment and improvements of the sector, including:

- Providing feedback on changes in the system and performance of policy;
- Improving the chances of successful adaptation;
- Ensuring movement towards a common goal;
- Improving implementation; and
- Increasing accountability.

Indicators can serve a number of purposes and those particularly relevant to the mining and minerals sector include:

- Encouraging the sector to monitor and evaluate their activities against the requirements of sustainable development.
- Providing the DME with information to report on its own performance and that of the sector.
- Providing measures to assist the sector in adopting sustainable business practices.

Short description of the preliminary Principles and Criteria development process

The monitoring system for the mining and minerals sector has been structured using the Principles-Criteria-Indicators-Standards (PCIS) framework (Box 1). This indicator development framework is goal-based and therefore guided by the vision for sustainable development in the mining sector. Within a goal-based framework, indicators are developed and organised according to how they relate to various goals (Principles) and objectives (Criteria) that have been identified to achieve the articulated vision. With time, standards can be designed for each indicator to benchmark progress towards achieving each Principle. All of the above involves communication and interaction with stakeholders in the sector.

Box 1: PCIS Definitions

Principles - Broad goal statements for achieving sustainable development in mining.

A principle is a fundamental truth or law as the basis for reasoning/decision-making.

Criteria - The management objectives that are set in order to achieve the broad goals set out in the principles.

Indicators - Tools for measuring whether the management objectives set in the criteria are being achieved.

Standards - Minimum levels set as targets to which management should strive in an attempt to improve sustainability.

Further detail on the process and value of the PCIS approach, as well as a description of the indicator development project as a whole, is found in the Final Indicators Report (2005/6). The following sections document the steps taken to date in forming the preliminary set of Principles and Criteria to be pilot tested in preparation for the full PCI development process in 2007/8.

Step 1: Confirmation of the purpose of the indicator set

It is well recognised that progress toward sustainable development requires increased information for decision-making. The regular measurement of indicators allows one to track trends through time, providing information for more informed choices, as well as allowing for continuous improvement. The aim of this monitoring system is therefore to report on the contribution to sustainable development made by the South African mining and minerals sector, to aid relevant decision-makers and track progress over time.

Figure 1 illustrates how the goal based indicator set functions within the larger initiative for sustainable development in mining. As with the vision, the PCI set is informed by key literature and thinking on Sustainable Development (SD) in terms of how best the sector can practically participate in achieving the sustainability goals of society. The monitoring results will track progress made by the sector in reaching its vision, and will highlight areas where improvement is needed if the ultimate goal is to be met. Thus, while the monitoring framework is one of several projects within the sustainable development in mining initiative, it should function as an independent feedback tool for assessing continual improvement in the sector as a whole.

