

**THE ENVIRONMENTAL IMPACTS OF
SMALL-SCALE MINING IN NAMIBIA: A
CASE STUDY OF UIS SMALL SCALE MINING
SITE - ERONGO REGION**

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Abstract

The Namibian mining sector is characterised by large, medium and small-scale mining sector. However, this study is based on the small-scale mining. Namibia is rich in mineral deposits including diamonds, uranium, gold, base metals, industrial minerals and different types of precious stones and dimension stones. It is against this background that mining has been the backbone of the Namibian economy. Small-scale mining plays a major role in alleviating poverty and supplements the income of those involved. The Minerals (Prospecting and Mining) Act of 1992 and the Minerals Policy (2003) make provision for the registration of different types of mineral licence and mining claims. Thus, this study was undertaken within the context of the legislative framework, the Minerals Policy in particular, as it also provides the basis for the registration of mining claims.

Despite the fact that small-scale mining contributes to the economic development of Namibia, it has also contributed to environmental impacts of which the greater ones have impacted other sectors of the economy. According to Speisers (2000), environmental impacts of small scale mining are divided into primary and secondary impacts, primary impacts being those that results from mining activities itself and secondary being those that results from the spin offs of the mining activity such as littering, and impacts on flora. Even with the provisions for the registration of mining claims in place, illegal mining operations are found. Thus, the paper explored the extent to which the minerals policy has been effective

in Namibia with emphasis to environmental protection during small-scale mining.

In light of the above, the objectives of this study were, to: determine the environmental implications of small-scale mining projects; review the provisions of the mineral policy on small-scale mining with emphasis on environmental protection; assess the effectiveness of the implementing mechanisms; and finally provide recommendations for effective implementation of the policy with emphasis on environmental protection during small-scale mining operations.

The methods of data collection used in the study were both qualitative and quantitative in nature. The study was characterised by field visits and secondary data analysis. Quantitative analysis was used to achieve the first and the third objectives, which are, to determine the environmental implications of small-scale mining projects, and to assess the effectiveness of the implementing mechanisms. Random selection was employed in conducting the research; this was, to enable all the miners to stand a chance of being interviewed. In addition to the miners, structured interviews were conducted with resourceful persons, two from Ministry of Mines and Energy, and two from Ministry of Environment and Tourism; one environmental consultant was also interviewed.

Secondary data analysis often referred to, as documentary studies was also undertaken. It was undertaken to supplement the primary data. This focussed on the review of the provisions of the Minerals Policy on small-scale mining as it affects the environmental protection. This was done using qualitative analysis which was used to achieve the second objective.

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DEDICATION

This paper is dedicated to Betha, a young boy who needs to take his study seriously and realize the potentials that lies in education. May the almighty save him from the agony of dependency.

DECLARATIONS

This is a thesis submitted jointly to the University of Namibia and the Institute of Social Studies in The Netherlands, in partial fulfilment of the requirements of the degree of Master of Arts in Public Policy and Administration. The entire thesis is the original work of the author and it has not been submitted to any other institution of higher learning for a degree or for whatever reasons.

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Date

ACRONYMS

CBO	Community Based Organisation
CDI	Centre of Development of Industries
DEA	Directorate of Environmental Affairs
DPWM	Directorate of Parks and Wildlife Management
EEISU	Environmental Education and Information System Unit
EIA	Environmental impact Assessment
EMP	Environmental Management Plan
ER	Environmental report
LOC	Letter of Conditions
MDG	Millennium Development Goals
MAWF	Ministry of Agriculture Water and Forestry
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
MRRDD	Mineral Rights & Development Division
N\$	Namibian Dollar
NMC	National Monuments Council
NEPL	Non Exclusive Prospecting Licence
NGO	Non-Governmental Organizations
NDP II	Second National Development Programmes
NSMAC	Namibia Small Scale Miners Association Centre
SMU	Small Miners of Uis
SADC	Southern African Development Community
SIDA	Swedish International Development Cooperation Agency
UNEP	United Nations Environment Programme
US\$	United States of America Dollar
WSSD	World Summit on Sustainable Development

CHAPTER 1: Introduction

1.1 Background

Namibia's mining sector is characterised by large, medium and small-scale mining, which this study focuses on. Depending on the licence held, onshore and offshore mining might be practised.

Mining has been the backbone of the Namibian economy, as Namibia is rich with a wealth of different types of mineral deposits including but not limited to diamonds, uranium, gold, base metals, industrial minerals, different types of precious stones and dimension stones. Minerals Act No. 33. 1992, Government Gazette of the Republic of Namibia 199 makes provision for different types of mineral licence that covers both small-scale and medium to larger scale mining activities.

Further to that, the Minerals Policy of Namibia (2003) makes provision for the registration of mining claims, which involves the pegging of mining claims by Namibian nationals and Namibian registered companies only. Namibia, being with different types of mineral resources, its small-scale mining sector provides possibilities for economic growth through creating employment for many people who are directly or indirectly

involved in the mining activities. Equally important, it can also supplement income and alleviate poverty. The Minerals Policy (2003) defines the small-scale mining as the 'one man operation digging for gemstones'. Given the Namibian population of about 1.8 million people according to 2001 population and housing census, its size of about 824 000 km² and its wealth of different types of mineral deposits, the country and its people stands a good chance to benefit from this wealth generating sector if it is managed sustainably.

The Government of the Republic of Namibia recognises the mining sectors' contribution to the economy, however the impacts mining operations have on the environment has been a matter of serious concern. According to the Minerals Policy (2003), mining operations are one of the largest contributors to environmental degradation. It is from these concerns that regulatory institutions have been formulated, to ensure environmental protection as enshrined in the Constitution¹. Soon after independence, the Ministry of Environment and Tourism (MET) was established: to maintain and rehabilitate essential ecological and life support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all

¹ Constitution of the Republic of Namibia

Namibians, both in the present and future as well as the international community (Ministry of Environment and Tourism. 2005:1).

According to the Minerals Policy of Namibia (2003) “before any mining operations commence, licence holders are required to enter into an environmental contract with MET and The Ministry of Mines and Energy (MME) on behalf of the Government of the Republic of Namibia”. The idea behind this is to ensure monitoring over the mining activities by MME and MET and compliance to the terms and conditions of environmental contract by the small-scale miners.

The Namibia Foundation (1998), states that various tantalite deposits are known to occur in the vicinity of Uis, these deposits are however too small to attract the attention of big mining companies. Equally important, these can be easily extracted using low technology and are easily marketable. Thus, the study focussed on the impacts of the Minerals Policy with emphasis on environmental protection during small-scale mining operations in the Uis mining sites. The policy impact in this context refers to change in behaviour of small-scale miners towards environmental protection as provided for in the Minerals Policy.

1. 2. Problem statement

Despite the fact that small-scale mining contributes to the Namibian economy, it has also contributed to major environmental impacts of which the major ones might have effects on other sectors of the economy such as tourism industry, which mostly depend on the beauty and uniqueness of the country. However, according to the Minerals Policy (2003), larger mining companies have the capacity to enforce environmental policies and practices as opposed to small-scale mining.

The environmental impacts of small-scale mining are divided into primary and secondary impacts, (Speiser. 2000). Primary impacts are those resulting from the mining activity itself, such as water consumption, scars on the landscape, destruction of flora and fauna, and damage to the social environment. Secondary impacts are those that result from spin offs of the mining activity such as littering, family members flow with small livestock which become an additional impact on flora, the migration of people from other regions to the mining vicinity, money raised from mining but not spent in the region. The study examined if these impacts do

really take place and the effectiveness of the minerals policy in addressing them.

The Ministry of Mines and Energy (MME) in collaboration with MET has a coordinating role of issuing mining claims and entering into environmental contracts with small-scale miners. MME issues mining claims whilst MET handles environmental contracts. The policy prescription assigning the issuing of environmental contracts by two ministries is likely to cause problems, while mining without an environmental contract may result in inadequate rehabilitation which is characterised by possible long term environmental damage. The Minerals Policy (2003), states that the inertia in processing environmental contract delays the commencement of mining operations. It is against this scenario, that the enabling policy was examined by this study.

The environmental contract enables small-scale miners to take part in regulated mining activities as provided for in the Minerals Policy. The registration of mining claims and environmental contracts are only done in Windhoek. Due to this centralisation, the miners have to bear transport costs to Windhoek and on top of that, they have to pay for the registration of mining claims. A major problem by some small scale miners is their

illegal status, which is often as a result of lack of transport or the financial means to travel to Windhoek to be able to obtain the relevant licences (Speiser. (2000) : 13.

The Mineral Policy (2003) states that, small- scale miners who have environmental contract needs to be monitored by MET and MME in order to ensure compliance with the set conditions. According to Speiser (2000) the shortage of mining inspectors and funds restricts the proper enforcement of environmental contracts, as a result small scale miners do not meet their contractual obligations and no measures have been taken by either MET or MME. Further to that, she claimed that, the monitoring is not effective due to inadequate coordination between MET and MME in relation to environmental legislation, these are some of the claims that were examined by this study.

Despite the fact that provision is made for the registration of mining claims, illegal mining operations are found. About eighty percent of the small-scale mining activities are done illegally, Minerals Policy (2003): 14. “So far the problem of illegal mining has not been sufficiently addressed by the Namibian Government”. Speiser. 2000:18. This paper attempted to look at this claim. The study also examined the extent to

which the Minerals Policy has been effective in Namibia with reference to environmental protection during small-scale mining.

1. 3. Objectives of the study

The objectives of this study were, to:

1. Determine the environmental implications of small-scale mining projects;
2. Review the provisions of the minerals policy on small-scale mining with emphasis on environmental protection;
3. Assess the effectiveness of the implementing mechanisms;
4. Provide recommendations for effective implementation of the policy with emphasis on environmental protection during small-scale mining.

1. 4. Hypothesis

The ineffective implementation of the Minerals Policy contributed greatly to the environmental impacts of the small-scale mining.

1. 5. Study methodology

The method that was used in this study was both qualitative and quantitative in nature. The study was based on both field visit and secondary data analysis.

1.5.1 Quantitative analysis

1.5.1.1 Population and sample

According to MME records, about 200 mining claims have been registered for the Uis mining area. In addition to that it is estimated that 100 – 200 people are mining there illegally. The population covered reflected such population for example gender, age, and ethnic group.

1.5.1.2 Sampling method

Quantitative sampling was used to sample the population listed and analyse the responses. Ten (10) miners who were selected through random selection were interviewed. Two miners were women and eight were men. Based on the information obtained simple statistical tools were used. Random selection was employed to receive the information. The reason behind random selection was to enable every small-scale miner to stand a chance of being interviewed. The random sampling method could also avoid bias in the research sample. Mining claims record for Erongo region was obtained from MME. Each registered miner in the mining claim record was assigned a number and the respondents were selected through using the table of random numbers. This enabled the researcher to have a random sample. This was not biased, as it included all registered miners in the area. A list of mining claim holders in Erongo that included Uis area

was obtained from MME, enabled the researcher to conduct the site inspection, look at the situation on the ground, thus determine the impacts that the mineral policy has on the small-scale miners and on the environment in particular.

The miners that formed a sample population were interviewed and the results was generalised to the entire Erongo Region small-scale mining community. The interview was preferred, as it enabled the miners to give as much information as possible. Quantitative sampling was used to sample the population listed and was also used to analyse the responses. Based on the information obtained simple statistical tools were used to analyse the data.

1.5.1.3. Structured interview: In depth-structured interviews divided into four sections were conducted as follows:

The ten miners who formed the research sample responded to section one. Section two was responded to by the Chief Control Warden of Erongo Region as the MET Regional head in Erongo Region in which Uis mining site falls, and also by the Director of Environmental Affairs (DEA) as the head of DEA which is the implementing agency responsible for recommending approvals and monitoring compliance of the

environmental contracts. The Mining Commissioner as head of mining division responded to the third section. One geological consultant responded to the fourth section. The geological consultant was selected based on the highest number of environmental questionnaire submitted to MET for environmental clearance for the Uis area. Equally, he was also selected to give independent views on the study.

1.5.2 Qualitative analysis: According to Giddens in LeBeau (1996), secondary data analysis often referred to, as documentary studies are the reanalysis of existing data sets and re-evaluation of previously recorded research findings generated by other researchers. The secondary data analysis was undertaken to supplement the primary data. This focussed on the review of the provisions of the Minerals Policy on small-scale mining as it affects the environmental protection.

Quantitative and qualitative analysis were used to understand as to why the authoritative decisions lead to the ineffective implementation, particularly unexpected results. The operational and official goals were examined through using both qualitative and quantitative methodologies. This enabled the researcher to find out exactly what the government wanted to do irrespective of what the official goals were.

