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MASTER THESIS

**Mining diamonds in Namibia—
Addressing environmental and
human development impact**

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Declaration

I hereby declare, that I have written this master thesis titled: “Mining of Diamonds in Namibia - Addressing environmental and human development impact”, myself with help of the literature listed in references.

Prague, 25 April 2013

.....

Paulina Nakashole

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Abstract

Namibia is endowed with a rich natural resource base, but the benefits gathered from these diamonds have not sufficiently trickled down to the local people as expected. One of the most important mining minerals are diamonds, which mining began in the country over a century ago. Before independence, diamonds mined in the country were all exported in rough form to international markets. In return, Namibia benefited from taxes and royalties, but lost out on developing a downstream diamond economy with the potential to create employment, and, to generate increased income for the state. Even today, 95% of diamond production is exported in rough form to international markets and, therefore, some benefits derived from diamonds do not reach the Namibian nation. Moreover, mining activities have a negative effect on local environment and through this on human development as well. Thus, the objective of the thesis is to analyze the impact of diamond mining industry on one of the most important mining area in Namibia, the Oranjemund community in Karas region, on human and environmental development. The total numbers of 49 respondents were interviewed through questionnaire. Data were processed via MS Office Excel®. The results showed strong negative correlation among following variables observed in mining town and satisfaction with mining: age, education and period stayed ($r=0.9245$, $p=0.0000$). The fact that education does not influence satisfaction with mining, which is obvious looking at the results that those respondents with low level of education seems to be more satisfied with mining compared to those with high level of education, can be explained through overall poverty and low human development. People put higher priority to the incomes that can be generated as salaries and do not consider environmental consequences and/or possibility of vertical integration and added value increase at regional or national level.

Key words: diamond, mining, poverty, economic growth, economic development, maximizing, government, household survey, NAMDEB, De beers, environment, pollution, Oranjemund, Namibia.

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List of Abbreviations

AIDS	: Acquired Immune Deficiency Syndrome
DBN	: Development Bank of Namibia
DTC	: Diamond Trading Company
EMS	: Environmental Management System
ESCOM	: Electricity Supply Commission
EU	: European Union
FDI	: Foreign Direct Investment
GDP	: Gross Domestic Product
GNP	: Gross National Product
HDI	: Human Development Index
IFAD	: International Fund for Agricultural Development
HIV	: Human Immunodeficiency Virus
IMF	: International Monetary Fund
ISO	: International Organization for Standardization
KPCS	: Kimberly Process Scheme
MLSW	: Ministry of Labour and Social Welfare (Namibia)
MME	: Ministry of Mines and Energy (Namibia)
MF	: Ministry of Finance (Namibia)
MUN	: Mines Workers Union
NAMCO	: Namibian Minerals Corporation
NAMDEB	: Namibian Diamond Corporation Ltd.
NamZinc	: Namibian Zinc Pty Ltd.
NDTC	: Namibian Diamond Trading Company
NPC	: National Planning Commission
SACU	: Southern African Customs Union
SADC	: Southern African Development Community
UN	: United Nations
UNDP	: United Nations Development Programme

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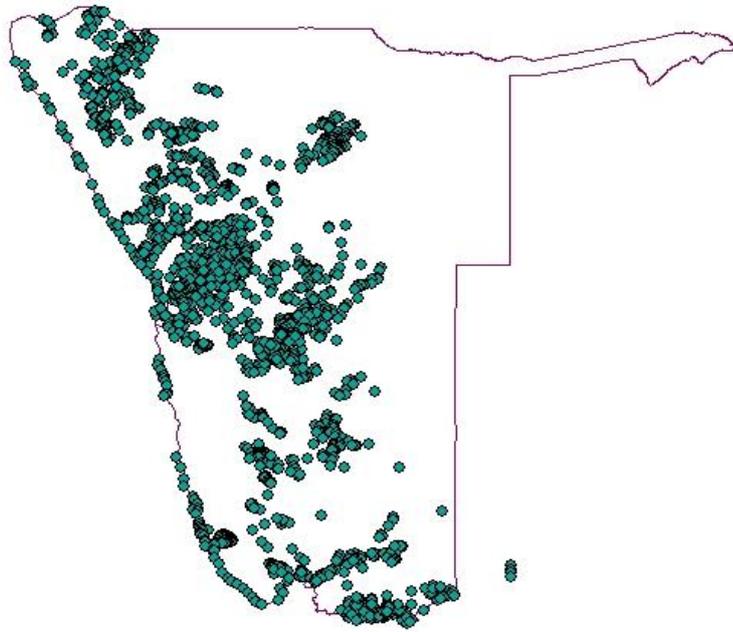
1. INTRODUCTION

According to Oxford dictionary mining is excavation in the earth from which ore or minerals can be extracted. Furthermore mining can be defined as the removal of minerals from the earth's crust in the service of man (Down and Stock, 1977 cited in Acheampong). The definitions may differ from source to source but have same meaning. The first diamonds were mined in India, in alluvial deposits of the stone along the rivers Krishna, Penner and Godavari over 4000 years ago. After 400 years of being discovered, diamonds continues its enduring legacy as the world's ultimate symbol of wealth.

According to Photius (2012), the diamond industry has different segments such as mines, processing and diamonds markets; he further states that gem quality diamonds are primarily mined in Namibia, Botswana, Russia, South Africa, Angola, and Australia. It takes an average of 250 tons of mined ore to produce one carat of finished diamond.

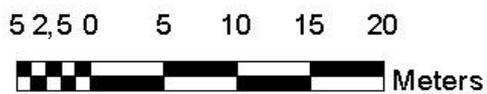
Namibia is a country endowed with a variety of valuable minerals, ranging from copper, zinc, uranium to gold, and, of course, diamonds (see map 1 below.)

MINERAL DEPOSITS IN NAMIBIA



Legend

- Mineral deposits in Namibia
- namibias borders



Paulina Nakashole
CULS, 2013

Map 1, data NAMDEB 2012

National Planning Commission (2008) announced that “the diamond mining sub-sector is one of the major contributors to the Namibian economy in terms of economic output and exports.” The potential of Namibian diamonds cannot be understated and exploring mechanisms to maximise this potential through a beneficiation process is central to this study. The question of maximizing the benefits from diamonds continues to be an imperative discussion in this important sub-sector, and in Namibia as a whole.

Diamond beneficiation can be summarized as a plan to promote diamond value addition by turning the natural resource into shared national wealth.

According to Brilliant earth (2013), Diamonds mined in Namibia are mined according to strict environmental and social responsibility standards. Namibian diamonds have been highly beneficial to the country for many years by creating employment, and contributing revenue to the state through corporate tax, dividends and royalties, but there remains much more scope for the country to further benefit from its diamonds. The revenues from the diamond industry are essential in funding economic development programs and social transformation. Maximizing benefits derived from diamonds can greatly contribute further to the Namibian economy through increasing national economic activities and improving state revenue, reducing the need for imports, improving the skill level in the minerals industry and widening the employment base (MTM, 2006).

This paper discusses the environment and human development impact of mining activities in Namibia's largest diamond production town, Oranjemund. In the first chapter, literature review, the role of diamonds in national economy is discussed as well as pros and cons of their mining on economic and environmental situation. Moreover, the second chapter of literature review discusses the mining strategy and roots of poverty in Namibia, when the country is blessed with resources yet it's still plagued by poverty. This paper further discusses the satisfaction of people with the mining industry in the country, who were randomly selected from the diamond town, Oranjemund.

The importance of diamond activity for the Namibian economy at both the individual and international level, and will provide a comparative analysis of the various beneficiation initiatives taking place in southern Africa based on research works available, using Botswana as comparative case study.

The issues discussed in this chapter shall be grouped under the broad headings below. A critical reviews of various theories and academic points of views are summarized, specifically those that have a bearing on the problem, which is to investigate how the benefits that are derived from the Namibian diamonds can be maximized. The report shall access and analyze, under following headings with several sub-headings:

- ❖ DIAMOND MINING OVERVIEW IN THE WORLD
- ❖ DIAMOND AND NAMIBIAN NATIONAL ECONOMY
- ❖ DIAMOND INDUSTRY AND POVERTY IN NAMIBIA
- ❖ MINING, DIAMOND INDUSTRY ON HUMAN DEVELOPEMENT AND ENVIRONMENTAL IMPACT

1.1 DIAMOND MINING OVERVIEW IN THE WORLD

The mining sector is a source of intense controversy regarding development trajectories for mineral rich countries in Africa. As cited below several authors from The development institutions and macroeconomists have argued for harnessing natural resources as an entry point for development, but the development process in Africa is going very slowly (Davis and Tilton, 2003 In: Yelapaala and Ali, 2005). Social and environmental activists have often pointed to the potential linkages between mineral endowments and conflict and consequential underdevelopment (Ross, 2001). Several countries worldwide have made various attempts and significant strides in maximising the benefits derived from their diamonds during the last decades. Lamont (2003) argues that the diamond beneficiation process is not a new concept but a developmental initiative, which appeared in the early 1990s when southern African countries began to sensitise each other towards the cultivation of a concept that would ensure that the citizens of their respective countries, would fully benefit from the natural resources of these countries. In contrast to this, Janiurek-Ashipala (2005) argues that full exploitation of the diamond value chain should be beneficial to the producer countries so that employment and economic expansion is made and accelerated for the benefit of its citizens. It is only through this process that producer's countries will feel a sense of ownership to the diamond activities and the benefits that is derived through the resources. According to Kimberly Process statistics (2011), in the year 2010 the global rough diamond production went up 39% by value.