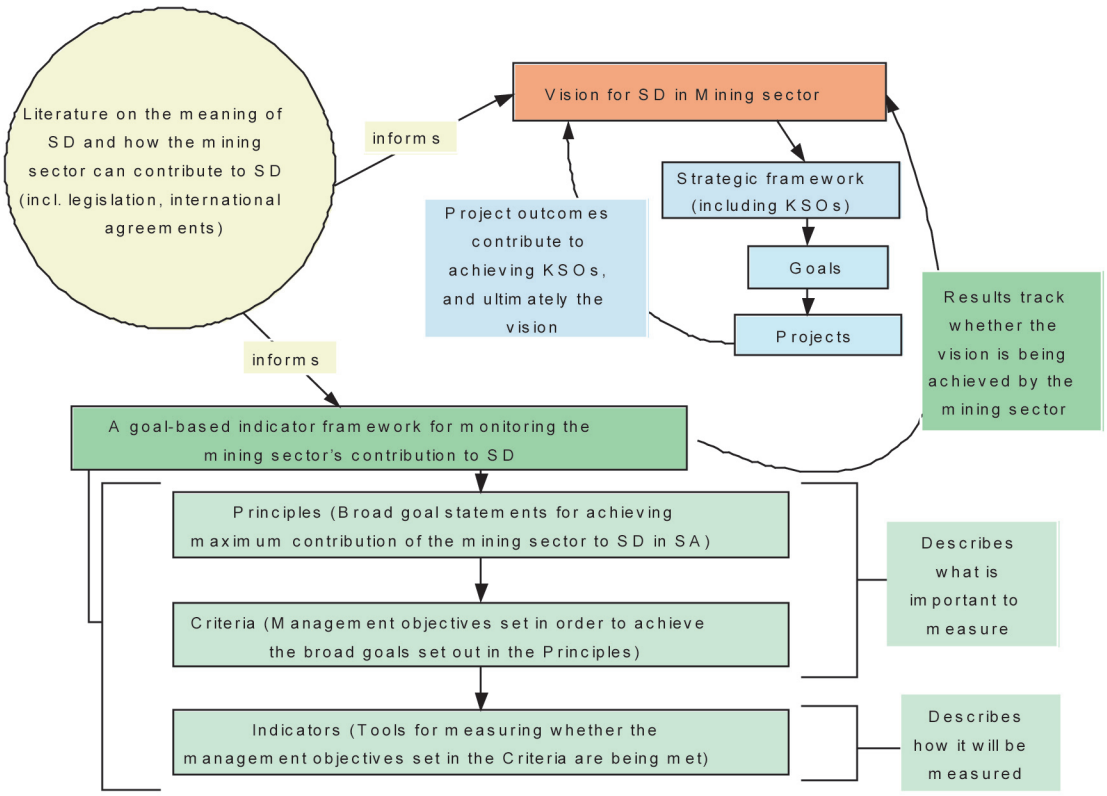

Figure 1: The purpose of the PCI set and its links with other projects in the SDM initiative

Step 2: Review of international and local SD literature

In order to unpack the vision for sustainable development in mining into tangible or practical components to be measured, a series of influential documents were reviewed. These included:

- The Johannesburg Plan of Implementation (JPOI) from the World Summit on Sustainable Development (WSSD),
- The Mining, Minerals and Sustainable Development (MMSD) reports,
- The National Strategy for Sustainable Development (NSSD),
- The International Council on Mining and Metals (ICMM) principles,
- The World Bank Group Extractive Industries Review (EIR),
- The Global Reporting Initiative (GRI) Mining and Metals Sector Supplement,
- Azapagic, A. 2004. Developing a framework for sustainable development indicators for the mining and minerals industry. Journal of Cleaner Production 12, 639-662, and
- Limpitlaw, D. Sustainable Development review of the mining and minerals sector. Centre for Sustainability in Mining and Industry, School of Mining Engineering, University of the Witwatersrand.

Key factors/variables describing the fundamentals of sustainable development were pulled from these documents and captured as tables of what was termed “SD elements” for the purpose of this process. As per convention, these elements were initially grouped into four pillars or themes of sustainable development: social development, economic development, environmental protection and governance. This division allowed the team to check the overall comprehensiveness and balance of the SD elements that were to form the basis for the Principle and Criteria developed.

Step 3: Development of draft Principles using SD elements

Using the tables of SD elements, the team worked individually to group similar elements together to form fewer, more strategic issue categories. These groups cut across the initial four pillars/themes in many cases, as the links between different elements became clearer. The team then brainstormed together, sharing their interpretation of how the broader categories should be focused. Once a fair degree of consensus was gained, the team debated the most suitable phrasing for each broad category, and in doing so formulated the first draft list of Principles.

Step 4: Review and refine draft Principles and assign draft Criteria under each

At a second workshop, the team checked first draft list of Principles against key national legislation (namely the National Environmental Management Act (NEMA, NOTE: please insert the year I don't know what it is) and the Minerals and Petroleum Resources Development Act (MPRDA, 2002) as well as the draft Sustainable Development through Mining (SDM) Programme, to ensure their compatibility and relevance. The team reviewed the outcomes of the last workshop and discussed possible improvements to the wording of each Principle and reworked these as necessary. While involved with this, the team referred back to the tables detailing the SD elements as defined by key literature, and determined under which Principle each factor/variable best fits. The second draft therefore contained a refined set of Principles along with an initial breakdown of the factors/variables to be achieved in order to meet these goals.