1.6. Importance of the study

The importance of this study resulted from the need of knowing whether the expected consequences of the Mineral Policy about environmental protection during small-scale mining operations do really take place. Equally important was the need to know whether there are unexpected consequences that takes place as a result of policy and how they take place. The unexpected consequences in this context refer to both positive and negative ones. In light of the above, this study will benefit MET and MME, the small-scale mining community and all stakeholders in environmental management and small-scale mining. It enables the above groups to apply the policy alternatives that were identified by this study.

The policy alternatives identified in this study are of importance, as it contributes to the environmental management and the development of small-scale mining in Namibia. The study also aimed at contributing to the academic debates and growth of knowledge, as it will be used as references. Equally important the information generated by this study will also assist the policy makers and policy analysts to design regulatory framework that enables the small-scale mining community to realise the full potentials that lies in the Namibian mineral resources while protecting the environment on the other hand.

1.7.Scope and limitation of study

The study looks at the effects of mining on the environment such as impacts on the physical environment, environmental degradation, and impacts of mining on water and air quality. Although the cost benefit analysis of environmental impacts and small-scale mining is crucial it was not entertained by this study due to time constraints. Therefore another study may be conducted to carry out such analysis.

1.8. Paper outline

The study paper is presented as follows: Chapter 1 contains the introduction and background, Chapter 2 presents the literature review and theoretical framework, Chapter 3 contains the review of the minerals policy of Namibia as it affects the environment, Chapter 4 presents the study analysis and findings, and Chapter 5 contains the conclusions and recommendations.

Chapter 2: Literature review and theoretical framework

Namibia is endowed with mineral resources; as a result, mining forms an important part of the national economy. The Government of the Republic of Namibia realised the contribution made by the mining sector to the economic development, in terms of income generation, employment creation, and export earnings. Soon after independence, the Ministry of Mines and Energy was created to ensure that government can exercise a regulatory and facilitating role, combining in one portfolio all relevant administrative functions. Murray, (1993): 53. The main reason behind this was to enable the mining sector to contribute to national goals. In Namibia mining is regulated by several laws, of which the Minerals Act of 1992 plays a major role.

Despite the fact that mining contributes to the socio economic well being of the people, it is also one of the highest contributors to environmental impacts. Different forms of mining impose various hazards on the environment. The environmental impacts increase as mining activities progress through different stages of mining. However in some instances, the benefit of mining to the community whose environment is impacted by mining activities is intangible. “In the event of environmental disasters, such as the 30 January 2000 incident in Baia Mare, Romania, the local

community has suffered environmental, economic and social disadvantages as a result of a mining mishap”. UNEP, (2000): 32. The community mostly suffers the consequences especially if they were not included in the planning phase of the mine, which could be done through interested and affected parties meeting. It is crucial that the community members are included into the planning of the mining activities in order to raise their concerns. This enables the interests of both parties to be taken into account.

Mining activities impact the environment negatively irrespective of the scale of operations. The greatest concerns of many observers and environmentalists is that small-scale and artisan miners cause major environmental impacts. This is mostly due to the fact that small scale and artisan miners some countries operate outside the legal and regulatory framework. Small-scale miners tend to focus on immediate consequences than the long term ones. The immediate consequences are focussing on extracting minerals for survival purposes. It is certainly true that small-scale miners tend to do more damage to the environment than those working in modern mining enterprises – with greater environmental cost per unit of output. University of Witwatersrand,(2003): 320.

People who lack information and necessary resources to be able to possess the affordable equipments and methods that reduce environmental impacts mostly practice small-scale mining. As a result the damage they cause to the environment outweighs the output of their production.

Surface mining² involves the clearing of the environment in order to get access to the mineral resources. Therefore, in some instances the environmental impacts can be associated with the size of the operation or the location of the mining activities. The location can be the case especially if mining operation is carried out on an area of environmentally and ecological sensitive. As mentioned earlier surface mining is associated with environmental destruction that includes archeologically and cultural heritage sites destruction. The air is polluted by noise resulting from the movements of vehicles and machinery, dust formation, smoke and fumes. The underground water quality is polluted especially by the improper use of chemicals. Water pollution resulting from mining activities is more dangerous to aquatic organisms, than to humans. This is due to the fact aquatic organism are more resistant to any form of water pollution.

Depending on the concentration of pollution, heavy metals may stop fish from reproducing, or enter the human chain by accumulating in fish

² Surface mining is the term used to refer to the extraction of minerals from near the surface.

tissues, this particularly with cadmium and mercury that may occur in zinc sulphide ores, UNEP, (1991): 24.

The plant species are cut down on the mine and its surrounding areas in order to make way for the mining activities. Animal species are also disturbed due to human movements and noise in the area. As a result the destruction of animal habitat causes migration of some species to other area for safety. Surface mining have also negative effects on the humans as it causes land use conflicts, resettlement as well as destruction of culturally and socially important area for example monuments and recreational areas. During the operational phases large quantity of waste is generated some of which remains in the area after the mine closure.

2.1 Small scale mining and sustainable development

Namibia is among the least developed countries in the world with about 38% earning less than US\$ 50 per month and more than half of the population earning less than US\$ 350 per month. Thus according to 1992 statistics 9% of Namibians live in extreme poverty, Ministry of Environment and Tourism 2006: 5.

Although it is classified as such, Namibia is endowed with rich natural resources such as diamonds and other mining products, fisheries and

tourism potentials. Hence the natural resources are the backbone of the national economy. The protection of natural resources is an important component of the national priorities as it is enshrined in the Constitution and sustainable use of the resources is being emphasised by Vision 2030.

The concept of sustainable development emerged as students, academics, practitioners, politicians and developers, attempted to evaluate the past, the present and forecasting the proposed future activities. Therefore it is crucial to reflect on the opinions and past experiences of environmentalists in order to understand how small-scale mining can be practiced sustainable. Tarr (1999) confidently states that, the most widely used definition of sustainable development is: the development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.

The Stockholm Conference that was held in 1972 was the first earth summit convened to deliberate about environmental issues. It was followed by Brazil's Rio de Janeiro summit in 1992. The Rio de Janeiro summit adopted principles referred to as Agenda 21 that aims, on one hand, for human development in a sustainable way while protecting the environment on the other hand. The World Summit on Sustainable Development (WSSD) followed the Rio Summit in 2002, whereby the

Namibian Government reaffirmed³ its commitment to sustainable development and environmental protection, sustainable use and environmental management as stipulated in the Namibian Constitution, which is as follows:

‘The state shall actively promote and maintain the welfare of the people by adopting inter alia policies aimed at the utilisation of living natural resources on a sustainable basis for the benefit of all Namibians’. Namibia Constitution Article 95 (1)

According to Siyambango (2001) any developing country that is endowed with suitable mineral resources, can benefit from properly organised small-scale mining industry. Thus small-scale mining activities could provide a basis for economic and social development of remote and depressed parts of Namibia where employment opportunities are scarce. In light of this the Namibian government realised that its people’s dependency on the natural resources and in the small-scale mining in particular have greater impacts on the environment, this is due to the fact that in most cases small-scale mining is a poverty driven activity. The regulatory framework was put in place in order to ensure a regulatory role is practiced over mining activities. The Minerals Policy contains a clause dealing with environmental protection during small scale mining

³ Namibia’s position for the World Summit on Sustainable Development (WSSD). Prior to the summit each country was required to state its positions in view of the WSSD.

operations. Such a clause contains the essential conditions that are needed to enforce environmental protection and most importantly to enforce compliance to environmental contract that aims to protect the environment, thus contributing to the efforts towards achieving sustainable development.

For sustainable development to be achieved the people or the community members needs to be environmentally educated. Environmental education is the process of bringing environmental information to the community in order to enable them to be environmentally literate. An environmentally literate society differentiates between a degraded environment and conserved environment, developing environmental problem solving skills and responsibility in engaging active interaction for the purpose of achieving a common goal. Southern Africa Development Community (SADC) have identified environmental education as one of the major necessities if the region is to move towards sustainable development SADC, 1999: 1

Environmental education was mainly identified to achieve the sustainable utilisation of natural resources and protection of the environment in the long run. For environmental education to be conducted among the small-scale miners the non-formal environmental education should be planned,

structured and conducted outside the formal education system. Environmental education for sustainable development can be conducted by government institutions, intergovernmental partnership and by Non Governmental Organisations (NGOs) as well as by Community based Organisations (CBO). It is worth mentioning that governments play an important role, as it is the custodian of the environment, thus it has to play the regulatory role over the stakeholders.

2.2 Tanzanian Mining Policy

Namibia's minerals policy is structured and expressed in a way that promotes regional integration, for example engagement with SADC member states. In light of this it is crucial to look at how the mineral policies of other SADC member states, are structured.

The SADC mining coordinating unit had among others identified the Tanzania's Mining Policy (1997) as contains best practices. Economic Commission for Africa, 2002: 12. The policy has numerous objectives, of which two specific ones deals with small-scale mining sector. These aim at, the regulation of small-scale mining sector and reduce poverty among the small-scale miners. In addition to these there are also general objectives such as environmental management that is also applicable to small-scale mining. The Mineral Policy shows clearly, the roles,

objectives and strategies that are needed for the development of both large and small-scale mining. The strategies for environmental management for small-scale mining activities among others aims to:

- (a) Demonstrate and encourage the use of environmental sound technologies;
- (b) Improve environmental awareness in the media and conducts environmental information dissemination in the national language “Kishwahili” which was mostly preferred;
- (c) Build partnership with different stakeholders in order to improve environmental awareness and environmental management;
- (d) Empower mining extension officer to carry out regular monitoring through established strict standards;
- (e) Introduce environmental control measure based on the principle of “polluter pays.” Economic commission for Africa (2002): 14

The Tanzanian licensing procedures for small-scale miners is streamlined and simplified. Tanzania’s mineral policy also promotes transparency and fairness in the mineral rights allocation for example first comes, first served. The mining code of conduct is disseminated to small-scale miners and the authority enforces its adherences. The policy also aims at taking the administrative and technical support services to the miners at the mining areas.

The Tanzanian Mining Policy contains certain provisions that could be considered for possible application in Namibia. This is important because sustainable development can be achieved if the good policy is backed by the government and the commitment of the community to ensure compliance to environmental contracts that aims for the protection of the environment and sustainable development in the long. Given the fact that small-scale mining is mostly poverty driven, Namibia should carefully consider the last strategy for environmental management which is (e). As mentioned earlier, 9% of the Namibian population live in extreme poverty, Namibia should recognise that, the majority of people may not afford to pay, thus should employ the strategy of “prevention is better than cure”. To achieve and maintain sustainable development it is very crucial to employ preventive measures so that unnecessary impacts are avoided.

Damage to the environment can be extensively avoided or at least limited by: Careful exploratory work, such as avoid using heavy equipments, choosing environmentally micro sites for lanes in order to minimise the environmental burden, taking measures to prevent environmental mishaps e.g installing traps for oil and chemicals, German Federal Ministry for Economic Cooperation and Development, (1995): 160

The known fact is that Namibia is a land of contrast, thus what constitute best mining practices in a given environment or area may not necessarily be the same in another area. In most cases the best practices may vary depending on the local conditions, culture, and mining capacity of the miners as well as on other non-tangible issues.

In addition to the above mentioned strategies that deals with environmental management, the Tanzanian mineral policy contains also strategies that among others aim to streamline and simplifying licensing procedures for artisan miners and mineral dealers, which aims for the easy access of acquiring mineral licences that enables the authority to play a regulatory role over the small scale mining activities. The Namibian licensing system is characterised by bureaucratic screenings and cumbersome process that make it difficult for the potential miners to acquire them. In addition to that the licensing system is centralised as it can only be done in Windhoek. Therefore, Namibia should adopt the Tanzanian system of streamlining and simplifying the licensing process.

Sustainable mining activities should be accompanied by good environmental stewardship in all activities. In actual fact, environmental and economic considerations should be integrated in the planning and decision making process. The integration enables the balance of

economic, socio cultural and environmental protection measures to take place. Sustainable mining under appropriate environmental guidelines is based on interaction between industries, governments, NGOs and the public directed towards optimising economic development while minimising environmental degradation, Southern Africa Development Community (1994): 1.

2.3. Implementation theory

Implementation is the process through which policy decisions are translated by policy actors and organisations into output such as good and services. It is regarded as the final stage of policy making. Public policies are implemented and evaluated by public officials and government institutions that are mandated and capable to do so. The implementation process is characterised by continuous interaction between actors and organisations. It requires continuous interactions between the objectives set and the actions needed to achieve those objectives. Thus the implementation analysis is used to understand why authoritative decisions in most case do not lead to desired results. Therefore policy implementation involves an examination of clearances points at which decisions have to be made. As a results delays in implementation takes place that is viewed as due to different actors involved. In implementing

the policies, officials have direct power they are granted to execute the policy. There are three requirements that enables the policy demands to be translated into tangible benefits through effective and equitable implementation. This is due to the fact that different resources have different impacts on the implementation of the policies. The requirements that should be available are such as economic resources, administrative framework as well as skilled and experienced personnel to work towards attaining the policy goals.

