THE POLICING OF ILLEGAL MINING IN GAUTENG

BY

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DECLARATION

STUDENT NUMBER: 547-99-473

I declare that **THE POLICING OF ILLEGAL MINING IN GAUTENG**, is my own work and that all the sources that I have used or quoted are duly acknowledged by means of a complete references list.

SIGNATURE DATE

BT Lebitso 06 October 2021

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DEDICATION

THIS THESIS IS DEDICATED TO MY LATE MOTHER

Thandi Lillian Mabaso

Who taught me that it is never too late to pursue your true passion…
And that passion is everything. You will always be missed forever and always. The beautiful moments you shared with us as your children will never be forgotten.

MAY HER PRECIOUS SOUL CONTINUE TO REST IN ETERNAL PEACE!

ABSTRACT

The aim of this study was to explore how the South African Police Service (SAPS) deal with illegal mining activities in Gauteng. The rising unemployment rate in South Africa and economic uncertainties in the neighbouring countries drive people to participate in illegal mining activities as a means of survival. In South Africa alone, the unemployment rate has reached 32 per cent in the fourth quarter of the year 2020. As such, illegal activities (such as illegal mining) have become one of the sources of income for many unemployed people in the country including people from African countries who reside in South Africa. Therefore, it is the intention of this research study to explore how SAPS deal with illegal mining activities in Gauteng

The study followed a qualitative research approach because this approach produces rich and detailed information about people's knowledge and experience. Through purposive sampling, the researcher identified the relevant research participants who possess the information needed to answer the research questions. The topic was then explored using Focus Group Discussions (FDG's), one-on-one interviews, and participant's observations.

The study discovered that illegal mining is a process that involves men, women and sometimes children. Many people involved in illegal mining in South Africa are South African citizens and foreign nationals from different ethnic groups partaking in various roles in the mining process. Often the poor black men are the ones risking their lives by extracting the products from the mines, while the rich, black, white and Indian men are the buyers who, through their connections, will sell such products to the merchants dealing with copper, gold and diamonds. The study also discovered that the lived experiences of illegal miners are constantly associated with numerous challenges whereby they stay underground in extremely hot temperatures for days or weeks at times. Such spaces are used for different activities including cooking, sleeping and due to lack of proper sanitation, even as a place to relieve oneself.

The study further proves that there are numerous risks involved in illegal mining activities such as intergroup conflict, murder, attempted murder, rape and assault. The main challenge facing police is that the strategies they use, such as Disruptive operations, are ineffective in curbing the problem of illegal mining in this country as the problem continues. Owing to that, this study recommends that despite the damages that occur in the formal mining sector specializing in gold, the government need to decriminalized illegal mining activities in South Africa. The decriminalization process will enable the miners to get police protection, the government to

establish policies that can effectively regulate illegal mining and for the miners to have access to the trade market as well as an improved relationship with the community members.

KEY TERMS: illegal mining, artisanal small-scale mining, active mines, abandoned mines, precious metals, crime prevention, police officials, crime syndicates.

LIST OF ABBREVIATIONS

AAM	Authorisation for Artisanal Mining
ABG	African Barrick Gold
ADB	Asian Development Bank
AIDS	Acquired Immune Deficiency Syndrome
AMCU	Association of Mineworkers and Construction Union
ASPASA	Aggregate and Sand Procedures Association of South Africa
BLF	Black First Land First
BNM	Bolivia National Mining
CBO	Community Based Organisation
CCTV	Closed Circuit Television
CEPS	Community Enterprise Support Project
CGS	Council for Geoscience
CIDA	Canadian International Development Agency
CPF	Community Policing Forum
CRC	Criminal Record centre
DMR	Department of Mineral Resources
DOM	Department of Mining
DPM	Diesel Particulate Matter
DRC	Democratic Republic of Congo
EHW	Employee Health and Wellness
EMR	Environmental Management Regulations
ESKOM	Electricity Supply Commission
FDG	Focus Group Discussion
FNB	First National Bank
GBC	Gold Barrick Corporation
GDP	Gross Domestic Product
GPS	Global Positioning System
HDSA	Historically Disadvantage South African
HIV	Human Immune Virus
HPD	Hearing Protective Device
IED	Institute of Environment and Development
ILO	International Labour Organisation
ISCOR	Iron Steel Corporation
JMPD	Johannesburg Metropolitan Police Department
JRA	Johannesburg Road Agency