Statistics on overall production differ from source to source and huge percentage of total production is believed to be not covered in official numbers. Nevertheless, journal (Ministry of Mines and Energy, 2011) indicated that Botswana seems to remain on top in many occasions, e.g. according to the Corbett, (2006) Botswana has been the largest producer of rough diamonds by value in the year 2011 at US\$ 3.902 billion for 22.905

million carats, followed by Russia was topping as a top producer by volume at 35.140 million carats valued at US\$ 2.675 billion. Canada was the third at US\$ 2.551 billion followed by South Africa with US\$ 1.730 billion. In addition to the mentioned above other top producers of diamond by volume in 2010 were the Democratic Republic of the Congo with 20.17 million carats, South Africa with 13.67 million carats, Canada reported 11.8 million carats, Zimbabwe mined 8.44 million carats and Angola produced 8.36 million carats respectively (figure 1 below) (Kimberley Process, 2012).

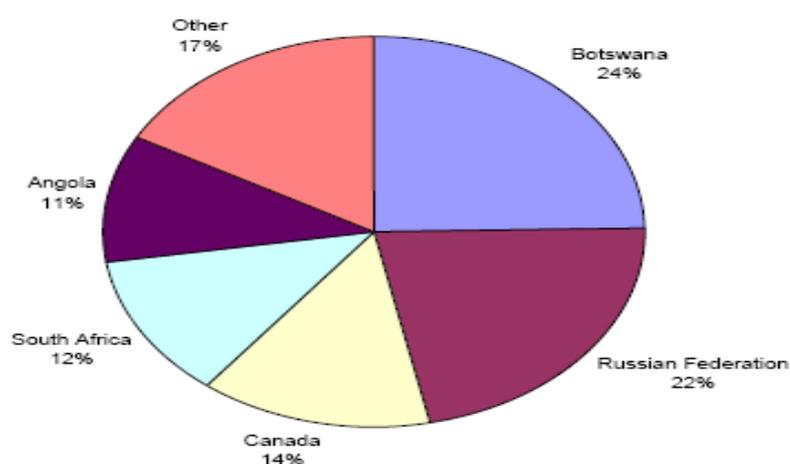


Figure 1 Production by value in the world

Source: Kimberley Process Certification Scheme (2012)

Other top diamond producers countries in terms of value included Angola with US\$ 976.3 million, Namibia at US\$ 873 million, Zimbabwe at US\$ 476 million and Australia with US\$ 221million (Kimberley Process, 2011).

Taking into consideration diamond production, the position of Namibia is very specific. On the one hand, Namibia has fallen from the world top five diamond producers, but on the other hand, Namibia's diamonds remain the top in the terms of quality.

Based on the data provided by the Kimberley Process (2012), below is the table indicating the top ten Diamond producing countries ranked by value.

Table 1

Top Ten Diamond Producing Countries by Value										
2011 Rank	Country	2011 Rough Production			2010 Rough Production			% Change From 2010		
		\$M	Cts '000	\$ / Ct	\$M	Cts '000	\$ / Ct	\$	Cts	\$ / Ct
1	Botswana	\$ 3,902	22,905	\$ 170	\$ 2,586	22,018	\$ 117	51%	4%	45%
2	Russia	\$ 2,675	35,140	\$ 76	\$ 2,382	34,857	\$ 68	12%	1%	11%
3	Canada	\$ 2,551	10,795	\$ 236	\$ 2,305	11,804	\$ 195	11%	-9%	21%
4	South Africa	\$ 1,730	8,205	\$ 211	\$ 1,194	8,863	\$ 135	45%	-7%	56%
5	Angola	\$ 1,163	8,329	\$ 140	\$ 976	8,362	\$ 117	19%	0%	20%
6	Namibia	\$ 873	1,256	\$ 695	\$ 744	1,693	\$ 440	17%	-26%	58%
7	Zimbabwe	\$ 476	8,503	\$ 56	\$ 340	8,435	\$ 40	40%	1%	39%
8	Australia	\$ 221	7,830	\$ 28	\$ 252	9,976	\$ 25	-12%	-22%	12%
9	Lesotho	\$ 359	224	\$ 1,602	\$ 198	109	\$ 1,817	82%	106%	-12%
10	Congo (DRC)	\$ 180	19,249	\$ 9	\$ 174	20,166	\$ 9	3%	-5%	8%
	Other	\$ 278	1,555	\$ 179	\$ 241	2,033	\$ 118	16%	-24%	51%
	Totals	\$ 14,407	123,990	\$ 116	\$ 11,393	128,315	\$ 89	26%	-3%	31%

Source: Kimberley Process (2012)

2. LITERATURE REVIEW

Several countries worldwide have made various attempts and significant strides in maximizing the benefits derived from their diamonds (Kandell, 2007). Lamont (2003) argued that the diamond beneficiation process is not a new concept but a developmental initiative, which came about in the early 1990s when southern African countries began to sensitize each other towards the cultivation of a concept that would ensure that the citizens of their respective countries would fully benefit from the natural resources of these countries.

Janiurek- Ashipala (2005) and Baartjies (2007) on the other hand argue that full exploitation of the diamond value chain should be beneficial to the producer countries so that employment and economic expansion is made and accelerated for the benefit of its citizens. It is only through this process that producer's countries will feel a sense of ownership to the diamond activities and the benefits that is derived through the resources.

The importance of diamond activity for the Namibian economy at both the individual and international level, and will provide a comparative analysis of the various beneficiation initiatives taking place in southern Africa based on research works available, using Botswana as comparative case study.

2.1 DIAMOND AND NAMIBIAN NATIONAL ECONOMY

During the last two decades, Namibia had experienced steady economic growth (refer to figure 2 below), moderate inflation, limited fiscal debt, a robust mining sector, a fairly developed infrastructure, and a strong legal and regulatory environment (World Bank, 2013).



Figure 2 Production by value in US\$ (total value = \$12,106,550,822)

Source: World Bank (2013)

The strong performance in the mining sector was the major driver of the economic growth in the Q4 2012, after the released quarterly economic update released. The mining sub sector recorded growth of 47.7% year on year on the back of a strong rebound in diamond output, which increased by 51.4% year on year respectively. The diamond production increased from 1.3 million carats in 2011 to over 1.6 million carats, which indicates the growth in diamond production in 2012(Ministry of Finance 2012).During the global economic crisis in 2009 just like all other countries, the Namibian economy was affected since there was low demand for Namibia's commodity exports, mainly diamonds. The crisis also caused reduction in the transfer payments the country receives since it's a member in the Southern African Customs Union (SACU) (Kruger and Wald, 2011).

It is believed that the contributions of diamonds to the national economy are amongst others manifested in employment creation as the local industry employs more than 3,000 workers. The industry benefits the nation in many ways: it delivers 45% of export revenue, 7% of tax income, 10% of the GDP and US\$ 255,299 in Corporate Social Responsibility spending (Ministry of Information and Communication, 2011). According to the African Business (2007), diamond and uranium production have remained one of the backbones of the Namibian economy accounting for 8.0 percent of total GDP, 45 percent of export value and 38 percent of the primary industry output.

In 2006, diamond production exceeded 2 million carats and generated over US\$ 200 million in export earnings which is about half of the total earnings (Sherbourne, 2007). Chamber of Mines (2008) stated that the industry employs 3,500 of the country's population and contributed close to US\$ 28.5 million to the government in statutory fees and state income. Furthermore, diamond mining output for Namibia was projected to grow by 6.9 percent in 2010, driven by offshore mining and high world demand (Bank of Namibia, 2008). International diamond market is expected to increase by 7.9 percent, driven mainly by high demand from China and India (Kimberley Process), 2012.

The supply, on the other hand, is expected not to match the increased demand because of a worldwide shortage and lack of new discoveries. As a result of excess demand, the price for both rough and polished diamonds will continue to be firm and is expected to rise in real terms each year between two and five percent or even as high as 10.0 percent for high quality stones (Chamber of Commerce, 2007).

2.1.1 General overview of the Namibian economy and the role of 'diamond industry'

United Nations define a mining economy as one that generates “*at least 10 percent of gross domestic product from mining and at least 40 percent of foreign exchange earnings from mineral exports*”. It is important to understand and gauge the Namibian economy in order to comprehend the impact it has on the maximisation of diamond benefits in the country. The country's economic sphere will be discussed briefly to ascertain specific characteristic that the economy poses for the benefits of its most lucrative industry – diamonds. According to the Bank of Namibia (2010), the country's economy has a modern

market sector, which produces most of the country's wealth, and a traditional subsistence sector a Gross Domestic Product per capita at 2749.27 US dollars in 2011. The GDP per Capita in Namibia is equivalent to 22 percent of the world's average. However, despite this economic level, Namibia also has one of the most unequal income distributions in the world (World Bank, 2012).

Table 2 Socioeconomic indicators of Namibia (2010)

Indicator	Unit of measure	Value
Total population	millions	2.3
Annual population growth (2010)	percentage	1.8
GDP (current in US\$)	billions, current US\$	12.2
Per capita GDP	US\$	5,330
Gini coefficient	...	>0.70
Annual GDP growth 2010	percentage	4.8
Life expectancy at birth	years	61.6
Literacy rate, youth female (national average 85%)	percentage of females ages 15-24	94.9
Infant mortality rate	per 1,000 live births	29.3
Prevalence of HIV, total	percentage of population ages 15-49	13.1

Source: World Bank (2010)

Like any other African country, the majority of the population lives in rural areas and depends on subsistence agriculture and herding for a living. The country has more than 200,000 skilled workers, as well as a small, well-trained professional and managerial class. Since independence, the government has pursued free-market economic principles designed to promote commercial development and job creation to assist disadvantaged Namibians benefit from the country's economy (Janiurek-Ashipala, 2005).