Due to the fact that the Third World government have limited resources in terms of finances and human resources centralising power is seen as the only way that enables the organisation to achieve the specified objectives with scarce resources. While some nation building as well as resources management requires some degree of centralisation and control, it has become clear that development requires strong component of local control even when local control generates decisions and behaviour incongruent with central preferences. In some instances decentralisation is preferred, but centralisation is viewed as giving privilege to the central authority, Bjorkman, 1994:139

2.4 Impact evaluation theory

This is the type of evaluation that looks at the program goals, namely official goals. The evaluation of program goals has its shortcomings, as the official goals in most cases do not reflect the program operation. As a result impact evaluation introduced the evaluation of both official and operational goals. According to Perrow (1961) in Chen (1990), official goals are the general purposes of the organisation, as put forth in the charter, annual reports, and public statement by key executive and other authoritative pronouncements. He further defines the operative goals as the end sought through the actual operating policies of the organisations; which tells what the organisation is actually trying to do, regardless of what the official goals say the aim is.

In some instances the official goals do not reflect the situation on the ground or what the organisation is really doing. The combination of official and operational goals is very important as it creates an understanding of what the organisation is doing through studying the operational goals.

In formulating official or policy goals the program managers or policy formulators tend to be positive about them, not knowing that difficulty

might be experienced in working towards achieving such goals, for example difficulty in allocating resources or availability of sufficient resources. In actual fact the program implementation is always not as anticipated.

Evaluating the program goals using official and operational goals seem not to be adequate, thus theory driven evaluation was introduced in the evaluation process. Theory driven evaluation enables the evaluator to identify the program outcomes. Program outcome may contain intended or unintended outcomes. According to Chen (1990) intended outcomes or plausible goals are those goals valued by stakeholders and actually pursued through program activities. Official program goals however may contain some plausible outcomes or unintended outcome that may serve important political purpose but were not intended to be pursued.

The above-mentioned theories were used to look at how the Minerals Policy is being implemented. In addition to that, the theories were also used to look at the impacts of the policy implementation. The evaluation of the policy implementation was conducted to find out whether it really contributed to the objectives of the policy or it lead to other unexpected results.

Chapter 3: A review of the Mineral Policy of Namibia as it affects the environment

The Minerals Act of 1992 and the Minerals Policy (2003) provide guiding principles as well as direction of mining operations. Given the fact that mining has been the backbone of the Namibian economy, the minerals policy is presented in a way that enables the mining sector to contribute to the broader national goals as outline in the Second National Development Programmes (NDP II) and Vision 2030.

According to the Minerals Act the minerals rights in Namibia rest with the state. ‘Subject to any right conferred under any provision of this Act, any right in relation to the reconnaissance or prospecting for, and the mining and sale or disposal of, and the exercise of control over, any mineral or group of minerals vests, notwithstanding any right of ownership of any person in relation to any land, in or under which any such mineral or group of minerals is found, in the state’, Republic of Namibia. Minerals Act No. 199: 15. The custodian of the mineral rights is placed with the state in order to enable mining activities to be done upon the consent of the Minister of Mines and Energy.

The objectives of Namibia's Minerals policy are among others, as follow:

1. Regularise and improve artisan and small scale mining sector so that it becomes part of the formal mining sector;
2. Ensure compliance with national environmental policy and other relevant policies to develop a sustainable mining industry;
3. Promote and encourage local participation in exploration and mining;
4. Promote and facilitate marketing arrangements to increase the economic benefits of the sector;
5. Ensure adherence of the principles of socio- economic upliftment through appropriate measures". (Ministry of Mines and Energy (2003) : 9 -10

In addition to the objectives, the minerals policy is structured and expressed in a way that aims to meet the key themes that are among others,

- Mining industry: Which deals with overseeing the promotion of the three sectors of mining namely, medium to larger scale mining, small scale mining and marine mining;

- Mining industry and environment: Which deals with the protection of the environment and with minimising the impacts of mining on the environment;
- Governance: Which deals with the management of the mining sector;
- Regional integration: This deals with engagement with SADC, (Ministry of Mines and Energy, 2003: 10

The policy is expressed on assumption that it is the responsibility of MME to implement it; the policy also makes provision in case other ministries are required to implement particular activities.

To ensure environmental sustainability it is required that before any mining activities commence, the miners should enter into environmental contracts with MET and MME on behalf of the Government of the Republic of Namibia. This can be done once the mining claim has been issued by MME. Hence, MME and MET have the responsibility to inform the miners to enter into environmental contract with the government. The two ministries have also the responsibility to monitor compliance of the environmental contracts provisions by the small-scale miners. It is crucial to examine how the monitoring process is being carried out. Therefore, implementation, monitoring evaluation theories are employed in the study.

According to Speiser (2000) the following stipulations that are stated in the Minerals Act of 1992 are applicable to small-scale mining. Obtaining the Non Exclusive Prospecting Licence (NEPL) is the first step before the potential small-scale miner is allowed to reserve the claim area. It is a legal requirement that both the NEPL and the mining claim must be registered with MME. The Minerals Policy of Namibia makes provision for the registration of small scale and medium to large-scale mining. Part IV, Section 25 –30 of the Minerals Act deals with the regulations relating to pegging of claims, that has been designed for the small-scale mining (Speiser, 2000: 4).

The mining claim is the type of mineral licence designed for small-scale mining. It allows the Namibian nationals and Namibian owned companies that are authorised by the Minister of Mines and Energy to reserve claims and mine upon the approval of all required documents and the payment of N\$ 50,00 per claim area. An individual may hold a maximum of ten (10) claims, but due to powers vested in the Minister of Mines and Energy, the number of claims for an individual may be increased if good reasons for increment are provided. According to the Minerals Act of 1992, the claims are valid for three years and may be renewed for two (2) years period. Renewal is only applicable if the claim has been worked on. Small-scale mining is practiced as a means of poverty alleviation and generator of

income. In some countries arrangements are that mineral rights for small-scale mining are restricted to the nationals of such country, which is done to alleviate poverty. According to international development, small-scale mining is practised in rural areas by miners who lack the requisite educational training, management skills and essential equipments. Economic benefits that are accrued from small-scale mining are among others the opportunity to alleviate poverty, especially in rural areas where employment opportunities are limited, thus reducing rural urban migration. It also creates alternative economic activities, as minerals extracted will be sold, which contributes to the national income in the long run.

Poverty alleviation is one of the Millennium Development Goals (MDGs), therefore the Government of the Republic of Namibia created an enabling environment for small-scale miners. Mining claims may not be pegged in the protected areas. The reason behind this, is that, due to the sensitivity of these areas prospecting or mining requires the submission of an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP), which the small-scale miners may not afford, as it is costly. This is done to apply the three components to environmental protection, namely: avoidance, prevention and rehabilitation on one hand, while trying to be pro poor on the other hand.

MET in collaboration with MME have designed a straightforward environmental questionnaire for mining claim holders. Such a questionnaire requires the miners to provide site specific information and to state the environmental impacts that are likely to result from mining activities e.g. from the use of certain mining equipments or methods. The authorities then make a decision based on the information provided. It is worth mentioning that by so doing the authorities are trying to apply the components of protection. It avoids discovering the impacts after mining operations, which will be too late in terms of environmental protection and may also require the claim holders to spend a lot of money rehabilitating the damage, or even abandon the claim area. Once the claim area is abandoned, the state will be left with no option, but to rehabilitate the damage caused.

According to Minerals Policy (2003) there were over 240 abandoned mining sites in 2003 whose responsibilities for rehabilitation were left to the state. The number of abandoned mines might have increased by now. Further to that the Minerals Policy states that large mines have the potential to implement environmental policies and practices. According to Namibia Foundation (1998) environmental rehabilitation is a constraint to many small-scale miners. Some miners lack expertise in the field of

environmental protection as well as funds to commission environmental rehabilitation.

The environmental questionnaire submitted form the basis upon which the environmental contracts can be drawn. Therefore, administration for the registration of mining claims and that of the environmental contracts are only available from the two Ministries Head Offices in Windhoek. According to Speiser environmental contract is intending among others to raise environmental awareness within the small-scale mining sector as well as measures that can be employed to protect the environment.

Despite the fact that both the Minerals Policy of Namibia and the Minerals Act makes provision for the registration of mining claims and environmental contracts, there are still a large number of people who are involved in illegal mining operations. It is worth mentioning that the small-scale miners who are in operation without the necessary authorisation may be operating exceptionally well, but given the fact that they are illegal, there is still no record of their production neither control over their activities. The unregulated or underhand way in which much small scale mining is carried out means that governments are missing out on much-needed revenue. International Labour Organisations (1999): 15

This study evaluated the effectiveness of the Mineral Policy on the small-scale mining with emphasis on the environmental protection. This involves the implementation of such policy by the small-scale miners and the two ministries, MME and MET respectively. There is a concern about the delay in the processing of environmental contracts. Thus, policy-making theory is used to explore the policy making process and to obtain an understanding of such an arrangement and establish if there is a policy gap.

The processing of environmental contracts is done by the public officials, therefore may be characterised by bureaucratic screenings and cumbersome process of acquiring the environmental contracts. Given that scenario, public management theory is used to enable the researcher to establish if there were underlying factors that could have delayed the processing of environmental contracts.

Despite the provisions for small scale mining or mining in particular being made in the minerals policy; the implications are that mining causes long-term environmental damage. Given the fact that in some instances small scale mining is poverty driven, the miners focuses on the immediate impacts e.g. to make a living through mining, than focussing on long term consequences such as environmental degradation.

Mining causes migration of people from different areas to the area where minerals can be found, which may have impacts on both flora and fauna. Upon migrating to the mineral concentrated areas, the miners settle in temporary informal houses that may lack necessary facilities such as toilets. Open pit mining is characterised by landscape clearing, which destroys plant species and causes waterway blockage. Destruction of trees and shrubs have impacts on the birds and other small animals as that provides habitat for them. Destruction of unique ecological, cultural heritage, historical and archaeological sites, is also associated with landscape clearing.

The inappropriately use of chemicals results in underground water contamination as well as on air pollution that may affect the ventilation system. Air pollution is also generated from rocks breaking in an attempt to extract minerals. Creation of access roads and off road driving destroys vegetation and vehicles movements generate air pollution. Improper use of explosives such as blasting affects the immediate environment as it shakes while attempting to break the rocks. Illegal mining operations is characterised by inadequate rehabilitation and poor pollution control and waste management that may have impacts on other sectors of the economy

such as tourism sector. People who depend on the tourism activities as a source of income may suffer as a consequences.

The Minerals Policy was formulated with a concern of environmental protection, as it contains provisions dealing with environmental management during mining operations. The mining claim holders are required to enter into environmental contracts with the Government. However, the minerals policy states that:

The inertia in the processing of environmental contracts delays the commencement of mining operations, while non-compliance with the provisions of the contracts results in inadequate rehabilitation and possible long-term environmental damage. Ministry of Mines and Energy. 2003: 17.

The minerals policy further suggests that the problem of delaying environmental contracts can be solved through cooperation between MME and MET. However the problem of delaying environmental contracts still persists, despite the suggestion made in the Minerals Policy to remedy the situation. The delay is due to the clearance points that the applications for environmental contracts have to go through. The environmental contract is said to aim among others, on creating environmental awareness among the

small scale mining community, to date the MET which is the competent authority in environmental management has no measure in place to create environmental awareness among the small scale mining community as stated by the mineral policy. Regular visits to small-scale mining sites that aim at monitoring compliance of environmental contracts is yet to be implemented. This indicates that the two ministries, MME and MET are failing to implement what they have set for themselves, therefore their expectation on the miners to meet their contractual obligations should be minimal.

According to the implementation theory both top down and bottom up approach plays an important role in policy implementation therefore, MME should try to reconsider the implementation strategies to enable the Mineral Policy to be implemented effectively. The reconsideration enables the policy implementers to dedicate the policy instruments and the resources they have at their disposal, towards policy implementation. It is worth mentioning that the implementation of the minerals policy is influenced by ineffective administrative procedures and managerial techniques. The combination of the two approaches is very important as it enables one to understand the performance or the behaviours of the implementers with regard to translating the decisions into tangible goods and services. For example the application for environmental contract that

is required by the policy has to go through different clearance points whereby it still have to be delayed due to managerial differences on the subject matter.

The impact evaluation of Chen that assesses the intended and unintended policy outcomes indicates that actions of policy implementers may lead to unintended outcome of the policy program. The clearance points that the application for environmental contract have to go through is characterised by the delay in implementation due to differences in opinion of the policy administrators. The bureaucratic and cumbersome process drives the small scale miners to conduct their activities underground, in fact mining without the required authorisation.