JSDF	Japanese Social Development Fund
JSE	Johannesburg Stock Exchange
KEMJV	Kimberly Ekapa Mining Joint Venture
MBOD	Mineral Bureau for Occupational Disease
MCSA	Mineral Council South Africa
MHSA	Mine Health and Safety Act
MMAA	Mineral Mining Amendment Act
MMCZ	Mineral Marketing Corporation of Zimbabwe
MPRDA	Mineral and Petroleum Resource Development Act
MQA	Mining Qualification Authority
MRO	Metals Refining Operations
MRS	Mine Rescue Services
MSD	Musculoskeletal Disorder
NCPS	National Crime Prevention Strategy
NEMA	National Environment Management Act
NGO	Non-Governmental Organisation
NIHL	Noise-Induced Hearing Loss
NIU	National Intervention Unit
NMA	National Mining Agency
NUM	National Union of Mineworkers
NWA	National Water Act
NYC	New York City
OLD	Occupational Lung Disease
OSD	Occupational Skin Disorder
PEMO	Provincial Environmental Management Office
PGM	Platinum Group Metals
PML	Primary Mining Licenses
PMMC	Precious Mineral Marketing Corporation
PPE	Personal Protective Equipment
PPL	Primary Prospecting Licenses
RDP	Reconstruction and Development Programme
SADC	South African Development Countries
SAHRC	South African Human Right Commission
SANDF	South African National Defense Force
SAPS	South African Police Service
SARS	South African Revenue Services
SASOL	South African Synthetic Oil Liquid

SMC	Shamva Mining Centre
SONA	State of the Nation Address
SPM	Sol Plaatjie Municipality
SSMAZ	Small-Scale Miners Association of Zimbabwe
SSMP	Small-scale Mining Project
STD	Sexual Transmitted Diseases
TA	Thematic Analysis
TB	Tuberculosis
TESDA	Technical Education and Skills Development Agency
TWA	Time Weighted Average
UNEP	United Nation Environment Program
UNIMIC	Unit Against Criminal Mining
USA	United States of America
USB	Universal Serial Bus

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CHAPTER 1: GENERAL ORIENTATION

1.1 INTRODUCTION

South Africa is a country that is rich in minerals resources; however, its mining industries still face massive challenges in reducing illegal activities such as illegal mining from occurring (Coetzee & Horn, 2006:7). The easy access and the selling of illegally mined products such as gold have created a substantial threat to the South African economy. Owing to that, the grade of gold in South Africa is very low as compared to previous years due to illegal activities that are taking place in the Gauteng Province. Research conducted by Farmer (2020:1) stipulates that gold has declined in the last decade owing to illegal activities that occurred in the mining sector. For example, the grade of gold had reduced from 5, 37 grams to 4, 5 grams a ton in 2012. Consequently, the mining sector has therefore faced major challenges in loss of revenue and annual inflation rate.

Thousands of households in the Gauteng Province are involved in these activities to alleviate poverty, thus, crime of this nature is considered one of the major problems affecting the mining sector in the country. Of concern is that in Johannesburg 79,613 illegal miners in Carletonville and Springs were arrested for committing crimes in the mining sector (News 24, 2020). Likewise, this problem has required the (SAPS) to investigate and prevent crime in the mining sector.

1.2 BACKGROUND TO THE STUDY

The discovery of gold on a farm named Langlaagte in Witwatersrand in 1886 brought a lot of changes in this country, whereby millions of people in and outside of this country were attracted to work in these sectors (Mining Africa, 2015). This includes people from other countries such as Swaziland, Lesotho and Zimbabwe becoming migrant workers in the South African mines. These mines employed both skilled and semi- skilled people who needed to be provided with training, in the long run, to perform their occupations in a professional manner (Mining Africa, 2015). Towns began to develop which also changed the country's image, and more factories were established which attracted investors from outside the African continent such as England and Europe to form part of South African businesses. The South African mining sectors are considered the largest producer of gold, chrome, platinum, and manganese globally; this shows that the mining sector contributes greatly to the economy of this country (Mining Africa, 2015).