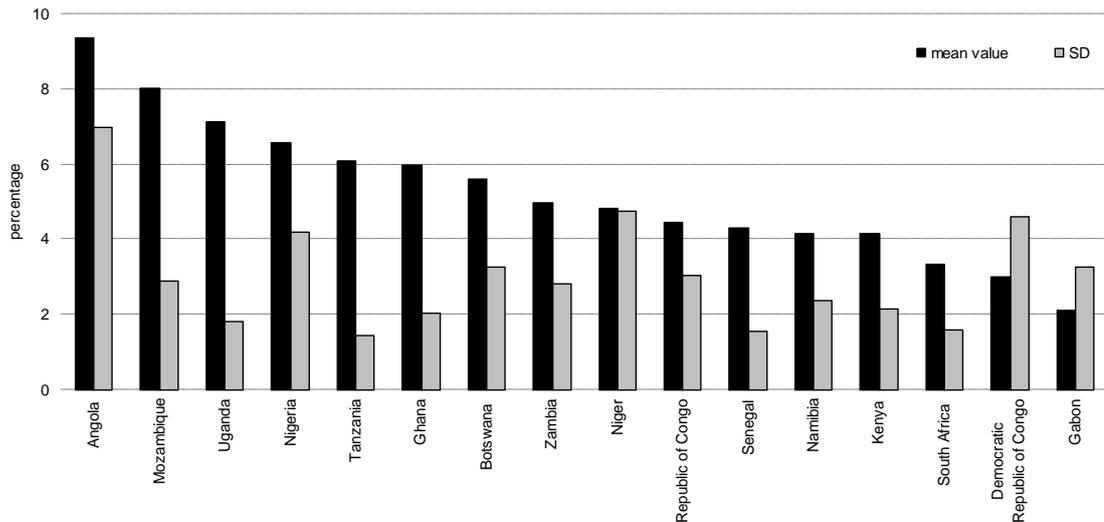


Figure 3 Average annual growth of GDP in selected countries from Sub-Saharan Africa (1995-2015)

Source: IMF (2012)

Generally, it has to be stated that per capita income in Namibia is higher comparing to other countries in Sub-Saharan Africa sub-region. Nevertheless, the Namibia Chamber of Mines (2007) stressed that the economic growth in Namibia is estimated to have slowed down considerably during 2007 to 3.8% comparing to 4.1% in the preceding year. Correspondingly, based on IMF data (IMF, 2012) we can conclude that annual growth of Namibian economy is one of the lowest among sub-Saharan countries (see Figure 4 above) and not surprisingly, is highly correlated ($r=0.5299$; $p=0.0000$) with GDP dynamics of South Africa (see Figure 4 below).

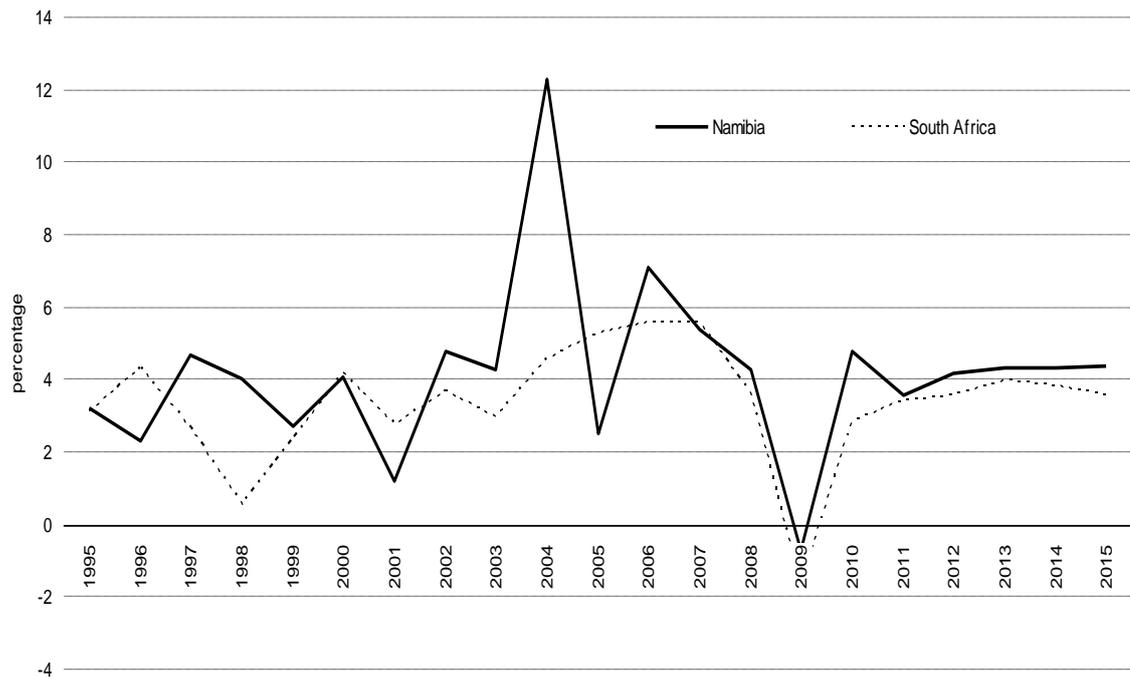


Figure 4 Annual growth of GDP in Namibia and South Africa (1995-2015)

Source: IMF (2012)

During 2007, persistent inflationary pressures were witnessed in Namibia as a result of high food prices, supported by high and volatile international oil prices. Increased food prices are attributed to the escalating cost of production, resulting mainly from rising fuel prices and other factors such as global milk shortages experienced during the year. In an effort to contain inflationary pressures, cites the Bank of Namibia. As a fundamental contributor to the Namibian economy, the country continues to be heavily dependent on the earnings generated from primary commodity exports in a few vital sectors, including agriculture fish and, of course, natural resources, such as minerals or diamonds.

In the context of minerals' input to GDP, the diamond industry has demonstrated itself to be one of the most vital industries in Namibia, contributing close to one tenth of national GDP, and employing a significant number of people (see Figure 5 below).

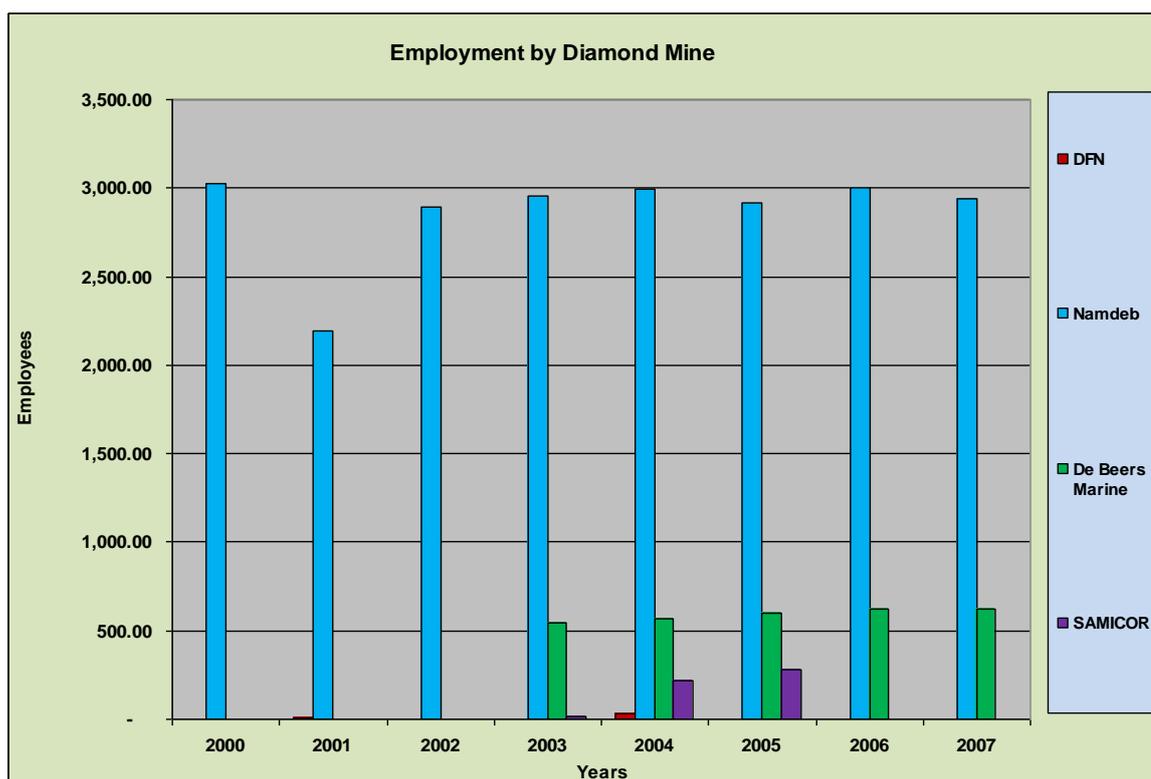


Figure 5 Employment by diamond mines

Source: Bank of Namibia (2008)

It is worth mentioning that the government of Namibia has encouraged business enterprises to maximise benefits from primary resources by engaging in mining activities, in order to increase added value to raw materials (Janiurek-Ashipala, 2005). In line with this effort, the Bank of Namibia (2008) reported that there was a significant improvement in the value added processes in manufacturing which was mainly reflected in the growth of meat, fish and other manufacturing sub-sectors.