The policy formulators might have though that the clearances points that the application have to go through, contributes to the effective implementation of the policy as no bias will be involved because the application passes through different people. Equally to mention is; the Minerals Policy formulators might have thought that the centralisation of licensing system accords the central government regulatory power over the mining activities, however the actual policy implementation leads to unintended results, which is conducting illegal mining operations as the miners in some instances can not afford to travel to Windhoek to register

the mining claims and apply for environmental contract. The above resulted from the slippage between the official program goals and operative program goals that leads to greater environmental impacts, while it was the hope of the policy formulators to protect the environment.

The provisions of the minerals policy contributes to the environmental impacts as, this is due to the fact that despite the problems that were known during the formulation of the minerals policy, the same problems still persists e.g. delay in the processing of environmental contract, centralisation of the licensing system. Practically, the appointed public officials who are assumed to have formulated the policy are implementing the policy. Therefore one assumes that the participatory process might have not been carried out properly - if not at all, to enable the policy actors to have ownership of the policy and work effectively towards achieving the goals of the policy. The problem of having the implementation strategies for the minerals policy not finalised yet is also linked to the formulation process. A clear guidelines on small-scale mining has been included in the minerals policy, however due to the complexity of small scale mining operations, the implementation procedures are still being developed, Ministry of Mines and Energy, 2006: 14.

According to the process of policy making, the public policy such as the minerals policy, involves the classical theory⁴ of policy making needs to be reviewed, reformulated or replaced on a regular basis. This is crucial to enable the organisation under whose custodian the minerals policy falls to be able to adapt to the changing environment. Equally important there should be continued interaction between the policy actors. The descriptive model of policy making needs to be employed with regard to the mineral policy so that it gives the reasons why it was formulated and give the results of its current ineffective implementation, pending the implementation strategies and make provisions for the way forward. Of importance is to mention that public official who implements the policies have direct powers that are vested on them in the execution of the policy. Due to such powers the implementation of the policy may be delayed, implemented partially, or the officials can cause disruption in the way the policy is implemented

A country rich in mineral resources such as Namibia should have the minerals policy that is implemented effectively, therefore taking into account the interest of all. This enables the country and its people to benefit from the wealth-creating sector, while protecting the environment on the other hand.

⁴ According to Hanekom (1995) Classical theory is the theory of policy making which accepts the different interests represented in government to be taken into account, such as the contributions of the legislature, the executive and the judiciary.

Chapter 4: An analysis of the environmental impacts of small-scale mining activities: The case study of Uis

4.1 Description of Uis

Uis is located within the Namib Desert in the Omaruru district – Erongo Region. It lies 300 metres above the sea level. The land tenure is characterised by communal land, and small stock farming; however, small-scale mining and tourism generate the main income. The climatic condition of Uis is described as arid. According to Barnard (1998), the Namib Desert and its adjacent plateaus have been arid or semi arid for many millennia. The area is associated with low rainfall. It is crucial to mention that when Uis is being referred to, with regard to mining it includes, Tafelkop, Gobobose, and Brandberg mining sites.

Palfi pers comm. Indicated that Uis is the area of interest, covered mainly by six hundred million years old Damara metasediments intruded by various tantalite- and tourmaline- bearing pegmatites. The western part of the area also covered by two hundred to hundred fifty million years old sand stones and shales. The thick basaltic lava units cover these sediments. Roughly hundred twenty million years ago the Brandberg granite massif intruded these sediments and lava flows.

Uis have a long tradition of mining; the tin mining licence was granted in the Uis area when the market for tin was good. The demand for tin declined in the international market, as a result the mine closed. The mineworkers remained in the area and jobless. They organised themselves and requested assistance from the MME. MME joined hands with the Raw Material Group of Sweden and established a project. Swedish International Development Cooperation Agency (SIDA) provided financial assistance. Miners benefited from the project as they were, trained in mining, blasting, drilling, hauling sorting and concentrating techniques. Economic Commission for Africa. 2002: 30

SIDA later withdrew from assisting financially. Arrangements were made for the miners to get financial assistance through subsidies. The miners got the subsidies but were operating on a loss. Namibia Small Scale Miners Association Centre (NSMAC) took over the project, with financial assistance from Centre for the Development of Industries (CDI). NSMAC was concentrated in exploring for tantalite deposits. CDI promised to finance the project if the results of the exploration could be successful and NSMAC and Small Miners of Uis (SMU) could run the project jointly. The project is still on, but not very active due to lack of market. The project is still busy looking for potential buyer as it currently having 1.5

tons of tin stored at Geological Survey of Namibia, a directorate within MME.

Some of the mineworkers who remained in the area are currently engaged in small scale mining either on their own or working for others who are in most cases have full time employment at different towns or engaged in other business ventures to provide bridging finances. According to Palfi (2001) some miners have valid mining claims while others are illegal. Unlicensed miners operates on mining claims belonging to others and without the claim holder's consent or mine in areas not held any minerals licence. Here small-scale miners are involved with the prospecting and mining of world known quartz and amethyst specimens. The miners are exploiting marginal deposits in harsh and dangerous conditions causing considerable environmental impacts. It is worth mentioning that some of these miners are from Uis nearby villages, while others came from the northern part of Namibia.

4.2 The data analysis and presentation of study findings

4.2.1 Data analysis

Eighty percent of the miners interviewed have indicated that they know the process involved for one to acquire the mining claim and the environmental contract. The remaining twenty percent do not know how

one become a miner, in other words do not know the process of acquiring the necessary authorisation that enables one to mine.

Figure 1: Statistical analysis of becoming a miner

Kprocess = Know the process

Dprocess = Do not know the process

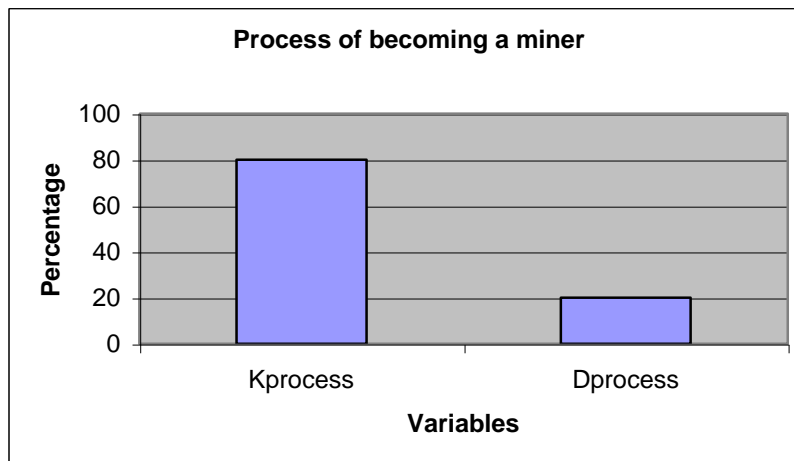
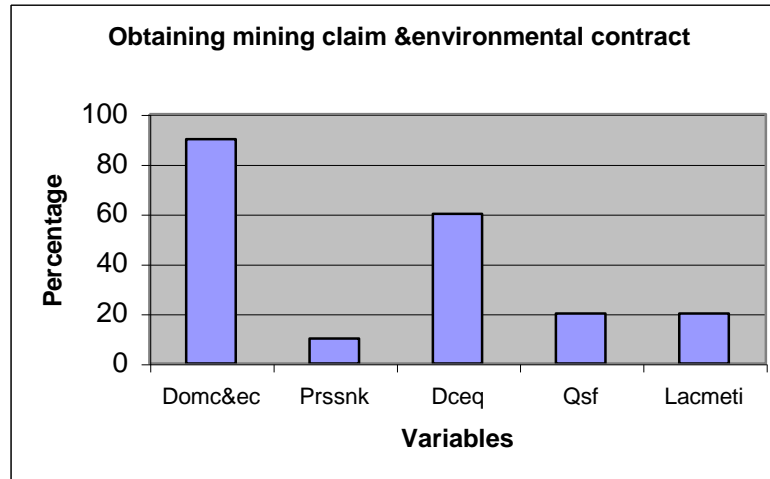


Figure 2: Statistical Analysis of obtaining Mining Claim and Environmental Contract

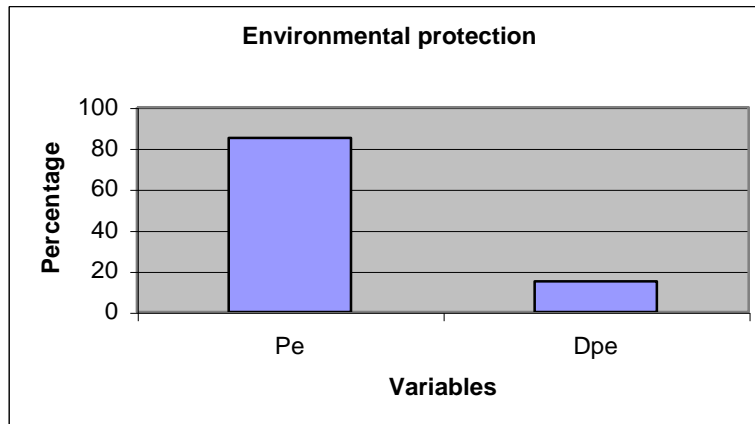


Domc&ec = Difficulty in obtaining MC & EC
 Prssnk = Process not known
 Dceq = Difficulty in completing environmental questionnaire
 Qsf = Questionnaire straight forward
 Lacmeti = Lack MET information

Ninety percent of the miners interviewed have indicated that it is difficult for one to register the mining claim and acquire the environmental contract. According to the miners, firstly one has to travel to Windhoek, register the claim with MME and also apply for the environmental contract at MET. Ten percent have indicated that they do not know whether it is easy or difficult to get the mining claim registered. Eighty percent of the miners have indicated that there are difficult environmental questionnaire that have to be completed and submitted to MET, after submission one have to wait for a long time before receiving the signed forms that constitute environmental contract from MET. Even after the environmental contract is received from MET one still have the

responsibility to find out from MME if the claim has been registered. They further indicated that only after the environmental clearance is received and registered by MME one is issued with the certificate of registration, therefore able to start with mining operations. Twenty percentages have indicated that environmental questionnaires are straightforward, thus easy to complete. Twenty percent of the miners interviewed have indicated that they do not know that after having received the letter for the registration of mining claims and blank environmental questionnaire they had to complete the environmental questionnaire and submit it at MET.

Figure 3 Statistical analysis of environmental protection



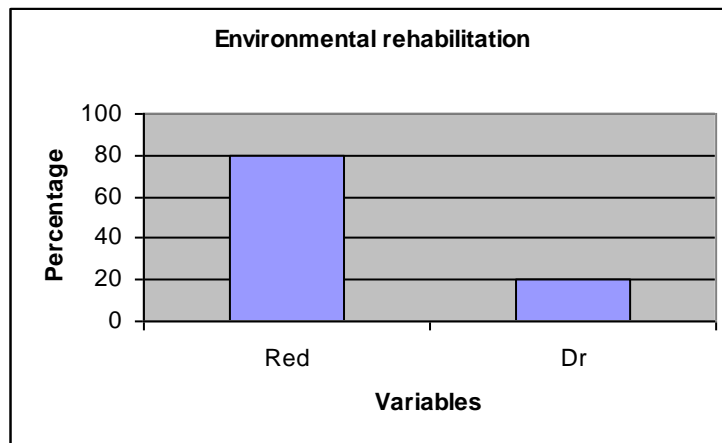
Pe = Protect the environment

Dpe = Do not protect the environment

Majority of the miners interviewed (85 %) have indicated that they have measure in place such as having drums meant for normal litter disposals or

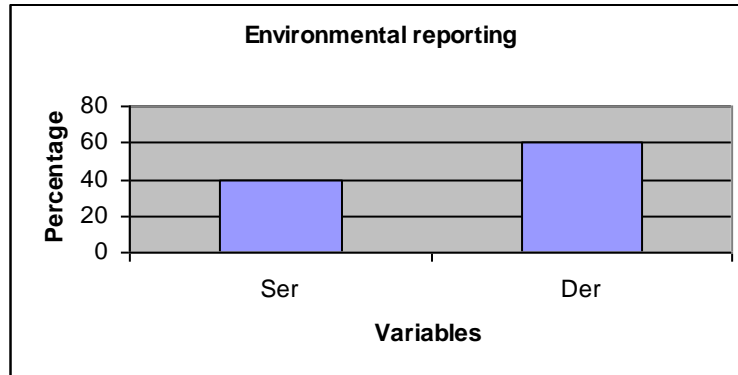
having created normal litter disposal sites next to their residence. Fifteen percentages have indicated that they are not interested in environmental protection.

Figure 4: Statistical analysis of environmental rehabilitation



Red = Rehabilitating environmental damage
 Dr = Do not rehabilitate the environmental damage

Eighty percent of the miners interviewed have indicated that they either rehabilitate the environment on the continuous basis or rehabilitate once mining has been completed. Twenty percent have indicated that they do not rehabilitate or close up the excavations.