These activities are not unique to South Africa, according to the South African Chamber of Mines Fact Sheet (2016). Illegal mining activities started at Sibanye Gold and Harmony Mining in Virginia in 1939, during that time these illegal activities were not as common as they are to date. This problem has been going on for about 77 years, nonetheless, the mining sector was not aware of the damage that is being caused by illegal miners. Although it is challenging to estimate the accurate number of stolen products and how much they are worth, it is indicated that the mined gold supply dropped to 5.3% globally (South African Chamber of Mines Fact Sheet (2016). Owing to that, the gold mining industry's contribution to mining GDP in SA had also reduced significantly in line with reduced gold production levels. In addition to that, mineral sales have fallen by 40 per cent since 2012 where illegal miners are responsible for the declining of gold in mining sectors specializing with precious metals (Newsroom Afrika, Channel 405).

1.2.1 The rise of gang groups in illegal mining

The issue of unemployment, however, has resulted in criminal endeavours that attract illegal mineworkers to South Africa. For example, a group of people from Lesotho known as 'Marashea' are well-known for contributing to criminal activities, gang wars and violence in the mining sector.

1.2.2 History of Marashea

The research study conducted by Kynoch (2001:249) explains that Marashea was founded in 1940, by Tseulo Tsilo (originally from Lesotho) formed a group of Marashea in the gold mining sector. Marashea is a group of men who came to South Africa illegally and were known as foreign immigrants. Kynoch (2001:253) postulate that a group of Basotho Nationals from QwaQwa in the Eastern Free State were recruited to form part of the Marashea because they spoke pure Sotho. Also, some citizens from Matatiele joined the gang of Marashea because they were fluent in Xhosa and South Sotho. According to Kynoch (2001:249), from 1960-1970 Marashea gangs grew in the gold mining sector. Members were recruited by Tsilo as he was known as the "Hero" to all Basotho nationals and was feared by everyone as he was also known for killing without hesitation.

Moreover, Kynoch (2001:252) further elaborate that Marashea firmly resided in various areas during their arrival in South Africa. The above-mentioned author further explains that because

of being unfamiliar with locations, another group of Marashea chose to reside in mining compounds. Similarly, as Marashea started to dominate in the mining sector, others decided to live in Soweto which is one of the townships of the City of Johannesburg. The study conducted by Kynoch (2001:252) postulate that Marashea then targeted Sotho sections in Soweto such as Phiri, Naledi, Tladi, Molapo and Moletsane. Moreover, Kynoch (2001:253) declare that Naledi and Phiri were famously known as dangerous sections owing to different crimes that were committed by Marashea.

According to Kynoch (2001:253) in 1960, Marashea were using *"Melamu"* derived from the Sotho language which is known as traditional fighting sticks as a way of defending themselves should fights arise. Also, *"Melamu"* was used to differentiate between Rashea and non-Rashean in Soweto. Additionally, Marashea developed three groups named Makaota, Molapo and Masupha. These groups were known as the most defensive group of criminals emanating from Marashea. Moreover, Kynoch (2001:249) explains that the main aim of these groups was to be recognized in the mining sector for notorious crimes, where they were moving from mine to mine intending to commit different kinds of crimes. These groups of Rashean's moved to the Free State and West Rand gold mining sector where they were working forcefully at the beginning of 1970, thus formal mine employees referred to Marashea as "Malofa" which means (loafers).

A group of Marashea then developed a link that connects them with formal mine employees to know the pros and cons of the mining sector. However, Marashea did not operate in the mining sector only, they moved to urban areas where a collective form of violence emerged. To support this statement, citizens began to be victimized by a group of Marashea in urban areas and other different crimes occurred such as killings, rape, murder and attempted murders (Kynoch, 2001:249). For communication, Marashea used to blow a whistle to alert other group members about anything that needs to be communicated owing to different sections that they were residing in. The researcher believes that when Marashea came to South Africa, they knew what they wanted to do and to achieve in the mining sector based on the vision and goals that they have. One of their goals was to own and terrorize formal mineworkers and to have their name painted in all mining sectors specialising in gold bearings.

1.2.3 Marashean' women in the mining sector

The involvement of Marashean women in the mining sector slightly increased, however, Marashean women do not make any decisions related to what they do, their spouses decide on their behalf. The research organized by Holmes and Busia (2020:4) state that the basic job

that women perform in the mining sector includes crashing, sluicing, washing, panning, sieving and sorting. Holmes and Busia (2004:4) further postulate that even though women partake in illegal mining activities, men received more attention from police officials as opposed to women. Holmes and Busia (2020:4) further explain that women are not capable of digging deep holes to search for gold as opposed to men, which further attributes to the lower incentives that they earn monthly.