2.1.2 Namibia's diamond industry performance in the international arena

In evaluating the importance of diamonds in Namibia, and the benefits derived, it is important to assess the performance of international diamond markets and their impact on Namibia's diamond industry. According to the KPCS (2007) Botswana, remained the largest producer of rough diamond followed by the Russian Federation and Canada coming in third place. South Africa and Angola came in fourth and fifth places respectively. Namibia tops amongst the high quality diamond producing countries in the world and thus

making it an attractive destination for establishing polishing and manufacturing factories (Boer, 2003). Additionally, Lamont (2003) stressed that it is Namibia's unique diamond characteristics that makes the country attractive for foreign direct investment (FDI).

Despite of Namibia being a competitive advantage on the quality of diamond it produce, the country is known for exporting most of its rough diamonds to other parts of the world with little or even no added value (African Business, 2007). On the other hand, Reed & White (2006) argue that this situation is not strange as Southern African countries are commonly known for being exporters of rough diamonds to the European Union (EU), who, according to the KPCS statistics of 2007, continues to be the leading importer of rough diamonds. Other countries such as India, United Arab Emirates, China or Israel also play a prominent role in the importing of rough diamonds from the African continent. Most rough diamonds were exported from southern African countries which contribute 60% of world production. This skewed situation of rough diamond being exporter to European countries can only be reduced when the producing countries can explore the benefits derived from the diamond industry (Minerd, 1999).

2.1.3 Namibian diamond strategy

Sherbourne (2007) made the fundamental argument for Namibia to maximize benefits from its 'diamond industry'. He highlighted that, there is a strong need to develop a national diamond strategy, highlighting amongst other priorities, concerns and ambition for the diamond industry and defined this strategy as "country's moves and approach that stakeholders employ to please the citizen of that country". Correspondingly, Thompson, Strickland and Gamble (2005) documented that this strategy should decide what direction Namibia wants to take in order for the diamond industry to move forward. They however, suggest that it is only through the extensive exploitation of the value chain, and by creating a jewellery industry, that Namibia can really say that it is benefiting from the diamond industry.

Sherbourne (2007) also stress that there is a need to promote diamond tourism in Namibia by creating a worthwhile initiative where a number of diamonds could be sold to tourists who come to Namibia as "Namibia diamonds," either because of their origin or where they

were cut, polished and turned into jewellery. These programmes, they argue, could be concluded as spin-offs resulting from increasing of the diamond pipeline through the significant integration into the downstream of the value chain. Voss (1998) support the above argument, that to take the route of emphasizing that government must take a leading role in the process of beneficiation. The pair suggests that certain parameters must be met for the successful implementation of the national initiative by establishing national diamond development plans which should be supported by the official promotion of good governance and transparency, hence creating better sustainable diamond business development (Simpson and Dore, 2004).

The national diamond producer and distributor, NAMDEB, employs the motto: ‘On Diamonds We Build.’ As indicated in the figure 6 below.



Figure 6 The gate entry to the diamond town

2.1.4 Tax Deduction and Exemption

Furthermore, as part of the government's drive to promote the mining of diamond in the country, incentives were created largely concentrated on stimulating manufacturing in the country while promoting exports into the region and to the rest of the world. Some of these general tax regulations which indicate government's commitment to the beneficiation process in Namibia include: Non-resident Shareholders' Tax is only 10 percent; Dividends accruing to Namibian diamond companies or resident shareholders are tax-exempt; Import or purchase of diamond manufacturing machinery and equipment is exempted from Value Added Tax (VAT); and Preferential market access to the USA and other markets for diamond manufacturers and exporters are provided (MME,2000)To make diamond manufacturing more competitive, government also introduced a number of special incentives for manufacturers and exporters, as illustrated in table 2 below:

Table 3 Summary of Special Incentives for Manufacturers and Exporters

	Registered Manufacturers	Exporters of Manufactured Goods	Export Processing Zone Enterprises
Eligibility and Registration	Enterprises engaged in manufacturing. Application to the Ministry of Trade and Industry and approval by the Ministry of Finance.	Enterprises that export manufactured goods whether produced in Namibia or not. Application and approval by the Ministry of Finance.	Enterprises engaged in manufacturing, assembly, packaging or break-bulk and exporting mainly to outside of SACU markets. Application to the EPZ Committee.
Corporate Tax	Set at a rate of 18% for a period of ten years, where after it will revert to the general rate of 35%.	80% allowance on income derived from exporting manufactured goods.	Exempt.
VAT	Exemption on purchase and import of manufacturing machinery and equipment.	Normal treatment.	Exempt.
Stamp and Transfer Duty	Normal treatment.	Normal treatment.	Exempt.
Establishment Tax Package	Negotiable rates and terms by special tax package.		
Special Building Allowance	Factory buildings written off at 20% in first year and balance at 8% for 10 years Not eligible.	Not eligible.	Not eligible.
Transportation Allowance	Allowance for land-based transportation by road or rail of 25% deduction from total cost.	Not eligible.	Not eligible.
Export Promotion Allowance	Additional deduction from taxable income of 25%.	Not eligible.	Not eligible.
Incentive for Training	Additional deduction from taxable income of between 25% and 75%.	Not eligible.	Substantial, issued by government on implementation of approved training programme.
Industrial Studies	Available at 50% of cost	Not eligible.	Not eligible.
Cash Grants	50% of direct cost of approved export promotion activities.	Not eligible.	Not eligible.

Source: Namibia. Ministry of Trade and Industry (2000)

2.1.5 Vision 2030

NDP3, however, is the first systematic attempt to translate the objectives of Vision 2030 – a national vision that aims to make Namibia an industrialized nation by the year 2030 – into concrete policies and actions. (Price Waterhouse Namibia, 2008; NDP3, 2008) Thus, NDP3 is seen as the first medium-term strategic implementing tool towards the systematic achievement of the Vision. According to Thompson, Strickland and Gamble (2005), “a vision is a long term game plan, highlighting objective and mission to be undertaken to a desired destination”

Vision 2030, which further provides a national strategic framework that would foster a sense of direction, ambition and destiny for all Namibians, also emphasizes the need for beneficiation by outlining two crucial objectives. First, it seeks to transform Namibia into an industrialized country of equal opportunities, which is globally competitive, and that realizes its maximum growth potential on a sustainable basis, with improved quality of life for all Namibians (Price Waterhouse Namibia, 2008). Second, it points to the need to transform Namibia into a knowledge-based society which in return will increase capacity at high levels of the value chain in the diamond industry. (Price Waterhouse Namibia, 2008)

The diamond industry is expected to play an essential role in achieving the national objectives as outlined in the NDP3 and Vision 2030.

2.2 DIAMOND INDUSTRY AND POVERTY IN NAMIBIA

2.2.1 Poverty prevalence in Namibia

Generally, according to World Bank (2012), Namibia is classified as a middle-income country. However at the same time, Namibia is one of the countries toping in the unequal

distribution of income, which leads to a huge gap between rich and poor. Namibian Household Income and Expenditure Survey (2011) stated that the poorest 10 percent of households command just one percent of the country's total income whereas the wealthiest 10 percent control more than half. The government has seems to have a problem solving the unequal distribution of income. Since this has been going on for long and there is no improvement yet. Although there are a few wealth people in Namibia, like any other country there are middle class and poor people, the majority seems to be poor people. UNDP stated that about 27.6% of households are classified as poor and 13.8% as severely poor¹. According to (UNDP, 2009) every second Namibian citizen lived below poverty line.

IFAD, 2013 stated that HIV/AIDS is one of the most serious problems influencing poverty ration HIV/AIDS is one of the major problem that African has been and still facing. According to HIV/AIDS is no is a problematic disease that it is affecting all sectors of the socio-economic development of African countries. It was further stated that 34.3 million people in the world are infected with HIV/AIDS; 24.5 million are in sub-Saharan Africa, which means about 72 percent are from sub-Sahara Africa. The most affected area in the Africa and in the world respectively (IFAD, 2013).

2.2.2 Roots of poverty in Namibia

The situation on the field of poverty reduction is rather difficult in Namibia, as well as in the whole Sub-Saharan Africa. However, there are two findings that have to be highlighted in order to understand more in the details the roots of poverty in this country.

Firstly, the roots of poverty are quiet old and traceable at least back in the 1960s. IFAD (2011) stated that the social and economic imbalances of the apartheid system, introduced into Namibia in 1964 under South African rule, left a deep divide in Namibian society. The black population or local people were largely denied to access productive resources and basic infrastructure, while white settlers (former colonisers) had privileged and exclusive access to large areas of land and strong government support for their farming enterprises. Such structural inequalities have led to difficulties in reducing poverty as well. In

¹Poverty is especially prevalent in rural areas.

communal areas, problems of conflict have arisen between poor farmers and better-off farmers who have fenced off land and access to water points. The land that was taken away by force during war remained with the former colonisers and it was never returned back.

Secondly, Namibian climate is very dry, which makes any large-scale agricultural activities very dependent on natural and financial inputs. Degradation and desertification are also a threat to agricultural productivity. The economy is also held back by low demand for domestic products. Since there is a lack of quality products produced in Namibia, and if they are, they are usually too expensive. As a result, Namibia depends on South African imports in almost everything. This makes the country highly dependent, underdeveloped in terms of vertical integration, which is necessary for any further development.

2.3 MINING, DIAMOND INDUSTRY ON HUMAN DEVELOPMENT AND ENVIRONMENTAL IMPACT

Mining activities have direct influence on natural capital capacity, quality use and sustainability.

Poor management, low rates of return as well as investments to rehabilitation and appropriate techniques, the changes on environment could be irreversible. The diamond industry dominates Namibia's mining sector. Apart from its annual contribution of approximately 10% to the GDP as mentioned earlier, the diamond industry also contributes to government's state coffers through various taxes, statutory fees and dividends (Martin and Sherbourne, 2003).