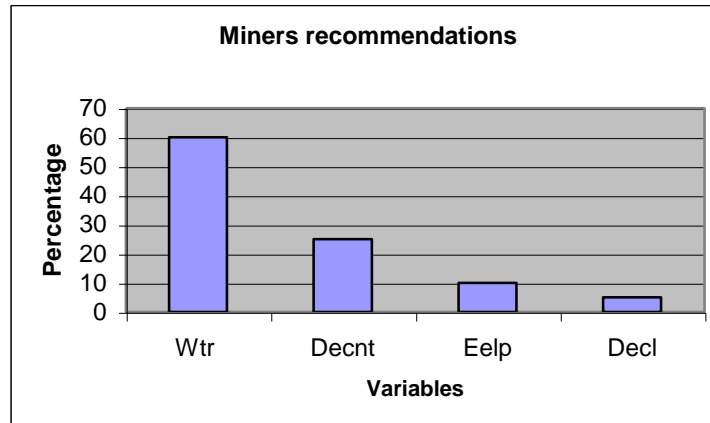
Figure 5: Statistical analysis of environmental reporting

Ser = Submit environmental reports

Der = Do not submit environmental reports

Forty percentage of the miners interviewed have indicated that they submit environmental reports to MET, whilst sixty percentage do not submit environmental reports.

Figure 6: Statistical analysis of the miners recommendations



Wtr = Water
 Decnt = Decentralisation of the registration process
 Eelp = Environmental education
 Decl = Declined

When requested to make recommendations sixty percentage of the miners interviewed have indicated that they are in need of water. Twenty-five percentages of the miners have recommended the decentralisation of the registration of mining claims and environmental contracts. Ten percentages have recommended that government should introduce environmental education and literacy programme in Uis. The remaining five percentages of the miners interviewed decline to make recommendations.

Maketo pers comm. (As per communication) has indicated that Directorate of Parks and Wildlife Management (DPWM) in Erongo Region has no

responsibility of managing the environmental contracts, because his office do not receive the copies of the environmental contracts if the mining activities do not fall in parks. Therefore, his office does not have any measure in place to monitor the small-scale miners in Erongo region. He further indicated that administrative needs they have in Erongo region is that, the staffs for the Directorate of Parks and Wildlife Management (DPWM) are not trained to deal with mining related activities and therefore are not capable of dealing with such.

The other problem is that if the DPWM staffs happen to find people mining, they would not know whether those people are mining there illegally or are allowed to mine at that particular area. In addition to that he has indicated that if there be a need for them to do monitoring over the miners activities it should be ironed out and DEA should provide them with the list or copies of the environmental contracts for the mining claims in the region which is currently not the case.

Regarding combating illegal mining operation in the region, he has indicated that illegal operation can only be found if it is in the protected area. If mining operation is outside the protected area that falls outside DPWM mandate, as a result there is nothing that his office can do.

He indicated that DPWM conduct mining inspections in the parks except if they have to assist DEA then they can do it outside the park, but that do not happen regularly. Therefore he feels that if there is a need for them to do so on a regular basis, DEA should communicate it to them and they maintain a regular communication with regard to mining that is currently lacking.

Nghitila pers comm. indicated that MET have the responsibility to make sure that the active mining claim holders have environmental contract with the government. That can be done through MME and MET liasing with each other to make sure that miners have entered into environmental contract with the Government. In the absence of environmental contract MME cannot allow the miners to mine. He further indicated that as a head of DEA his responsibility is to make sure that the EIA unit staff members under whose jurisdiction mining related activities fall, are performing their tasks and ensure that monitoring and compliance are carried out and obligations under environmental contracts are complied with by the miners. He pointed that the EIA unit staffs suppose to conduct regular inspection at least twice a year at each mining site, to enable them to see if the conditions under environmental contract are complied with. In addition to that the unit staffs are also responsible to liase with MME regarding new claims that are issued. However according to him, the EIA

unit suffers a set back, as it is not sufficiently staffed. Some staff members have left the ministry for better employment and the positions have not been filled since then. In addition to that capacity building in terms of training is needed in the unit. He indicated that attempts were made to realign the unit in order to enable it to deliver the much-needed services to the public, but that was put on hold, as according to him the entire ministry needs to be restructured. Despite lack of manpower, resources for inspections are available.

He further indicated that monitoring is the matter of how often they conduct inspections at mining sites. Measures that MET has in place is that from time to time they conduct inspections. He stressed that if DEA`s EIA unit was sufficiently staffed it could mean more inspections. He indicated further that they conduct joint inspections with MME. He believed that by strengthening institutional relations monitoring will be done properly. Due to the fact that the EIA unit is under staffed, if there is a need to audit the mining activities MET may even commission it.

Mr Nghitila has confirmed the claim regarding non-submission of ER by the miners to be true. He further indicated that the intention of environmental contract is to create environmental awareness among miners, but MET`s Environmental Education and Information System

Unit (EEISU) under whose jurisdiction the environmental awareness fall operates in a traditional way of school outreach only.

According to the Mining Commissioner it is a legal requirement that the mining claim should not be granted without the environmental contract. If one happen to be found mining without the environmental contract the mining claim may be cancelled by the Minister of Mines and Energy. He further indicated that there is no formal communication network exists between MME and MET regarding monitoring miners compliance to the environmental contract. He made it categorically clear that, despite the fact that minerals policy was formulated in 2003, implementing strategies has not been finalised yet, therefore there is no failure and no success of Namibia's minerals policy. What bind the mining claim holders are the conditions of the licence they posses. Therefore, the mining commissioner strongly stated that the policy does not need to be implemented. It is very crucial that the government conducts the cost benefit analysis of developing the policies, that it fails to implement as much needed revenues is spend on something that do not produce or lead to tangible results.

He further indicated that MME provides assistance to the miners through its small-scale mining coordination unit such as translating environmental

questionnaire into local languages that the miners understand. The officers are not allowed to give answers but only to make suggestions to the miners. He disputed the claim that lack of mining inspectors that is meant to refer to the claim inspectors and funds restricts the proper enforcement of environmental contracts, as baseless and lacks any truth. He indicated that for the past ten years the Minerals Rights & Resources Development Division (MRRDD) never lacked claim inspectors. He made it categorically clear that the MRRDD operates on the government allocated budget and as a matter of fact money is never being enough, as the funds allocated may be finish before the end of the financial year.

According to the geological consultant Mr. Palfi who is very familiar with Uis and its surrounding mining sites, indicated that he do not provide the miners with any assistance, as they won't listen to him. Mr. Palfi indicated that the mining activities cause greater impacts to the environment, for instance miners are mining illegal at Brandberg which is excluded for mining activities as it is a monument area. However scars of mining activities can be seen from a distance, as the miners do not rehabilitate the area damaged by mining activities. He indicated that the miners are operating in the very harsh and difficult conditions as they do not possess the necessary equipments and there is also no water in the area, some of them are illegal and some works for other people, while others operates on

the area covered by other people's mining claims, but without the claim holders consent.

4.2.2 Study discussions and results

4.2.2.1 Process of becoming a miner

On the basis of the findings it was indicated that it is a legislative requirement that applicants for the small-scale mining operations, mining claims in particular should enter into an environmental contract with the Government. Thus an eight page environmental questionnaire (refer to appendix 2) was developed, which each licensee should complete and describe the operations and measures that would be taken to minimize environmental impacts.

The study found out that the purpose of the questionnaire is mainly to gather information, to encourage the mining claim holders to make commitments towards environmental protection, and to provide the basis upon which environmental contract, with conditions if deemed necessary can be drawn from. In addition to the questionnaire, the claim holders are also required to complete the three pages Pro - Forma environmental contract (refer to appendix 3), which is an undertaking to rehabilitate the damage caused by mining activities. Further to that, the miners are also

expected to sign the two pages Letter of Conditions (LOC) (refer to appendix 4) that they are issued with by MET officials upon submission of the environmental questionnaire and Pro forma environmental contract.

LOC contains what the claim holders should do and what they should not do during mining operations. Twenty percentages (20%) of the miners have indicated that they are not aware of the above-mentioned process. It is not known as to why they are not familiar with the processes, whether because they are ignorant or just because the information regarding the registration of mining claims and environmental contracts were not brought to their attention.

According to the theory of policy implementation, public policies such as the Minerals Policy are implemented by public officials who might cause disruption in the implementation process due to the powers vested in them. Hanekom (1995) indicated that, a government through its appointed officials has various instruments which it can use to influence and change the society in a different direction. In this case miners are kept waiting for the environmental contract, while poverty stricken on the other side as mining can not commence without environmental contract.

4.2.2.2 Process of obtaining mining claim and environmental contract

The study has indicated that it is difficult to obtain mining claims and environmental contract. The difficulty experienced by miners includes among others, travelling to Windhoek`s MME head office where the mining claims have to be registered, and completing the environmental questionnaires and a period of waiting before the environmental contract is issued by MET. The environmental contract is said to be delaying the commencement of mining operations, as one is not allowed to mine before it is being issued.

The Pro Forma environmental contract that has to be counter signed by MET and MET causes the delay in the issuing of environmental contract. Once the claim holder submitted the environmental questionnaire and Pro forma form to MET, that MME officials have issued him/ her with, MET officials still have to send the application to MME to be signed by the Mining Commissioner. After the mining commissioner has signed the MME officials have to send the application back to MET, for MET to issue environmental contract. After the environmental contract is issued MET officials still have to send its copy to MME for the claim to be registered. It is only after the environmental contract is registered by

MME that the miner is allowed to start mining. The estimation from different miners shows that the circulation of application forms from clearances points lasts for one month. It was further indicated that in some instances the time span for acquiring environmental contract might be longer than the one-month indicated. This is the case especially when the applications have to be referred to other stakeholders, for example, to the Department of Water Affairs; at the Ministry of Agriculture Water and Forestry (MAWF) or to the National Monuments Council (NMC). The application is referred to the Department of Water Affairs for water abstraction permit, when a borehole needs to be drilled or when the water is to be abstracted from the river. The application can also be referred to the National Monuments Council (NMC) for archaeological assessment. If the application is referred to one of these institutions, it might take four to seven months for the miner to receive the environmental contract.

The responses obtained further indicated that some miners are operating illegally as according to the miners interviewed some of them can mine at any area where minerals occur. Further to that the miners interviewed stated that the illegal miners do not even know the procedures that one is required to follow to obtain the mining claim and the environmental contract, something they suppose to know if they could have gone through it. It is worth mentioning that there are some miners who are not

conversant with the process to acquire mining claims and environment contracts, as they are employees of the claim holders, which the researcher clearly understood.

The miners interviewed stated that a major problem that leads to the (illegal) status, are: lack of transportation means to get to Windhoek to apply for the mining claims and environmental contracts. In actual fact the miners do not want to spend the little they have in transport and the payment for the registration of mining claims. After having done the cost benefit analysis, regarding getting the mining claims and environmental contracts registered in Windhoek, the costs out weight the benefits thus some miners decided to operate illegally.

The miners claimed that they requested the Government to assist them to enable them to obtain the relevant mineral licence and general assistance regarding their mining operations, thus benefiting fully and realising the potentials that lies in Namibia's mineral resources. However, they indicated that nothing has happened to date. The miners felt that the registration of mining claims and environmental contracts should be decentralised. According to Adamolekun in Mphaisha (2006), decentralisation is used to refer to the delegation of authority and managerial responsibility for specific functions. Administrative

decentralisation or deconcentration as it sometimes known allows the establishment of central government field offices; this can be done through employing the functional system. The functional system enables the specific functions at the head quarters, which are MME and MET in this case, to be carried out by field officials who acts as the representative of their headquarter ministries. Therefore, in this regard decentralisation enables the miners to obtain relevant mineral licences, equally important it enables the Government to promote the maintenance of uniform standard in small-scale mining, which is to possess the mining claims and environmental contract as well as meeting the contractual obligation as outlined in the Minerals Act and the Minerals Policy.

Mr. Nghitila indicated that the Government is aware of the difficulty that the small-scale mining community is going through, thus MME is currently in the process of modelling small-scale mining to conservancies' policy in order to enable the miners to get assistance that they are currently in need of.

Despite the fact that the policy formulation was finalised in 2003, the implementation guidelines has not been developed yet and that is the main reason why the implementation process is being done the way it is. It is

crucial for the government to always conduct the cost benefit analysis of developing the policies, which is fails to implement.

4.2.2.3 Environmental protection

The majority of the miners interviewed (85%) have indicated that they have measure in place to protect the environment as they have drums meant for normal litters and created waste disposal facilities next to their residences. In addition to that they have indicated that they do not cut down the trees, do not practise overdriving neither start wild fire.

However the situation on the ground gives a different picture. One could notice that some miners are partially meeting their contractual obligations with regard to waste management particularly normal litter, for example, kitchen spoils, papers, cans and bottles. According to the miners, once the holes that contain waste are full they are closed up with sands and new ones are created. Burying the waste is in contradiction with the environmental conditions and in particular with the environmental contracts they have entered into with the Government. However, having looked at this, one may assume that the miners are burying the litters, due to lack of environmental education. Despite the drums or holes meant for normal litters, litters such as bottles and cans could still be seen scattered around, in addition to that plastics could also be seen flying around.