Moreover, Holmes and Busia (2004:4) added that women are seen as able to handle tough jobs like men, but due to instructions from Tsilo, women are bound to work in the mining sector. The growing practice of illegal mining activities has passed to the female youth who see illegal mining activities as their only means of survival (Holmes & Busia, 2020:4). A major concern to women participating in illegal mining activities is that, when Tsilo is not around, they are forced to pay bribes to other illegal mineworkers for protection, thus receiving even fewer incentives at the end of the month (Holmes & Busia, 2020:4). The researcher is of the interpretation that women tend to accept hard conditions in the mining sector because there are no alternative jobs that they can perform. Furthermore, the researcher also denotes that financial gain is of great importance to women to support their families back home, thus any kind of employment is of great importance to women.

1.2.4 Rules of Marashea

The research conducted by Kynoch (2000:251) hypothesizes that when Marashea enters any mining sector specialising in gold, their first rule is to evict non-Basotho such as Zulus and Xhosas. The scholar further continues to explain that Marashea is a group of people who are constantly feared by everyone owing to the corruption that they conduct in the mining sector. Kynoch (2000:251) contends that Marashea wears Blue and Black blankets which also serve as the trademark to them, although other colours seem to dominate. Living under the rules of Marashea became difficult for other illegal miners, especially with regards to protection. Additionally, for every member to be protected underground and within the vicinity, a certain membership fee needs to be paid monthly which also serve as a renewal to the kingpin of Marashea (Kynoch, 2000:251).

Furthermore, illegal miners resided in shacks in squatter camps close by under the protection of Tsilo. During weekends, Marashea attends meetings to alert them regarding the modus operandi that should be followed underground (Kynoch, 2000:252). Besides Marashea working as illegal miners underground, Tsilo considered mining sectors as their “market” to sell beer and dagga, thus was also perceived as another way of making money. In 1972, Tsilo

met Morena Mokhele who was the kingpin in the Klerksdorp mining sector, also known as Vaal Reefs. A relationship was developed between these two kingpins with the aim of terrorizing mining sectors.

Kynoch (2000:254) further explain that because of how Marashea lived, media attention was gained which led to attention on radio and television, even to this date. In 1963, Marashea forged ahead to establish links in mining sectors specialising in gold, including the Free State, West Rand and Langlaagte to become familiar with how shifts work in mining sectors and to own a certain territory underground (Kynoch, 2000:254). This was successful when strategies were implemented by Tsilo who began to travel underground at night fighting with formal employees. In Phiri and Naledi, Marashea became known for immoral activities, resulting in citizens becoming scared of men wearing Blue and Black blankets.

Following the notorious Marashea gang groups, other less well-known groups such as the Zama-Zama's and informal miners were formed by other illegal miners from other nationalities. Gang groups of illegal miners still exist in the current illegal mining space in South Africa.

1.3 TYPES OF MINES IN SOUTH AFRICA

South Africa has various mining industries, including:

1.3.1 Coal mining

The discovery of diamonds in South Africa led to coal mines being formed in South Africa; coal mining was formed in 1879 in Vereeniging (McCarthy & Pretorius, 2009:56). According to Jeffrey (2005:95), coal is found in 19 coalfields mines that are situated in KwaZulu-Natal, Mpumalanga and Limpopo with fewer in Gauteng and the Free State Province. In Mpumalanga Province, towns such as Witbank, Ermelo, Secunda and Standerton are the main urban areas that specialize in coal mining. Coal is defined as an "organic rock which can be burned for fuel and to generate electricity" (Jeffrey, 2005:95). Furthermore, coal is also used to generate liquid fuel, it is used to produce benzene and is also used to heat boilers that produce suitable steam which is primarily used to generate electricity. According to Lloyd (2002:1), coal is extracted between surface mining and underground mining, using massive machines to dig to the required depth. Surface mining is when coals are less than 200 feet below the surface and underground mining is when coal is hundreds of feet below the surface.