Step 5: Review and refine draft Principles and Criteria

A third workshop focused primarily on forming appropriately phrased Criteria under each Principle. The factors/variables assigned under each at the previous meeting were discussed and re-worded as management objectives. Once all the criteria under a Principle were complete, the team again revisited the phrasing and focus of the Principle to ensure its suitability. In two cases the team debated whether one Principle should be combined with another Principle, but in both cases it was decided that combining these would increase the risk of losing important details when monitoring. The team then wrote up short explanations for each Principle, and this third draft is the list presented along with this document.

PRELIMINARY PRINCIPLES AND CRITERIA (P&C) SET

Principle 1: *Maximise the contribution of the mining sector to national economic development (links with MPRDA, 2002: 2f)*

Brief Explanation: As a key sector in the South African economy, mining and minerals must play a role in maximising the potential opportunities and benefits of its activities. Technology development, trade and investment should assist South Africa in achieving sustainable growth.

Criteria: (Management objectives set out to achieve the broad goal outlined in the principle)

- Relevant technology is developed, and inter- and intra-sectoral transfer is ensured
- SMME development
- Compliance with appropriate trade and investment policies and regulations
- Ensure diversity and competitiveness of the sector
- Facilitate local (South African) beneficiation
- Direct financial contribution from mining is optimised

Principle 2: *Contribute to the socio-economic development of South Africa (links with MPRDA, 2002: 2i)*

Brief Explanation: As the activities of the sector are situated within, or impact on, local communities, industries in the sector have a responsibility to practically promote and uplift community livelihoods. In order to work towards sustainable, resilient communities both social and economic needs must be addressed. These include creating opportunities for community economic initiatives based on local entrepreneurship, infrastructure development, skills development and resources, as a basis for local economic development and competitiveness prior to and after mine closure.

Criteria (Management objectives set out to achieve the broad goal outlined in the principle)

- Ensure skills development and transfer
    - Multi-skilling
- Prioritise job creation and employment
- Contribute towards community development
    - Working towards poverty-related targets
    - Improve/build basic infrastructure
    - Improved access to appropriate energy sources (reduce use of low grade wood and coal)
    - Improving food security and natural resource-based livelihoods
    - Contribute towards community education and capacity building e.g. computer rooms, libraries
    - Access to land – tenure, ownership
    - Access to sanitation
    - Access to safe drinking water

- Facilitate the development of sense of place and belonging
    - Community at large
    - Employee integration into community

Principle 3: *Expand opportunities for historically disadvantaged persons (links with MPRDA, 2002: 2d; 100)*

Brief Explanation: The mining sector must continue to contribute to the correction of historical imbalances caused by the legacy of apartheid. The empowerment of historically disadvantaged South Africans in the mining sector presents opportunities for the sector to eliminate discrimination against individuals.

Criteria (Management objectives set out to achieve the broad goal outlined in the principle)

- Ensure the mining sector is aligned with applicable national guidelines that address historically disadvantaged persons (related to race, gender and where applicable, age).

Principle 4: Develop and strengthen health and safety programmes and initiatives (links with MPRDA, 2002: 2h)

Brief Explanation: Improved health care and mitigation of health and safety risks are key areas in which the mining sector can reinforce the development of human capital and contribute towards sustainable practice. Therefore, it is essential that there is continued implementation and improvement of measures to safeguard people from health and safety hazards and the risks associated with mineral resource extraction, use and mine closure. Furthermore, a strengthened contribution by the mining sector to general health care and health education initiatives can significantly assist in reducing the burden that inadequate community health care has on human capital development.

Criteria (Management objectives set out to achieve the broad goal outlined in the principle)

- Continued and enhanced involvement in reducing the spread, and increasing the treatment, of communicable diseases (e.g. HIV; TB);
- Seek and ensure continual improvement of occupational health and safety conditions (e.g. Reduce work-related injuries and health impacts);
- Seek and ensure continual improvement of all aspects of operations that could have a significant impact on communities neighbouring mining sector facilities (e.g. Reduce health risks associated with emissions from operational facilities and safety risks associated closed/decommissioned facilities).

Principle 5: *Promote responsible practice*

Brief Explanation: In addition to compliance with applicable laws and regulations the mining sector must continue to develop and maintain commitment to voluntary codes and initiatives aimed at responsible and ethical business practices, sustainable development principles and the implementation of sound systems for corporate governance.