The management of industrial waste is very poor in the Uis area as parts of old machinery, old vehicles, and rubbles could be seen at the background of the houses. This is in contradiction with the information provided in the environmental contracts, whereby the miners have indicated that the industrial waste would be taken to approved dumping site in Uis. The information provided in the environmental questionnaire upon which environmental contract was drawn, regarding the disposal of industrial waste lacks any truth as Uis dumping site is about 80 kilometres away from Gobobose where some mining activities takes place. One may assume that the miners provides MET with wrong information as there is no regular mining site inspections as indicated by Mr. Nghitila.

Very few miners are trying to manage the human waste as long drop and pit latrine toilets could be seen at some residence. The majority of the miners especially at Gobobose area are without toilets, as according to them they have requested the government in 1999 to provide them with toilet facilities and have been waiting for such since then.

4.2.2.4 Environmental rehabilitation

Eighty percent (80%) of the miners have indicated that they do rehabilitate the environment. However the situation on the ground is different, as visible excavations and trenches could be seen left open and seems to be dangerous. In addition to that visible pieces of rocks that can hardly rehabilitate and returns to its original shape could be seen all over. The destructed environment in general if not rehabilitated might have negative impacts on tourism sector that depends on the beauty of the area. Twenty percentages (20 %) of the miners have indicated that they do not rehabilitate or close up the excavations because they believe that in future mining operations might be conducted on the same area, therefore it will be easy because the excavations will still be open. The geological consultant confirmed the issue on non-rehabilitation. According to him almost all the miners do not rehabilitate, as it is very difficult for them to do so. Most of the miners are using hand tools. He further indicated that time is also another constraint, as the miners are working under harsh and difficult conditions to support their families.

The geological consultant made it categorically clear that the government should not expect the small-scale miners to fill up just for them to be environmentally right. According to him that is not possible given the

conditions under which these people work. For example some parts of Uis are mountainous, in some instances mining activities takes place on top of the mountain, the rocks that are broken down in the process of mining are thrown down on the ground which might be ten to fifteen metres away. It is just impossible for the miners to carry the rocks to the top. The geological consultant has also indicated that rehabilitating, especially closing up of the excavations takes away the much-needed financial resources from the miners. The closing up of the excavations can also take money away from the miners who in the future might like to mine at the rehabilitated area as they will have to spend time to open up the excavations without getting any mineral.

It is therefore crucial that when policies are formed the interests of both parties should be taken into account. For instance ecological sustainability and economy stability in the case of the small-scale miners should be balanced.

4.2.2.5 Environmental reporting

Forty percentage of the miners interviewed have indicated that they do submit biannual ER to MET, while sixty have indicated that they do not submit ERs to MET. EIA unit records to which the ERs are submitted

have also confirmed that very few miners submit ER. The information provided has concurred with the claim made regarding submission of ER that was also confirmed by Mr. Nghitila to be true. According to him the scale of operations is so small that it is done for survival purposes only, and in addition to that the miners are not capable of completing the ER forms. Of importance is to question MET as to why they developed the ER forms while knowing that the activity is for survival purposes. More importantly he indicated that, there is no legal backing from MET side to enforce submission of ER as the environmental management and assessment bill is yet to be enacted. He indicated that once the bill has is enacted by parliament it will be a legal requirement for the miners to submit ERs. It is very disturbing to learn that MET`s Environmental Management and Assessment bill has not been enacted by cabinet since 1999 and MET has been without a legislation dealing with general environmental protection, sixteen years after independence.

The above involves the classical or institutional theory of policy making which implies that there are different interests in the government that has been put into account or in fact regarded as priorities, thus delaying the enactment of the environmental management and assessment bill. As mentioned earlier by Mr. Nghitila lack of staffs in the EIA unit also makes it difficult for the ministry to enforce submission of ER. It is worth

mentioning that for the theory of implementation states clearly that for policy to be implemented effectively economic resources, and skilled personnel should be available. Therefore for DEA to be able to implement the policy effectively it should fill the positions that were left open by the staff that went for better employment. Skilled and competent personnel to enable them to make impact on the policy implementation should fill these positions. To enable the government to translate policy demands into tangible benefits through effective and equitable implementation.

On the basis of the above, it is crucial that the two ministries jointly develop a separate policy focussing on the small-scale miners. This is because the awarding of mining claims and environmental contracts and allowing the miners to mine without meeting their contractual obligations is a long lasting bedrock on reliable small scale mining and in particular on environmental protection. In light of this, the miners can hardly conform as any sanction or any risk of getting the mining claim withdrawn is involved. The enactment of the bill that is believed to enable MET to enforce the law and submission of environmental reports, and protecting the environment fully, is very much desired.

The above manifests that the government is playing a “Laissez –faire” policy or let them do as the government devoted itself in formulating the

policy containing the section dealing with environmental protection, but decided to let the miners do whatever regarding implementation. According to Hanekom (1995), policies are not merely made to keep the politicians and administrators occupied or to create the impression that something is being done about a particular public matter, but their real test lies in the implementation.

4.2.2.6 The miner's recommendations

On the basis of the recommendations made it can be clearly seen that the miners have various needs. Through their recommendations 60% have indicated that they are in need of water, which concur with the recommendation made by the geological consultant who is very familiar with the Uis area. Both the miners and the geological consultant have indicated that people with cars use to charge N\$ 14, 00 per 20 litres container of water. Thus recommended that when ever the MME officials' travels to the area, particularly Gobobose that is 80 kilometres away from Uis, they should take water with them and distribute among the miners. Most importantly the Government should provide them with water by drilling boreholes in the area. Twenty-five percentages of the miners interviewed felt that the registration of mining claims and environmental contracts should be decentralised. This concurred with the recommendation made by the geological consultant who indicated that the

government should assist the miners especially with decentralising the licensing system to enable them to acquire the necessary authorisation, for them to stop conducting illegal mining.

Ten percentages of the miners interviewed have indicated that they are in need of literacy programme and environmental education among others. For example information regarding environmental protection and environmental contracts, the importance of having an environmental contract, importance of submitting environmental reports, and methods of rehabilitating the damage . According to Mr. Nghitila environmental education and information dissemination to the small-scale miners suppose to be done by MET`s (EEISU), which predominantly operates mostly on school outreach and exhibiting at trade fairs.

It is worth mentioning that information disseminated at the trade fairs does not deal with environmental protection during small scale mining, even if, it could contain such, very few miners, if not at all attend trade fairs or visiting the MET stand at the trade fairs. This indicates that MET, as a competent authority in environmental protection does not have any measure in place to educate the miners how to mine in an environmental friendly way. This is in contradiction with the Minerals policy that states

that the purpose of environmental contract is to create environmental awareness among the miners.

Small-scale mining cause environmental implications, as the implementation of the mineral policy that regulates mining is not effectively implemented. This is based on the review of the provisions of the mineral policy as it affects the environment that was carried out by this study. The implementing mechanism of the minerals policy is also not effective, despite the fact that the implementation strategies is not finalised yet. This confirms what the theory of policymaking process indicates that the policy implementation may be partially implemented or delayed, or the public officials who implement the policy may disrupt its implementation.

In light of the above findings it can be concluded that the findings of the small-scale mining in Uis is applicable to the entire Erongo region. This is due to the fact that the conditions of the small-scale miners in Uis are similar to those of other miners in other parts of Erongo region. Therefore legislation focussing on the small-scale mining needs to be developed to remedy the situation as it is currently not acceptable both socially, and environmentally

Chapter 5: Conclusion and recommendations

5.1 Conclusion:

Small-scale mining in Namibia has the potentials to contribute positively to the economic and social being of its people; however, it creates environmental impacts. The policy prescription of acquiring the relevant authorisation for small scale mining that enables them to start mining is causing problems which drive the miners underground. The problems associated with the licensing system is being centralised and process of waiting as the applications have to go through different clearing points. The study has indicated further that small scale mining is a poverty driven activity. The miners are operating in a very harsh and difficult condition, they lack the necessary equipment and it is just not possible for them to rehabilitate, as the time is not by their side.

The study indicated further that the minerals policy is not effectively implemented as there is no interactive communication between MME and MET regarding the issuing of mining claims and environmental contract. Therefore the loophole exists that enables some miners to start mining without being granted environmental contract. As a result the environment is suffering the consequences. Despite the fact that the miners have indicated that they have measures in place to protect the environment the

situation on the ground gives a different picture as environmental impacts resulted from mining activities could be seen from distance.

Therefore the institutional arrangements should be strengthened, to enable the policy to be implemented effectively. This can be in the form of forming the interactive communication network, conducting joint mining site inspections as well as filling the vacant positions with skilful and experienced personnel, especially in the case of DEA.

On the basis of the above findings the section in the Minerals Policy dealing with environmental protection during small-scale mining is sound, however, the implementation of the policy manifests that the government has failed to achieve what it sets for itself. The implementation guidelines have not been developed by MME. Equally important the priorities of environmental management seems to have been re - directed which led to MET and Namibia in general to be without the general environmental management legislation sixteen years after independence.

The study further indicated that in order for the small scale mining to practice sustainable mining, MET should create programmes aiming at raising environmental awareness among the miners. It is a known fact that environmental education cuts across different sectors, however, MET is

the institution under whose custodian of the environment falls. MET should oversee and apply supervisory and regulatory measures that leads to the effective implementation of the environmental education. Equally important MET is capable of attracting trained personnel in environmental education. Environmental education is very important as it enable the miners to meet their contractual obligations as required by the minerals policy.

5.2 Recommendations

- On the basis of the finding it is recommended that the institutional mechanisms should be strengthened, thus the environmental questionnaire for the mining claims that has been issued should remain with MME who submit such to MET on a regular basis depending on what has been issued. This is important as some miners do not go to MET to submit environmental questionnaires which constitute the basis upon which environmental contract can be drawn. It will also close the loophole that exists in the legislations that enables some miners to start mining without being granted the environmental contract.

- This study strongly recommends that better coordination and facilitation of issuing mining claims and mining site inspections should be encouraged and strengthened between MET and MME.
- The government should come up with the legislation dealing with small-scale mining. This will enable the government to control the activities of small scale mining community without practising the Laissez - faire policy. Such legislation should make provision for the decentralisation of the licensing system to enable the miners to acquire the necessary authorisation, thus releasing them from the burden of travelling to Windhoek. It is crucial to mention that in formulating the legislation dealing with small scale miners. The policy formulation such as, participatory process of the interest groups should be taken into account as this will enable the interest groups to claim ownership and enhance commitment towards achieving the goals of such a legislation.
- In addition to the trade shows and school outreaches that is currently being practiced by MET's environmental education and information system unit, programs that aims at creating environmental awareness among the small scale mining community should be introduced. Environmental education is regarded as both responses and proactive approach to environmental impacts resulting from mining activities.

Environmental education is crucial, as it will contribute to the environmental literate society, by educating the miners to try other options that will not have greater negative impacts on the environment. Equally important environmental awareness will enable the miners to meet their contractual obligations.

- The government through MME and other relevant institutions should find ways to support the miners, to enable them to realize the potentials that lies in this wealth-creating sector. Support can be in the form of drilling boreholes in the area, establishing markets that will enable the miners to improve their livelihood without being exploited by potential buyer.

Appendices

Appendix A: Interview questions with small-scale miners

1. How did you become a miner?
2. How easy or difficult it is to obtain a mining claim and an environmental contract?
3. What measures do you protect the environment?
4. What rehabilitation method do you employ?
5. How of do you submit environmental reports to MET?
6. What are your recommendations, if any?

Section 2: Interview questions with MET Chief Control Warden for Erongo Region and MET`s Director of Environmental Affairs

Section 2 (A) Interview questions with Mr. Cletius Maketo, MET`s Chief Control Warden for Erongo Region

1. As a head of MET in Erongo region can you briefly state your main responsibilities regarding managing environmental contracts for the small-scale miners?

2. What type of administrative needs has you discovered in managing the activities of small-scale miners in the region?
3. What administrative measure do you have in place for monitoring compliance of environmental contracts by the MC holders?
4. How do you combat illegal mining operations in the region?
5. What monitoring mechanisms do you have in place over small-scale mining?
6. How often does your office conduct mining site inspections?
7. What are your recommendations if any?

Section 2 (B) Interview questions with Mr. Teofilus Nghitila, the Director of Environmental Affairs in MET

1. What measures do MET have in place to ensure that all MC holders have entered into environmental contract with the government?
2. How promptly the environmental contracts are processed?
3. As a head of DEA, what are your major responsibilities in ensuring that the small scale miners are meeting their contractual obligations?
4. What administrative measures do you have in place for monitoring compliance of environmental contracts by the MC holders?
5. It is claimed that the small scale miners do not submit their bi annual environmental reports and MET only sends them letters reminding them to

submit reports and no stronger measures has been taken. Dispute / confirm this.