The diamond mining industry constantly strives to strike a balance between its economic, social and environmental responsibilities and making a positive and lasting contribution to the environment and communities in which it operates. However there is also a large amount of informal alluvial diamond digging which is not currently regulated and therefore neither is its impact on the environment. Mining plays a major role in contributing to the country's economy but, on the other hand, it destroys the environment.

2.3.1 Diamond mining impact on the environment

In general the mining industry faces environmental challenges. According to World Diamond Council (2012) diamond mining industry has to take responsibility, economically, socially and environmentally in order to strike a balance between the three above mentioned while making sure it offer a positive and lasting contribution to the environment and communities in which it operates. The author further stated that a large amount of informal alluvial diamond is found which is not currently regulated moreover neither is its impact on the environment.

Mineral extraction in terms of mining does have the potential to impact the environment unless carefully managed. The main challenge the mining industry faces is the challenge is land disturbance. Other challenges the mining industry faces are: Energy use and emissions, water and air pollution, noise, waste and recycling and so on (Green Karat, 2013)

It's clear that variety of methods are used in diamond mining, some involve the removal of large quantities of soil from the earth (World Diamond Council, 2012). On the other hand Green Karat (2013) stated that it is economically beneficial to recover the greatest amount of diamonds while moving the least amount of other material.



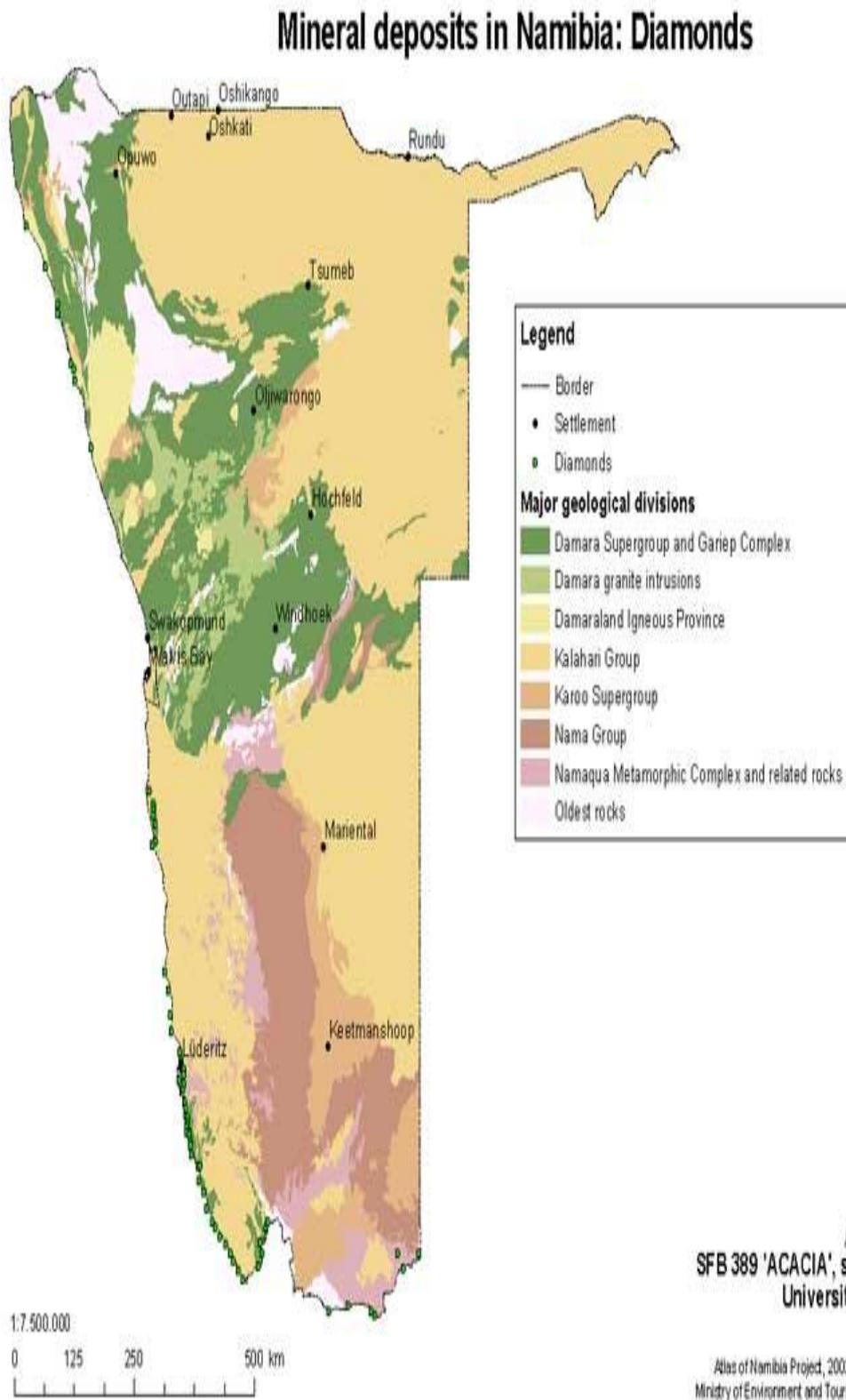
Figure 7 The gate entry to the NAMDEB mine

On the other hand both animals and plants around the mining area are affected by the mining activities. For instance when a mining company moves into an area to mine for diamonds, the plants life around a site is in danger. It might be easier to replace the plants with other plants that are more torelant to the mining activities however in the case of animals its a big problem. It is a hard challengeto protect local wildlife because animals are sensitive to change.

Chemical substances and fuels that NAMDEB² use for mining process contribute to the pollutants (KPCS 2011). Furthermore, the Oranjemund is located at the coastal, there is the sea, the water is polluted and this can lead to the death of living things in the sea. Thus diamond mines seek to have the minimum sized footprint, and move only that necessary waste efficiently. Roger (2001) further argued that on a positive note diamond mining does not use hazardous material unlike other types of mineral mining.

² NAMDEB prides itself as a dynamic diamond mining company owned in equal shares by De Beers Centenary AG and the Government of the Republic of Namibia. NAMDEB's head office is situated in Windhoek, the capital city of Namibia (NAMDEB Official Webpage, 2012).

Below is a map indicating location of diamonds in Namibia.



Map 2 Diamond deposits in Namibia

Source: MET (2000)

Martin and Sherbourne (2003) stated that diamond mining has proven that 95% of Namibian diamonds are of “gem” quality. There is also little public information and discussion about the magnitude of Namibia’s diamonds as the mines tends to keep this kind of information confidential.

2.3.2 Diamond mining impact on human development

Health and safety risks in the mining industries are complex and dependent upon the mineral mined , the location, depth of mining and its scale (Yelpaala, 2005). According to Morris (2010) the diamonds in many developing countries is associated with armed conflict that leads to damage on human life and civilian infrastructure. Some of the most affected countries are Sierra Leone, the Democratic Republic of Congo (DRC) and Angola.

The author further stated that the failure of diamond production to impact on the livelihoods of humans and development has lead to increased resentment and a different type of non-violent but more socio-politically driven tension. This occur in more politically stable countries such as Namibia, Botswana and South Africa. Morris (2010) stated that there are four types of indicators necessary to measure sustainable development that must be considered , namely social, economic, environmental and governance.

Accidents are one of the major problems human faces resulting from working in the mining industry. On the other hand according to World Diamond Council (2012) nowadays most of the diamond mines are managed to the ISO 14001 standards of environmental management, and the major companies have a policy of regularly publishing reports on their environmental performance. Many of the major diamond mining companies go beyond the ISO 14001 standard and use Environmental Impact Assessments and Social Impact Assessments to identify the environmental and social impacts of mines as well as to identify gaps at their operation, in this case this leads to minimum accident. In the case of NAMDEB refer to the figure 8 below for statistics records of injuries in 2012.



Figure 8 The statistical records of accidents and injuries NAMDEB

Moreover, migration due to labour has been identified not only as one of the major division of families but as well one of the major factor that spread HIV/AIDS (Campbell 2000). It is clear that there is inter-relationship between migration , sexual networking, social and the transmission of HIV/AIDS for miners and other people working in the mining industry or living in the area.

2.3.3 Lessons learnt from Botswana

As stated earlier in this paper, Botswana has always been one of the top diamonds producing country in the world. Unlike Namibia, Botswana has continued to foster a culture of value addition to its diamonds, ensuring that not all rough diamonds are exported abroad (Baartjies, 2007). He further stated that the basic tenet of the country’s diamond development philosophy should be to optimize the benefits of revenues from natural resources by reinvesting them into developing further productive capacity of the economy such as education and training, health, infrastructure, and other sectors. Through a good management of Botswana’s diamond and other valuable mineral resources, the country today enjoys the benefits of a good health system, education, social and economic

infrastructure, and a stable, uninterrupted, and democratic government (Cowell, 2003). Oppenheimer (2008) stressed that one of the most important and attractive aspect of Botswana is the country's determination to have honest and transparent government, which is a vital aspect in the diamond business.

One of the important things lacking in the Namibian government is honesty. There seems to be several corrupt politicians in Namibia who can also be the reason why the benefits from diamonds do not reach masses. It would be advisable for Namibia, to seek strategic partnership with Botswana, to learn how Botswana has managed its diamond affair in the attempt of maximizing benefits derived from diamonds. It will be important for Namibia to investigate and evaluate some of the social and economic programs that Botswana has introduced in addressing the issue of diamond beneficiation in the country. Botswana is known for mining high volume of carats per year and has established unique sorting and polishing and manufacturing system in the country that Namibia can learn from. The assessment should focus on benefits that could be derived from mining, sorting and diamond manufacturing.