Criteria (Management objectives set out to achieve the broad goal outlined in the principle)

- Comply and exceed the requirements of the applicable laws and regulations;
- Adopt and promote basic human rights and best practice business ethics;
- Implement policies and practice that promote environmental and social performance and accountability;
- Facilitate and encourage the use of appropriate tools for responsible and integrated material management

throughout the mining sector value chain (e.g. life cycle analysis, risk assessment);

- Promote and encourage the use of the 'precautionary principle' when assessing the risks associated with mining sector developments and that of existing operations.

Principle 6: *Contribute to achieving sustainable (efficient) patterns of production and consumption*

Brief description: Industries in the mining and minerals sector should participate in reducing their impact by adopting efficient processes and applying best available technologies. Measures must be taken to manage every activity undertaken in a sound manner, and with a focus on continuous improvement.

Criteria (Management objectives set out to achieve the broad goal outlined in the principle)

- Application of cleaner production principles
- Waste minimisation, increased waste re-use and recycling
- Sound management of chemicals and hazardous wastes
- Energy efficiency, use of renewable/alternative energy sources
- Green procurement
- Water management
- Air management
- Land management

Principle 7: *Reduce impact on life support systems and the ecological services they provide*

Brief Explanation: The nature of mining is such that the biophysical environment is impacted upon, resulting in various forms of environmental degradation. These impacts need to be reduced and mitigated sufficiently to ensure that ecological services continue to function optimally in order to support life. The mining sector must show commitment to the long-term well-being and resilience of the biophysical environment.

Criteria (Management objectives that are set out to achieve broad goals outlined in the principle)

- Manage and mitigate affected natural capital / ecosystems;
- Contribute towards biodiversity conservation;
- Ensure effective and appropriate land rehabilitation;
- Ensure comprehensive disaster management and planning.

Principle 8: *Develop effective partnerships and communication networks to promote good governance*

Brief Explanation: A key element in achieving the maximum contribution to SD by the mining sector is creating and maintaining strong links with other role-players and organisations that are working towards similar goals. In order to be effective, these networks require a culture of democracy, honesty and respect, so that optimal co-operation can take place to reach mutually beneficial outcomes in the short, medium and long-term. These outcomes will be greater than those a single role-player could have achieved working alone.

Criteria (Management objectives that are set out to achieve broad goals outlined in the principle)

- Ensure transparency and availability of information;
- Maintain democratic (open, fair and inclusive) communication channels;
- Implement co-operative governance;
    - o Partnerships between and within Government departments, industry, civil society
- Participate and encourage multi-stakeholder, integrated (local level) planning.

Principle 9: *Ensure the ability of Government (i.e. the DME) to fulfil its mandate*

Brief description: The DME is central in driving the process of ensuring an optimal contribution to SD by the mining and minerals sector. The capacity of Government to fulfil three distinct elements, namely rule making, rule application and rule adjudication becomes critically important in achieving any goals established.

Criteria (Management objectives that are set out to achieve broad goals outlined in the principle)

- Strengthen and maintain regulatory capacity
- Ensure a common vision for the contribution of mining sector to Sustainable Development in South Africa
- Ensuring capacity/resources for meeting reporting commitments
- Strengthen capacity to enforce legislation/regulations and address impacts throughout the life cycle
- Promote accountability

QUESTIONS TO GUIDE STAKEHOLDER FEEDBACK

1. Read through each Principle (broad goal) and answer the following:

    a) Do the Principles address the key aspects needed to ensure the mining and minerals sector is contributing to Sustainable Development?

    b) Bearing in mind that a maximum of 10 Principles is preferred, are any additional Principles necessary to complete this set?

    c) Are there any Principles that should not be included in this set? Please elaborate.

    d) Should any of the Principles be re-worded to better reflect the key aspects required for contributing to Sustainable Development by the sector?

2. Read through the Criteria (objectives) and answer the following:

    a) If all the Criteria under each Principle were achieved, would this ensure that the Principle concerned would also be achieved (i.e. are the Criteria under each Principle complete and appropriate)?

    b) Are there any Criteria that should not be included in this set? Please elaborate.

    c) Should any of the Criteria be re-worded to better reflect the key objectives required for contributing to Sustainable Development by the sector?

3. Are there any other comments regarding the preliminary Principles and Criteria set?