6. How often do your office release staffs to go conduct inspections?
7. How often does your office conduct environmental awareness among the miners?
8. What are your recommendations if any?

Section 3: Interview questions with Mr Erasmus Shivolo, Mining Commissioner, MME

1. What is the role and obligations of MME in ensuring that the miners have entered into environmental contract with the government as stipulated in the Minerals Policy?
2. What information network is in place that enables MET and MME to monitor the miner's compliance to the environmental contract?
3. From your point of view has the minerals policy been a success or a failure with regard to environmental protection during small-scale mining?
4. What administrative measures do MME has in place to assist the miners with regard to environmental protection?
5. It is claimed that the shortage of mining inspectors and funds restricts the proper enforcement of environmental contracts: Dispute/ confirm such claim.

6. What are your recommendations if any?

Section 4: Interview questions with Mr Andreas Palfi, the geological consultant

1. What type of assistance do you provide to the small scale miners
2. From your point of view what type of assistance do the small-scale miners need during their mining operations with emphasis on environmental protection?
3. How the small-scale miners are handling waste and rehabilitation?
4. What are your recommendations if any?

Appendix B: List of people interviewed

List of small-scale miners

- | | |
|---------------------|-------------------|
| 1. Martha van Wyk | Small scale miner |
| 2. Mr. Paulus | Small scale miner |
| 3. Victory Johannes | Small scale miner |
| 4. Gerit Zandberg | Small scale miner |
| 5. James Raaw | Small scale miner |
| 6. Raaths Lourens | Small scale miner |
| 7. Martha Nanus | Small scale miner |
| 8. Seibeb James | Small scale miner |
| 9. Eddy Gotthardt | Small-scale miner |
| 10. Gariseb Awarab | Small scale miner |

List of senior government officials

- | | |
|----------------------|-----------------------------------|
| 1. Teofilus Nghitila | Director of Environmental Affairs |
| 2. Erasmus Shivolo | Mining Commissioner |
| 3. Cletius Maketo | Chief Control Warden |

List of geological consultant

- | | |
|------------------|-----------------------|
| 1. Andreas Palfi | Geological Consultant |
|------------------|-----------------------|

Appendix: C Environmental questionnaire for mining claims in Namibia



REPUBLIC OF NAMIBIA

ENVIRONMENTAL QUESTIONNAIRE FOR MINING CLAIMS IN NAMIBIA

BEING APPENDIX A TO THE ENVIRONMENTAL CONTRACT

1. Background information

- 1.1 Companies (or individuals) applying for **MINING CLAIMS** must complete this questionnaire.
- 1.2 The answers provided in this questionnaire shall be regarded as commitments which will become part of the **Environmental Contract** between the Holder and the Government of the Republic of Namibia, duly represented by the Ministry of Environment and Tourism (MET) and the Ministry of Mines and Energy (MME).
- 1.3 Once the Holder has completed this questionnaire the MET and MME will either accept / reject / request further information regarding the environmental commitments made therein. The MET and MME reserve the right to add further conditions.
- 1.4 Once agreed to by all parties concerned, the completed questionnaire shall form part of the **Environmental Contract**.
- 1.5 **Please attach a map of the claim area and a copy of application to register claims.**

2. Holder details

2.1	Name of Holder		
2.2	Name of Claim Holder (if different from 2.1)		
2.3	Telephone, Fax , Cell phone and/ E-mail	Tel: E-mail:	Fax: Cell phone:
2.4	Postal Address Residential/ Registered Address		

2.5 Reference Number	NEPL no: Expiry:
2.6 Claim Number	
2.7 Location, district and Region of claim	
2.8 Minerals to be mined	

2.8 How many people will work on your claim, and where will they live?

Number of people	Where will the people live

3. Environmental commitments

3.1 Pollution and Waste

3.1.1 What will you do with **normal litter** (e.g. Kitchen spoils, cans, bottles, paper, etc.)

3.1.2 What **industrial waste** will be generated and what will you do with it (e.g. old machinery, vehicles, building rubble, batteries, paint, thinners, vehicle oil, etc.)

--

3.1.3 Describe what type of **toilet facilities** will be provided

3.2 Vehicles, earthmoving equipment, drilling and blasting :

3.2.1 List the type and quantity of vehicles, earthmoving equipment, drilling equipment, and other machinery likely to be used on your claim (e.g. 2 x bakkie; 1 x bulldozer, etc.)

Vehicles:

Earthmoving equipment:

Drilling equipment:

Other equipment or machinery:

3.2.2 Describe the environmental damage that is likely to result from the use of vehicles and machinery within the claim area. (e.g. on the landscape in general, soil, vegetation, noise, dust, etc....)

3.2.3 How will you control the movement of **vehicles and machinery** in order to minimise **Environmental damage?**

3.2.4 Which routes will be used by vehicles to get to your claim and state whether you intend making new roads or tracks (both to your claim and within your claim).

--

3.2.5 Will you do any blasting on your claim?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Unsure <input type="checkbox"/>
---	------------------------------	-----------------------------	---------------------------------

3.2.6 If "yes" above, explain how you intend minimising environmental impacts, including the safety of humans, livestock and wildlife ?

3.3 Water

3.3.1 How much water do you intend using for various activities (e.g. Human use, washing of equipment, washing sand/stones, recreation, dust control, gardens, etc.) and state how you intend saving water within each category of use.

Activity or category of use	Quantity of water needed per month (litres)	Water saving methods

3.3.2 Where will you get your water (e.g. river, own borehole, water affairs connection, etc)

3.3.3 Explain how you will minimise or completely avoid polluting any water source, including underground water.

3.4 Relations with neighbouring communities and/or the general public

3.4.1 Are there any people living in or near your claim ?

Yes No Unsure

3.4.2 If "yes", explain where these people live and describe their economic activities.

3.4.3 If "yes" in (3.4. 1) explain what you will do to maintain a good relationship with such people.

3.4.4 Will the activities on your claim restrict the movement of other people in the area ? (e.g. the general public, tourists, farmers, local people, etc.)

Yes No Unsure

3.4.5 If "yes" for 3.4.4. please explain why their movements or access will be restricted

--

3.5 Protection of plants and wildlife

3.5.1 How will you ensure that your activities will not cause unnecessary damage to **plants and wildlife** in or near your claim (e.g. hunting, plant collecting, fishing, etc.) ?

3.6 Historical, archaeological and cultural heritage

(e.g. Rock art, graves, monuments, fossils, sacred sites, historical buildings, etc.)

3.6.1 Are there any historical, archaeological or culturally important sites within your claim area (tick one box) ?

Yes No Unsure

3.6.2 If "yes" above, please describe these briefly

--

3.6.3 If such sites are known, how will you avoid damaging them ? .

3.6.4 If such sites are discovered after you have started working your claim, would you accept new conditions to this contract so that they can be properly protected ?

Yes No Unsure

3.7 Rehabilitation

3.7.1 When will you rehabilitate the environmental damage done during prospecting ?
(tick appropriate box)

- I have no intention of rehabilitating any damage
- On a continuous basis (i.e. simultaneous with prospecting)
- Only after all prospecting has finally been completed
- Don't know

3.7.2 Describe the methods you will use to rehabilitate damage:

4. Existing Damage

Describe what environmental damage exists in your claim area now, in other words, damage caused by someone else before you began working on the claim. (where possible, provide evidence such as photo's, statements, etc.)

I hereby declare that the information provided in this questionnaire is, to the best of my knowledge, accurate and correct, and that I'm prepared to keep to the commitments stated therein.

.....
Claim Holder or Authorized
Representative

.....
Place

.....
Date

Appendix D: Pro Forma Environmental Contract



REPUBLIC OF NAMIBIA

PRO-FORMA ENVIRONMENTAL CONTRACT

WHEREAS the Applicant/ Company referred to below, has been notified under section 48(4) of the Minerals (prospecting and Mining) Act, 1992 that the Minister of Mines and Energy is prepared to grant the applicant a _____ subject to certain terms and conditions and;

WHEREAS such terms and conditions include the condition precedent that the applicant enters into an Environmental Contract with the Government of Namibia;

IT is hereby agreed as follows:

1. PARTIES.

The parties to this contract are: -----

(hereinafter referred to as the "Holder") being the holder of Non Exclusive Prospecting Licence/ Exclusive Prospecting Licence/ Reconnaissance License/ Mining Claim(s)/Mining License/ (delete those not applicable)

no -----

on the one hand, and THE GOVERNMENT OF NAMIBIA
(hereinafter referred to as "the Government")

duly represented by:

THE MINISTRY OF ENVIRONMENT & TOURISM (MET)
and THE MINISTRY OF MINES & ENERGY (MME)

on the other.

2. GENERAL OBLIGATIONS.

2.1 The provisions contained in this contract are in addition to and do not detract from

any obligations which the Holder may have under the Minerals (Prospecting and Mining) Act, 1992 (the Act).

- 2.2 The Holder recognises that its prospecting / mining operations may have significant impacts on the environment. Accordingly the Holder undertakes that during the course of its operations it will take every practicable step necessary to ensure the mitigation of such impacts. In doing so it will liaise with the MET and MME as provided for in 3.3 and 4 below.
- 2.3 In particular the Holder will undertake necessary and adequate steps to ensure that environmental damage is reduced to a minimum and prevented insofar, as is practicable.
- 2.4 Should the Holder not carry out its environmental obligations it shall be liable for the environmental damage which may result. In this regard the Government reserves the right to:
 - 2.4.1 demand at any time financial or other guarantees to restore the environment or mitigate environmental damage which has, or which may occur, as a result of the Holder's activities;
 - 2.4.2 itself undertake such mitigatory or restorative measures and to recover the costs thereof from the Holder;
 - 2.4.3 claim compensation for environmental damage, which may have been brought about by the Holder's activities.
- 2.5 The Holder shall on completion or suspension of its operations, ensure that the impact on the environment is minimised and that every reasonable and practicable step is undertaken to ensure that the environment is left in a reasonable state. The provisions of clause 2.4 apply *mutatis mutandis* to environmental damage evident after prospecting, mining or other operations have been suspended or completed.
- 2.6 The Holder acknowledges that should it apply for a mining licence in consequence of its prospecting or other operations, it will have to comply with Namibia's National Environmental Assessment Policy (Directorate of Environmental Affairs, Jan, 1995) and that this will entail the carrying out of an Environmental Assessment (EA).

3. THE ENVIRONMENTAL CONDITIONS

- 3.1 In accordance with section 68(f) of the Act, which provides that an application for

a licence shall contain particulars of the existing condition of the environment, an estimate of the effect which the proposed operations may have, and the proposed steps to be taken to prevent or minimise such effect, the Holder has attached Environmental Conditions marked Appendix A.

- 3.2 The Holder acknowledges that once the MET and MME has determined that the information furnished in Appendix A is satisfactory, it will form part of this contract.
- 3.3 The Holder warrants that the information contained in Appendix A is to the best of its knowledge and belief true and correct and that it will notify the Government of any material changes therein. Should there be such material changes, the Government reserves the right to re-negotiate the terms and conditions of this agreement.

4. COMPLIANCE AND NOTIFICATION

- 4.1 The Holder acknowledges that the reports, which it is obliged to furnish to the MME (which is provided for in the notice from the office of the Mining Commissioner under section 48(4) of the Act) will include an Environmental Report.
- 4.2 The Holder acknowledges that officials from the MME and/or the MET may at any time conduct a compliance and/or performance inspection of its operations.
- 4.3 The Holder will keep records of its environmental performance and make these available to the officials referred to in 4.2.

SIGNED AT _____ on thisday of2005

For the Holder:

.....
.....

(duly authorised thereto)

For the Government of Namibia:

.....

M. Lindeque
Permanent

Secretary
Ministry of Environment and Tourism

and

.....

Mr. E. Shivolo
Mining Commissioner
Ministry of Mines and Energy

Appendix E: Environmental conditions for mining

ENVIRONMENTAL CONDITIONS FOR MINING CLAIM

1. Pollution and waste

1.1 No toxic or hazardous chemicals may be brought into the prospecting area or deposited thereon (this excludes the use of petrol & diesel as fuel).

1.2 All domestic refuse and industrial waste will be deposited in a designated municipal refuse dump at regular intervals, but at least once every three months. No refuse may be dumped or buried within the prospecting or surrounding area, except if the landowner has an own specific designated refuse site for this purpose. Dumping of refuse on this site shall be negotiated with the landowner. It is permissible to store refuse temporarily in containers until such time as they are ready for removal. During such temporary storage, all paper and plastic refuse should be incinerated to avoid wind-blown litter. All attempts should be made to keep the area clean.

1.3 Pit latrines (toilets) will be provided for, and used by, all staff. Non-specific shallow pits may be used for toilets where small groups of people (< five) are staying in an area for less than one week with approval of the landowner.