2.3.4 Socioeconomic impacts

Mining plays a major role in contributing to the country's economy but it can destroy the environment, for instance it can lead to water, land and air pollutions, which are important basic needs. By-products which occur in some metals are dangerous if released in the environment. Chemical substances and fuels that mine uses in the mining processes contribute to the pollution.

According to UN (2011), although there are benefits delivered from mining, such as employment creation and contribution a lot to the tax and GDP, there are still ranges of environmental and social impacts negatively affecting local communities, thus the sustainability of mining industry and the efficient use of its resources for development remain crucial. According to World Institute of Resources (2011), Biodiversity is also one of the impacts. And the most obvious impact to biodiversity from mining is the removal of vegetation, which in turn alters the availability of food and shelter for wildlife. They further elaborated that most mining operations use metals, reagents, or other compounds to

process valuable minerals. Certain reagents or heavy metals, such as cyanide and mercury, are particularly valued for their conductive properties and thus are frequently used. Metals released into the environment can also be triggered by acid drainage or through accidental releases from mine tailings impoundments.

3. OBJECTIVE OF THE THESIS

Namibia is rich in natural capital, such as biodiversity, mineral resources or diamonds. However, despite the fact that diamonds have been mined for over a century, only a few percentage of the country population is able to benefit from this economic activity. Recent topic-related literature shows several explanations and suggests reviewing this issue at regional perspective.

Thus, the objective of the thesis is to analyse the impact of diamond mining industry on the Karas region, which represents one of the most important mining areas in Namibia, on human, economic and environmental development.

4. METHODOLOGY

Leedy and Ormrod (2005), Welmanl (2005), Diamantopoulos and Schlegelmilch (2000) stressed that quantitative research is mainly aimed at observation studies, correlations, development design and survey research. The application of this methodology is clearly seen in the results and discussion part of the thesis

The data and information used were gathered from institutions within the diamond industry and local community people from Oranjemund town.

4.1 STUDY AREA DESCRIPTION

The thesis is focused on Oranjemund town, where the NAMDEB diamond mine is located. According to the Karas Regional Council (2011), the Karas Region, whose name is assigned to reflect the prominence of the Karas mountain range, is situated in the very southern part of Namibia and is considered as a natural organic administrative and economic unit. The following magisterial districts are included in the region: Keetmanshoop, Karasburg, Bethanie and Lüderitz. Karas borders with the shores of the Atlantic Ocean in the west and shares borders in the south and east with the Northern Cape Province of South Africa. In the north, it borders with the Hardap region.

The Karas Region covers 161,235 square km, about 20% of the total surface area of the country. The Karas Region is the single most important mining region in Namibia. According to Namibian census 2010 the population of the region was 69,329.



Figure 9 Fish river canyon in Karas Region, Namibia

Source: Siyabona Africa (2012)

Kara's region is well known because it is rich in mineral resources. These include diamonds, zinc, copper, tin, lead silver, marble and gemstone. This makes it the most important region in Namibia. Karas Regional council (2011) stated that the mineral deposits contribute to the regional development in a way that it provides 27.5% of employment opportunities and some 12.5% of GDP. The region is a predominantly small stock farming area, consisting mostly of animals such as sheep or goats. There is also game farming and irrigation farming that can be found along the Naute Dam and the Orange River. Lüderitz is well known for its fishing and boat building industry, the diamond areas along the coast, both on and off shore, with Oranjemund as the main centre, mining enterprises in the southern part of Namibia (Klein Karas area, Rosh Pinah), the Kudu Gas field in the Atlantic Ocean near Lüderitz and small-scale industries in Lüderitz and Keetmanshoop. Although it is a dry area, there are some well watered agricultural zones. This is mainly due to the major feeds from the Orange and Fish and water catchments such as the huge Naute Dam. Certain crops such as lucernes, grapes, onions, maize, cotton and olives are cultivated on a commercial basis. There is potential for small-scale agricultural projects, along the banks of the Orange River, for local consumption in Oranjemund. The Hot Water Springs at Ai-Ais, the Kokerboom forest near Keetmanshoop, the Fish River Canyon which is the second largest in the world, the Brukaros Mountain (a former volcano) near Berseba, the coastal town Lüderitz and several guest and game farms are some of the main tourist attractions in the region. The economic growth potential of the area is considerable but needs an intensive general development policy. It is a profitable

tax-generating area, which predominantly comes from diamond mining for the central government. A lot need to be done to improve the current development standard.



Figure 10 Study site: Karas region

Source: Karas Regional Council (2011)

Keetmanshoop is considered as the capital of the south and has direct air, railway and road links with the capital city, Windhoek. According to the Karas Regional Council (2011) its airport is of international standard and suitable for international air traffic. Unfortunately there is no tarred road linked to Oranjemund, the diamond town. The main railway line and two main trunk roads give access to South Africa. Karas region has well developed energy and water network and an advanced post and telecommunications system that link villages and towns with the rest of the country. Oranjemund has a well-developed water and electricity reticulation system. Water is obtained from the Orange River and electricity directly from Eskom, South Africa.

Karas Region is the most important mining region in Namibia. Namdeb, a diamond mine is the biggest followed by Rosh Pinah Zinc Cooperation and Skorpion Zinc are the most important mine in the region or country at large (Chamber of Mines of Namibia, 2007).

The Namibia Household Income and Expenditure Survey (2004) stated that 73 percent of household income, in the Karas region is derived from salaries. Nearly a third of households live in poverty, spending more than 60% of their income on food alone.

According to NPC (2008) Karas region in terms of poverty is doing much better compared to other 12 regions in Namibia. In 2004 the Namibian Gini-coefficient³ was 0.68 (NPC, 2008), making the country to be one with the most unequal distribution of income in the world. However the degree of inequality in the 13 administrative regions of Namibia differs. The lowest Gini-coefficients are found in Ohangwena and Omusati region at 0.45 and 0.46. The highest is in Hardap with 0.69 and Omaheke with 0.64. Kara's region can also be rated as one of the region with the highest Gini-coefficient at 0.61.

4.1.1 Natural conditions

According to maplandia (2012), the diamond town Oranjemund, meaning "Orange mouth" in German, is situated in Sperrgebiet, in the extreme southwest of Namibia. Its geographical co-ordinates are 28°33'0" S, 16°26'0" E. Oranjemund share borders with South Africa, to the south, along the Orange River and on the western side, it shares borders with the Atlantic Ocean. While on the northern and eastern side, Oranjemund town shares borders with Lüderitz and Karasburg towns. Oranjemund occupies one of the most remarkable landscapes along the Namibian west coast or in Namibia in general. Oranjemund town was established in 1936, after diamonds were discovered on the north bank of the Orange River. Apart from the ocean and the river the town is located on the desert. There are so many different types of fauna and flora that is indigenous to the harsh environment of the Namibian desert.

4.1.2 Socioeconomic Overview

Apart from Oranjemund being rich in natural resources, the town faces numerous development challenges. Economic diversification of Oranjemund requires attention and need to be tackled to avoid loads of economic losses and social expenses. According to the GeoNames geographical database the population of Oranjemund, is 8496. Over 80% of the population is employed, with most of them being employed in the mining industry. Due to

³ Gini-coefficient measures the extent to which the distribution of income among households in a country is diverging from a perfectly equal distribution. A value of 0 indicates a perfect equality while a value of 1 indicates a perfect inequality.

the diamond mined in Oranjemund, the town is Namibia's economic titan. However the town just like other regions in Namibia has poverty and inequality prevailing. Income per head in Oranjemund is seven times greater than those in Caprivi province, the poorest region in Namibia (Mwinga 2010). AIDS is the number one cause of death in Namibia. Although HIV/AIDS is all over Namibia, some regions have more number of people living with HIV/AIDS in comparison to others. This epidemic is one of the main factors that hold back the development of the country.

4.1.3 Overview of the 'diamond industry

NAMDEB is Namibia's number one diamond company. It's located in Oranjemund, 890 kilometres from the capital city Windhoek. NAMDEB is the largest producer of gem quality diamond in Namibia. It covers 15,789 square kilometres and holds six mining licences. NAMDEB employees more than 3,000 people, this made it the second largest employer and the biggest tax payer in Namibia. NAMDEB operates mainly in Oranjemund but also satellite mines in Luderitz and the Orange River. As mentioned above, NAMDEB was affected by the economic crisis in the year 2009 but the company posted a strong financial performance in the following year 2010. The revenue increased due to strong recovery of the diamond market supported by an increase in average stone size. In 2010, NAMDEB produced 1.47 million carats, compared to 0.94 million carats in 2009.

This included 0.98m carats from sea-based operations and 0.49m carats from land-based operations. The increase in production is mainly due to the return to continuous activity. The diamond is cut and polished at the diamond cutting and polishing factory named as NamGem in Okahandja, a subordinate company of Namdeb and it is structured with the most upgraded equipments. Okahandja is 830 kilometres from Oranjemund where the diamond mine is located. This factory of NamGem modifies eight-sided rough diamonds as "round brilliants". 95% of the rounded diamond stones fabricated in NamGem factory are delivered to London.

4.2 DATA COLLECTION

Firstly, data on diamond mining and the national economy was gathered from Namibian regional government, particularly from Ministry of Mines and Energy, Namibia Planning Commission, Chamber of Mines of Namibia, Namibia Diamond Trading Company, DeBeers, Bank of Namibia, NAMDEB, Oranjemund town council as well as the Oranjemund community.

Secondly, data on socioeconomic development of Namibia as well as of target area were obtained from World Bank, International Monetary Fund, United Nations Development Programme and University of Pennsylvania (Penn World Table version 7.0).

Finally, background data and satisfaction of respondents with mining industry and their opinions about mining industry were gathered via structured questionnaires. Research itself was conducted face to face with the respondents who were local people who lived in Oranjemund town. Questionnaire consisted of 18 questions, which consisted of both close ended and open ended questions. Some of the questions were multiple choices (see annex 1). Data on human and environmental impact of diamond mining were collected.

Data regarding the residents' opinion on the mining industry activities and the development of the town was collected in August and September 2012. The town is a closed town (only people with valid permission can enter the town). Application for the permit to enter the town takes minimum two weeks and it's only given to people with important reasons of visit. Based on town major Coetzee (2012, personal communication), the government is not ready to open the town. Oranjemund can be described as a city with a poor infrastructure (lack of schools, roads) as well as poor access to basic services, particularly health care.

4.3 DATA PROCESSING

Collected data were stored in MS Office Excel® and simple descriptive analysis were applied (means, standard deviations etc.). For correlation analysis, open-access statistical package GRETL (Gnu Regression, Econometrics and Time-series Library) version 1.6.0 was used and ArcGIS (Arccatalog 10 and ArcMap 10) for indicating on the map the locations of minerals in Namibia as well as the indication of diamond mines in Namibia.

5. RESULTS

5.1 CHARACTERISTICS OF THE RESPONDENTS

Male respondents dominated in the survey compared to females. Majority of our respondents were of middle age (20-40 years), about 62% while 36% were between 41-60 years, and, 2% were older than 60 years. Majority of the respondents confirmed that they lived in the target area between 6 and 10 years (40%), 31% claimed living in the area between 11 and 20 years, 15% for more than 20 years and only 14% of them lived there for less than 5 five years. Education levels were observed among the respondents, as only 30% reported to have higher education. While majority of them have only basic education. Most of the respondents lived in Oranjemund because of their job and their families lived in other towns. Although all respondents currently lived in Oranjemund only 20% of the respondents were originally from urban area and most of them originally come from rural areas, mainly from the northern part of Namibia, which is about 1,600 km far from Oranjemund. More than half from our 92 respondents (52.17%) were married. Household income of our respondents consisted particularly from their salaries, some of them have family farms with prevailing subsistence production. Off-farm activities, such as small business, were observed among 42% of the respondents, particularly back in their town or villages of origin which are being run by their family while they are at work. Majority of the respondents (about 70%) have only basic education and they are employed in the informal sector. According to Karas regional council (2011), average wages in Oranjemund are the highest compared to other towns in Namibia. However, most of the respondents do not earn enough money for a living therefore some of them run small private business and small farm (mixed crop and livestock farming) besides working for the mining industry.

5.2 SATISFACTION WITH MINING INDUSTRY

Majority of the respondents (74%) were satisfied with the mining industry and the main common reason it work, The satisfaction level ranges from 1 to 10. 1 being least satisfied and 10 being very satisfied.

The satisfaction with mining activities is negatively correlated with the level of education ($r=0.9245$, $p=0.000$). Respondents with higher education were less satisfied compare to those with lower education (see table 4).

Table 4 Satisfaction with mining according to level of education

Level of education	Rate	Satisfaction with mining
No education	0	9
Primary	1	9
Basic	2	8
Secondary	3	3
Higher education	4	2

The satisfaction level ranges from 1 to 10. 1 being least satisfied and 10 being very satisfied. Reasons for satisfaction with mining differ. Majority of the respondents cited work opportunities as the most important benefit from mining industry, 11.3% economic development of the town and ten percent did not mentioned any one single reason. Below is table 5 indicating reasons why respondents are satisfied with mining.

Table 5 Reasons of satisfaction in percentage

Reasons for satisfaction	Percentage
Work	78.4%
economic development	11.3%
no reason	10.3%

There were also a few people (about 26%) who are not satisfied with mining (table 6). The most important issues cited were health problems and overall pollution.

Table 6 Reason of no satisfaction in percentage

Reasons for no satisfaction	Percentage
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Health Problems	88%
Pollution	12%

Table 5 clearly shows that most of the respondents (78.4%) are satisfied with mining because of work opportunities. There were a few respondents (11.3%) mainly those with higher education who are satisfied with mining because of the economic development that has a positive impact on the whole country. The remaining minority (10.3%) are satisfied with mining industry without having a proper reason to state.

Table 6 shows that the respondents who are not satisfied with mining, most of them (88%) its due to health problem resulting from mining activities, for example mine workers are required to be x-rayed every day when they enter and leave work, making sure they did not steal the diamond but this cause some sort of health problems and the rest (12%) is because of the pollution caused by mining. Some respondents mentioned land degradation as a problem that they observe in the town.

6. DISCUSSION

6.1 COMPARISON OF THE RESULTS WITH OTHER PUBLISHED STUDIES

Our survey documented that the significant number of respondents are aware about the health risk, which they consider as the only negative aspects of mining activities. In this regards, the results corresponds with other studies (Macnair, 2011; Mwinga, 2011). However, our respondents perceive more problems connected to using of x-rays, while the above mentioned studies describe dust disease and pneumoconiosis at the most serious health problems observed. Additionally, our respondents had no idea that mining can cause such a health problems, which could be explained by the fact that high percentage of the respondents (75%) were not directly working in the mining industry. Apart from mine workers (geologists, mining engineers and informal mine employees) other respondents occupations were students, police officers, major, shop assistants, teachers, post officers, bank workers an Data regarding the residents' opinion on the mining industry activities

and the development of the town was collected in August and September 2012. The town is a closed town (only people with valid permission can enter the town). Application for the permit to enter the town takes minimum two weeks and it's only given to people with important reasons of visit. Based on town major Coetzee (2012, personal communication), the government is not ready to open the town. Oranjemund can be described as a city with a poor infrastructure (lack of schools, roads) as well as poor access to basic services, particularly health care.

Furthermore, majority of the respondents simply support mining industry because as the main employer in the town and they tend not to see other potential benefits from mines. The town is owned by NAMDEB. Therefore, land degradation was observed to be the only negatively perceived problem by our respondents.

Looking at various opinions from different respondents on what can be the main health problem to them since they work for the mine; different views from respondents were elicited and noted accordingly. First of all, respondents mentioned health problems, particularly x-rays. In general, X-rays have harmful effects on the human body. Assuming most people know about the harmful consequences of nuclear explosions. The harmful effects could be broadly divided into two categories. The first is physical and second genetic. More radiation in the body may lead to Leukemia (blood cancer), a fatal disease. The minority of the mine workers are more concerned with safety, for instance if rocks in the mine fall on them, in the past a few were victims of the above mentioned accident.

6.2 GOVERNMENT REPRESENTATION (The Diamond Commissioner)

According to the (MME, 2009) The Directorate of Diamond Affairs, under the Ministry of Mines and Energy, was established through the Diamond Act of 1999. The functions of the directorate are co-ordinated by the diamond commissioner, who is mandated through the Act to promote the growth and stability of the Namibian downstream diamond industry. Furthermore, the commissioner is required to effectively and efficiently monitor the diamond prospecting, mining and downstream activities as well as to promote the country as an investor-friendly destination for the diamond industry.

Given this mandate, the view of the Diamond Commissioner is significant, as the government, through its various pieces of relevant legislation – such as the Mineral Act, the Minerals Policy and the Diamond Act – has been a leading campaigner for value-addition since the independence of the country. The Diamond Commissioner has been central to the promotion of a conflict-free diamond industry through the Kimberley Process Certification Scheme which was established for diamond countries to combat conflict, or what some call ‘blood diamonds.’ In this manner the industry is in the position to promote the beneficiation drive. The government is thus pivotal in providing appropriate and efficient information on how beneficiation processes should work and further suggest the road ahead.

6.3 MINEWORKERS UNIONS (Mineworkers Union of Namibia)

According to Roger 2011, the Mines Workers Union (MUN), established on the 23rd November 1986, was formed as a remedy to show the determination of the workers to collectively fight the unbearable and exploitative conditions which mining and energy workers had to endure in Namibia’s pre-independent era. Through its existence, MUN kept rendering services to its members through representation and fighting for members’ rights and interests. In 2001, MUN had the highest unionization rate of all unions in the country, and is recognized by almost all mining/energy companies. One of the important aims of MUN is to constantly improve wages and salaries as well as the working and living conditions of its members. The union also works to educate and conscientise members on relevant subjects such as Namibia’s industrial history, and to highlight the role played by the workers in the country’s industrial and social development(Bank of Namibia,2008).

In view of the above matters, it is evident that MUN has a major interest in the well-being of its members. It is therefore vital to seek the Union’s opinion on how beneficiation programs should be carried in Namibia to ensure that the mine workers are fairly paid and protected.

6.4 NAMIBIA CHAMPER OF MINES

The Namibia Chamber of Mines was inaugurated in 1969, and today represents the interests of all the major mining and exploration companies active in the country, thus bringing together a wide variety of companies from the most important sector of the Namibian economy (Chamber of Mines, 2008). The main directive of the Chamber is to promote, encourage, protect and foster the mining industry of Namibia, and to advance the objectives of: promoting public interest in the sector, promoting employment on the mines and industries connected therewith, promoting and providing facilities for the training of persons employed in the mining industry, and directly or indirectly advancing the cause of the mining industry of Namibia and of education in mining matters, whether general, technical, or professional.