2. Vehicles and Earthmoving equipment

2.1 Vehicular movement shall be restricted to existing fence-lines, roads and tracks wherever possible. Where it is unavoidable that vehicles and machinery need to create new roads or tracks, these new access routes shall be carefully planned so as not to cause unnecessary environmental damage. In any event, no new road may be established without the prior approval of the landowner.

2.2 Any trenches where prospecting or mining has been completed, shall be systematically backfilled with overburden and topsoil, and the area rehabilitated to as near as possible a natural state.

2.3 Notwithstanding clause 2.1, during the reconnaissance and planning phase of exploration, off-road vehicle access is permitted to areas where tracks are sparse. Specifically this access is to define places to which tracks may at a later stage be constructed. Such access is subject to prior approval by the landowner.

3. Water

3.1 Water shall be used sparingly and all reasonable attempts will be made to avoid water wastage.

3.2 Water shall be used only for human consumption, washing and essential prospecting-related activities.

4. Protection of Fauna and Flora

4.1 No hunting wood or plant collecting shall be allowed within the prospecting or surrounding area. The collecting of dead wood for domestic use may only take place with the concurrence of the landowner.

4.2 Every effort shall be made avoid starting veld fires. Should a fire occur as a direct or indirect result of the companies' activities, the company/ claim holder shall make every reasonable effort to extinguish such fire.

4.3 The company/ claim holder shall provide written instructions to its entire staff and sub-contractors to this effect.

5. Interaction with neighbouring communities and / or tourists

5.1 The company/ claim holder shall maintain good relations with any surrounding communities, and shall not deny any person transit rights through the prospecting area. This condition is mainly relevant for prospecting activities on state lands.

6. Rehabilitation

6.1 The company/ claim holder shall ensure that sufficient funds are available to affect appropriate rehabilitation of environmental damage.

6.2 The company/ claim holder shall ensure that rehabilitation of exploration trenches / holes / pits will take place within 8 weeks of the completion of exploration at any site.

6.3 Under no circumstances, shall trenches / holes / pits be left in a state where their existence endangers human or animal life.

7. Monitoring and reporting

7.1 The company/ claim holder shall submit every six months an Environmental Report to the Ministry of Environment and Tourism according to the prescribed format.

7.2 Staff from the Ministry of Environment and Tourism and / or the Ministry of Mines and Energy may at any time inspect prospecting areas.

8. General

The conditions stated in this notification are in addition to and do not detract from any obligations which the prospecting company may have under the Minerals (Prospecting and Mining) Act, 1992 The Nature Conservation Ordinance (Ordinance 4 of 1975), or the attached Pro-Forma Environmental Contract including the Environmental Questionnaire for Prospecting in Namibia, being Appendix A.

.....
M. Lindeque
Permanent Secretary
Ministry of Environment and Tourism

.....
Date

We agree to abide by the Pro-Forma Environmental Contract and the Environmental Conditions.

.....
Holder

Appendix F: Environmental report for mining claim

ENVIRONMENTAL REPORT (ER) (Mining Claims Holders)

INSTRUCTIONS:

1. An Environmental Report shall be submitted to the Ministry of Environment and Tourism (MET) by the following dates each year: -

December to June and from June to December (biannually)

2. This form shall be the minimum reporting format. Mining Claim Holders are expected to attach a map of the area to this report. Mining Claim Holders are welcome to attach any other information they like, such as copies of new agreements, letters of explanation, aerial photographs, or anything else of interest.
3. The map shall be used to indicate the following:
 - * areas where activities has taken place,
 - * roads or tracks made and/or used,
 - * houses and other infrastructure erected,
 - * excavations or other scars that have been rehabilitated,
 - * conflict areas, etc....
4. It is recommended (but not compulsory) that Holders attach photographs to their report, which visually illustrate the activities described in their report.
5. Failure to submit an Environmental Report shall constitute a breach of the Environmental Contract, which could result in steps taken against the Holder.
6. All information contained in the Environmental Report shall be treated as confidential.
7. The Holder shall ensure that all the information recorded in the Environmental Report is, to their best knowledge, accurate and correct.

HOLDER DETAILS AND REPORTING PERIOD :

Name of Holder:

Address of Holder:

Telephone:

Fax number:

E-mail:

Name of person compiling report:

Reference number(s) of Mining Claim area / block / license:

Geographical location of area / block / license:

This report is for the period of: (tick the relevant box and fill in the year)

January - June 20

July - December 20

Other (please specify)

B. POLLUTION AND WASTE

Has all domestic refuse (eg. Household waste, bottles, tins, paper, plastic, etc) been removed from the mining claim area?

no

Yes

If "yes" above, specify the site where such refuse has been deposited:

How often is refuse removed to the site mentioned above? : every week

every two weeks

every three weeks

once a month

at irregular intervals

If refuse has not been removed, where has it been dumped?

As far as litter is concerned, would you describe your mining claim area as : Very clean Reasonably clean
Filthy

If your mining claim area is littered with refuse, please indicate how you intend cleaning it up :
.....
.....

Are toilets provided for all staff employed by the holder : yes
no

If “yes” above, are they : Flush toilets Chemical Toilets Pit Latrines
Other

If chemical toilets are used, how are old chemicals disposed of :
Deposited in evaporation ponds Deposited in a municipal refuse dump
Buried on site Other (specify)

C. VEHICLES AND EARTHMOVING EQUIPMENT

Indicate the types and number of vehicles and earthmoving equipment used on site during the reporting period (tick box in front of the category of vehicles used and then fill in the next boxes to indicate numbers)

<input type="checkbox"/> Pick-up trucks (“bakkies”), either 2x4 or 4x4	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Lorries / trucks between 5 - 10 ton capacity	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Lorries / trucks larger than 10 ton capacity	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Bulldozer of any size	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Road Grader of any size	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Front-end loader of any size	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Drilling machine of any type	How many in use	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> Other (specify)	How many in use	<input type="checkbox"/> <input type="checkbox"/>

D. ROADS AND TRACKS *In addition to ticking the following boxes, please draw roads/tracks made on an accompanying map in blue ink.*

Roads which have been rehabilitated (ie. restored to their natural state) can be scratched out in red pen.

Have new roads or tracks been made during the reporting period ?	yes <input type="checkbox"/>
no <input type="checkbox"/>	

If “yes” above how long are these (in kilometres) ?	<input type="text"/> <input type="text"/> <input type="text"/> Km
---	---

If “yes” above are these still in use ?	yes <input type="checkbox"/>
no <input type="checkbox"/>	

If “no” above have any of these roads or tracks been rehabilitated ?	yes <input type="checkbox"/>
no <input type="checkbox"/>	

If “yes” above, how have you done such rehabilitation ? : Ripping <input type="checkbox"/> Raking <input type="checkbox"/>
sweeping <input type="checkbox"/> Other (specify) <input type="checkbox"/>
.....

If road / track rehabilitation has taken place, how many kilometres of roads or tracks have been rehabilitated ? <input type="text"/> <input type="text"/> <input type="text"/> kilometres
--

E. TRENCHES OR PITS: *If new trenches or pits were made in the site / area during the reporting period, please indicate these by ticking the appropriate boxes AND by means of illustrating them on the same map described above. New pits or trenches made, should be numbered and drawn as a CIRCLE in blue ink, while pits or trenches which were rehabilitated during the reporting period should be scratched out in RED ink.*

Have new trenches or pits been excavated in your area during the reporting period ?	yes <input type="checkbox"/> no <input type="checkbox"/>
---	--

If “yes” above, what are their approximate sizes or dimensions ? (in metres)
1. Trench / pit No.1 : Size / dimensions : <input type="text"/> <input type="text"/> Cubic metres or <input type="text"/> length x <input type="text"/> breadth x <input type="text"/> depth
2. Trench / pit No.2 : Size / dimensions : <input type="text"/> <input type="text"/> Cubic metres or <input type="text"/> length x <input type="text"/> breadth x <input type="text"/> depth
3. Trench / pit No.3 : Size / dimensions : <input type="text"/> <input type="text"/> Cubic metres or <input type="text"/> length x <input type="text"/> breadth x <input type="text"/> depth
4. Trench / pit No.4 : Size / dimensions : <input type="text"/> <input type="text"/> Cubic metres or <input type="text"/> length x <input type="text"/> breadth x <input type="text"/> depth

5.
.....
.....

6.
.....
.....

Were any holes/trenches rehabilitated during this period of reporting ? yes (show on map) no

F. INFRASTRUCTURAL DEVELOPMENT

Infrastructural Developments means any offices, houses, sheds, cement slabs, or other buildings or foundations for buildings. It also includes storage tanks (for water, fuel or other substances), temporary housing such as mobile homes & caravans, prefab units and tented camps. Please report on new construction or additions to buildings you reported on, in your previous Environmental Report.

Was any NEW infrastructure established during this period ? yes No

If “yes” above, is this infrastructure : Permanent Temporary A combination

Describe infrastructure by ticking boxes : Offices Housing
Sheds Prefab structure Garages
Storage tanks Cement slabs Foundations
Other
If “other”, please specify :
.....

G. BOREHOLES, SAMPLE HOLES OR OTHER DRILLING

This category includes holes drilled for water, for taking mineral or other samples, for setting explosives, for testing mineral quality, or any other purpose.

Were any holes drilled during this period ? yes no

If “yes”, for which purpose were they drilled ? Water depth
Quantity

Quantity <input type="text"/> <input type="text"/> <input type="text"/>	Sampling <input type="checkbox"/> depth <input type="text"/> <input type="text"/> <input type="text"/>
Quantity <input type="text"/> <input type="text"/> <input type="text"/>	Explosives <input type="checkbox"/> depth <input type="text"/> <input type="text"/> <input type="text"/>
Other <input type="checkbox"/> (specify)	depth <input type="text"/> <input type="text"/> <input type="text"/>
Quantity <input type="text"/> <input type="text"/> <input type="text"/>	

H. WATER

Your estimated monthly water consumption during this period was :
 cubic metres

Water was obtained from : River Borehole Dam Water Affairs
 Other

Please estimate the percentage of water used for the following activities during this period:

Human consumption	<input type="text"/> <input type="text"/>	%
Toilets	<input type="text"/> <input type="text"/>	%
Mining claim activities	<input type="text"/> <input type="text"/>	%
Washing vehicles & equipment	<input type="text"/> <input type="text"/>	%
Dust control	<input type="text"/> <input type="text"/>	%
Building activities	<input type="text"/> <input type="text"/>	%
Gardens	<input type="text"/> <input type="text"/>	%
Recreation	<input type="text"/> <input type="text"/>	%
Other (specify)	<input type="text"/> <input type="text"/>	%

Were there any accidents which caused a loss of water ? yes no

If "yes", please give details

PROTECTION OF FAUNA AND FLORA

Please answer the following questions by ticking the appropriate boxes :

Question :	Yes	No
Unsure		
Were any mammals, birds, reptiles or fish killed or wounded (purposefully or accidentally) in the mining claim site or area ?	<input type="checkbox"/>	<input type="checkbox"/>
Were any plants (excluding grasses) picked, damaged or removed ?	<input type="checkbox"/>	<input type="checkbox"/>

Was there any wood collecting in the area ? <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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J. RELATIONS WITH NEIGHBOURS, OFFICIALS AND/OR THE GENERAL PUBLIC

Were there any conflicts with neighbours, land-owners, Government Officials or the public during this period ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If “yes” above, what was the nature of these conflicts ? (tick boxes to provide answers)		
People entered the area without permission or prior arrangement	<input type="checkbox"/>	
Complaints about reduced access to water or other resources	<input type="checkbox"/>	
Complaints about danger posed to livestock or wildlife	<input type="checkbox"/>	
Allegations about stock-theft or poaching	<input type="checkbox"/>	
Complaints about vehicle or equipment movement on access roads / tracks	<input type="checkbox"/>	
Complaints about litter or other types of pollution (eg. Noise, dust, etc.)	<input type="checkbox"/>	
Complaints about the activities / actions of Holder staff	<input type="checkbox"/>	
Allegations that the Holder was not adhering to contracts / agreements	<input type="checkbox"/>	
Allegations that the Holder damaged property or installations	<input type="checkbox"/>	
Allegations that gates were left open or unlocked	<input type="checkbox"/>	
Other (specify).....	<input type="checkbox"/>	

If conflicts arose, indicate how these were resolved ? (tick boxes)	
Verbal agreement after discussions.....	<input type="checkbox"/>
Written agreement by special contract.....	<input type="checkbox"/>
Instructions to Holder staff to avoid conflicts.....	<input type="checkbox"/>
Holder rectified its mistakes and undertook to avoid future wrong-doing..	<input type="checkbox"/>
Court action or other third party arbitration.....	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>
The conflicts remain unsolved.....	<input type="checkbox"/>

Any other comments or information :

.....

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

I declare that the information provided in this Environmental Report is, to the best of my knowledge, accurate and correct.

.....
Holder

.....
Date

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