6.5 IMPACT ON ENVIRONMENT

Although Martin (2001) stated that activities from mines damage the environment in several different ways. 41% of our respondents stated that the mining industry does not cause any harm to the environment. Penny (2008) revealed that little marketing and promotion exists in the region to encourage the general public to get involved in the diamond industry. He further elaborated that the only way for the public to feel a sense of ownership of the diamond industry is by sharing the natural custody of the diamonds. To this effect, there is a need for basic education to be afforded to the general public, to enhance awareness of the importance of diamonds to the Namibia economy and to highlight the benefits encountered by the citizens who participate in the downstream activities of the industry.

Some of the respondents seem to have a little understanding about diamond mine therefore experts from the government and De Beers need to pay attention on finding a solution to this. This was indicated by how some respondents from the town are not even aware that it is diamond mined in the mine. They are aware it's a mine but had no idea what is being mined there. Mwinga (2010) stated that if the workers receive the opportunity to understand how the diamond industry functions, this will automatically unveil the mystery around the industry. The workers will also have the opportunity to question the current laws and policies and ascertain whether they are paid and treated fairly. It was stated in some by MME (2011) that most of the Oranjemund residents work for the mining industry. This was proven right since all the respondents happen to work for the diamond industry.

7. LIMITATIONS OF THE STUDY

One of the major limitations of the study is that not many people in Karas region or specifically in Oranjemund town have only a basic understanding of the importance of mining industry or specifically diamonds to the Namibian economy, let alone their value to the lives of ordinary Namibians. The director from the Ministry of Trade, division of Mining as well as NAMDEB refused to provide with some useful information the reason being, mining information is confidential. The absences of this real information gave a hard time because such kind of information's might have influenced the outcome of this paper. Furthermore to get a permit to visit Oranjemund requires a lot of personal documentations and takes one month to be granted permission.

Finally, with regards to soliciting information on Namibia's diamond industry, a cloud of mystery surrounds the topic and the diamonds themselves, thereby limiting the amount of information gathered from the interviewees for the purpose of the study. Despite these limitations, however, a number of viewpoints were collected, and the information emerging from the literature review and the questionnaire have been invaluable in making various recommendations on.

8. CONCLUSION

In conclusion, diamonds are important and the government needs to pay more attention to them. It is very surprising how Oranjemund is a special diamond town but the economic growth and development remain slow, particularly this is simply due to less attention that is paid to the town by government officials.

There are not enough education institutions in the town, lack of infrastructures and market and many other important factors for a living. Poverty tends to be thriving in the town or region at large where the diamond is mined. Poverty can reduce illicit mining activities. It is also evident from the literature to the structured interviews that for benefits delivered from diamonds to be fully maximized, the current legal framework in place should be implemented in a timely fashion to address the issue of beneficiation effectively. It was suggested that De Beers and government should take a leading role in marketing and promoting the importance of Namibian diamonds to the economy, so as to encourage a broader participation of local downstream activities in the industry. Mines do not really consider the danger that can result from the pollution delivered from mining industry. Therefore mines should pay attention to the environment and try to use chemicals that are less harmful to the environment than others.

Most of the Namibian people have no basic knowledge about the mining industry. It is necessary for them to know about it so they can be part of it. Lastly, the need to explore other avenues to find new deposits is crucial in the wake of the depleting reserves from traditional land operations, thereby having a negative impact on the beneficiation process in Namibia. For one to be able to answer the question on how the benefits derived from the diamond industry should be maximized, it is evident that many factors need to be considered before a solid answer is provided. Division of families due to labour in the mining industry is one of the major problems in addition to spreading of the killer disease HIV/AIDS. On the other hand there is a rapid growth of the Namibian diamonds economy in the recent years, which is a huge benefit for the country's economy.

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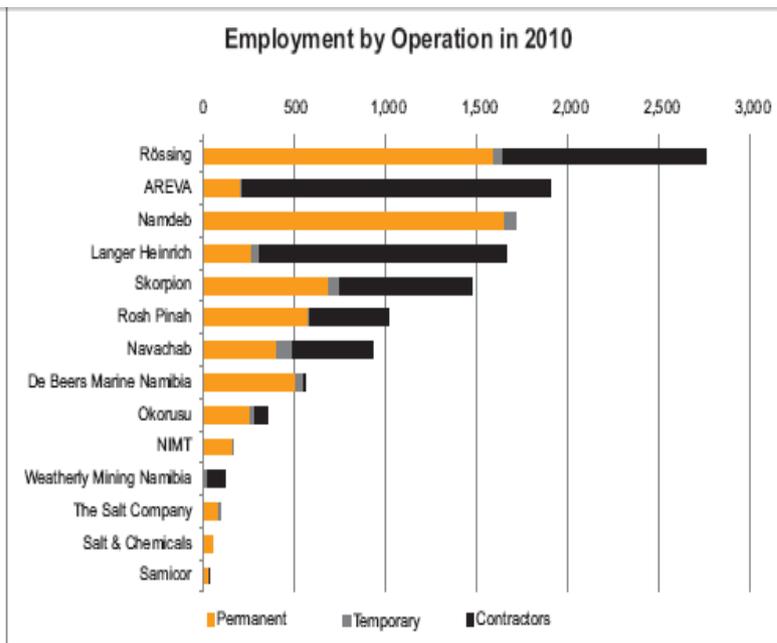
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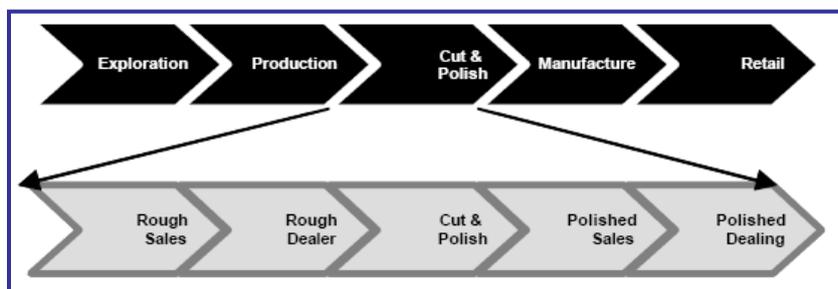
Annex 1 Overview of the 'diamond industry' in the world

Source: Google maps (2011)



Annex 3 Employment in mining industry in Namibia

Source: Changers of Mines, 2011



Annex 4 Simplified Diamond Pipeline

Source Baartjies, 2007

Annex 5

Questionnaire

This questionnaire is for academic purpose, therefore there will not be any private information spread out.

1. Age

2. Sex

- a. Male b. Female

3. Marital Status

- a. Single b. Married

4. Education level

- a. None
b. Primary
c. Basic
d. Complete secondary
e. Higher education

5. What is the main source of your household income?

- a. Salary from a private company
b. Agriculture(farm)
c. Salary from a governmental organization
d. Salary from a mining company
e. Own business
f. Other

14. What are the environmental impacts caused by mining activities which have any effects for your living?

- a. Land degradation
- b. Air pollution, dust
- c. Water pollution
- d. Water evaporation
- e. Noise
- f. None

15. How will you define the health system in your region?

- a. Very poor
- b. Poor
- c. Good
- d. Very good
- e. I don't know

16. According to your own opinion, what do you think is holding back the development of Oranjemund?

.....

17. How is the mining industry important to you? Do you think you benefit from it?

.....

18. Please write down if you have any complaints or health problems caused by mining activities.

.....

Diamond timeline	Year
Discovery of diamonds along the southern Namibian coastline	1908
Diamond mining regulations are introduced and the Sperrgebiet or (forbidden territory) is declared	
Sir Ernest Oppenheimer forms Consolidated Diamond Mines of South West Africa (CDM). Merging of the 10 largest German diamond mines in Namibia, by Ernest Oppenheimer with the financial backing of Anglo American, into the Consolidated Diamond Mines (CDM) of South West Africa, for the prospecting and mining of Namibian diamonds.	1920
CDM concludes the Halbscheid Agreement with the South West African Administration, granting CDM the mining rights for the Sperrgebiet.	1923
Oppenheimer and his Anglo American invited to become a member of the DeBeers syndicate. Oppenheimer becomes chairman in 1925 on account of the strength of CDM Holdings	1924
Prospecting and mining of Namibian Diamonds by CDM, with no direct benefit to the people of Namibia, who, at the time, were living subject to the South African apartheid regime.	1924-1990
Diamond mining operations cease at Kolmanskop	1930
The establishment of Oranjemund town, which was named after its geographical position at the mouth of the Orange River, the national boundary between the Republic of Namibia and South Africa.	1936
CDM Head Office moves from Kolmanskop to Oranjemund.	1943
First offshore mining concession granted.	1961
CDM Head Office moves from Kimberley to Windhoek.	1977
Formation of Namdeb – a 50:50 partnership between the Namibian government and DeBeers, for the prospecting and mining of Namibian diamonds. All of the DeBeers Group’s existing Namibian mining licences and related rights were replaced by a consolidated and rationalised mineral agreement, drawn up under Namibia’s post-independence mineral legislation.	1994
DeBeers agrees to set up a local cutting plant – NamGem	1998
Promulgation of the Diamond Act of 1999 providing government with the power to assign up to 10% value and 16% caratage of Namibian diamonds to local polishing and cutting companies (sight holders). Emergence of several cutting and polishing firms (mostly with foreign investment) into the diamond industry. However, DeBeers continues to resist efforts to create a local diamond industry in trading and cutting.	1999

Formation of NDTC – a 50:50 joint venture between DeBeers and the Namibian government. NDTC announces that it would sell 16% cuttables to established local companies (11 companies, 8 of which are DeBeers approved buyers, holding buying rights from DTC London.) 2007

Namibian government begins negotiations with DeBeers to take up full partnership in DeBeers Marine, in which it currently only holds a 30% shareholding. 2008

Project 2050 is initiated 2010

Source: Ministry of Mines and Energy (Namibia) 2010

Annex 6