Coal mining has played a major role in South Africa by supplying coal to big companies such as Sasol which manufacture products such as oil, petrol and diesel. To date, the use of coal further generates export earnings with the distribution of 80 million products every year (Lloyd, 2002:4). Mpumalanga and the Free State Province are known for having a cold climate during winter thus, coal is used to heat homes, cook and boil water which minimizes the use of electricity and avoid enormous bills which may accumulate from using electricity. Most of the coal mines are in the Mpumalanga Province, namely:

1.3.1.1 Kriel Coalfield Mine

The Kriel Coalfield Mine is an Anglo mine that started to operate in 1973 in the Mpumalanga Province. This mine is situated between Ogies, Bethal and Witbank (Raganya, 2011:282). The Kriel Coalfield Mine supplies Eskom stations with coal to generate electricity. Eskom generates 95 per cent of the electricity that is used in South Africa and relies on coal to generate it. The author further clarifies that coal in Mpumalanga is regarded as an important source of energy that supplies other companies with coal such as Sasol to generate petroleum liquid fuel. However, the exportation of coal to other countries is low compared to gold. According to Raganya (2011:282), the Kriel Coalfield Mine is one of the colliery mines that are owned by Anglo American in the Mpumalanga Province. The Kriel Coalfield Mine has been contracted to Eskom to supply coal up to 2019 which further means that this sector will continue to contribute to the South African economy. The role played by coal it is that it is an affordable source of energy that has been producing millions of tons (Mt) from 2008 till to date. This asserts that South Africa is regarded as the richest country in minerals.

1.3.1.2 Witbank Coalfield Mine

The Witbank Coalfield mine is the largest in Mpumalanga and accounts for 40 per cent of the coal being produced every year (Banks, Palumbo, van Tonder, Davies, Fleming & Chevrel, 2012:13). The Witbank Coalfield mine started to operate in 1918 and people from Africa such as Mozambique were employed by this mine (Banks et al 2012:13). These authors further state that the Witbank Coalfield mine is the main centre of coal mining activities and more collieries were therefore opened to generate electricity. Rich coals are found in the Mpumalanga Province, and they supply Eskom power stations such as Arnot, Komati and Hendrina power stations to further generate electricity. People from neighbouring places such as Middleburg and Ermelo rely on coalfield mining industries for job opportunities and this has therefore increased the population in Witbank (Banks et al., 2011:25). Iron and Steel

Corporation (ISCOR) is another company that is supplied by the Witbank Coalfield mine with coal. ISCOR uses coal to manufacture and to produce steel and copper, and further explains that even though coal does not generate large sums of money compared to gold, but still play an important role in South African industries and companies. The researcher believes that coalfield mines in South Africa have contributed significantly to the economy.

1.4 PLATINUM MINING

Platinum mines in the Gauteng Province are mines that specialize in different six chemical elements such as, palladium, rhodium, osmium, iridium, ruthenium and nickel which are produced in platinum mining sectors (South Africa, 2014). Platinum in South Africa was found in 1923 in Mashishing previously known as Lydenburg by Hans Merensky. This mining sector is regarded as the international leader of platinum products that produce a range of chemicals that are distributed internationally (Glaister & Mudd, 2009:1). Platinum Group Metals (PGM) dominates the South African economy due to the volume of resources that are being produced yearly. This has resulted in countries such as Russia, Canada, Zimbabwe and the United States playing a minor role in the manufacturing of platinum products.

According to Hochreite, Kennedy, Muir and Woods (1985:165) mines such as Lonmin mines and Rustenburg platinum mines, which belong to Anglo Platinum mines, were formed by British platinum producers in 1926. The main reason that led to the formation of the mines mentioned above was to supply refining industries to produce jewellery. Of importance with regards to platinum mines in the Gauteng Province, is that this industry is still regarded as the largest mining sector that, to date, plays a vital role in Gross Domestic Product (GDP) by contributing 41 per cent including the 90 per cent which is received from export earnings (Ryan, 2016:299).

1.5 GOLD MINES

Most of the gold mines in this country are based in the Gauteng Province, namely:

1.5.1 Sibanye Gold

Sibanye Gold is an independent mining group which is situated in Driefontein in the Gauteng Province. Sibanye Gold produces high-quality gold in South Africa and own projects that produce uranium in the Witwatersrand (South Africa, 2016). This mine is responsible for uranium operations throughout Westonaria and was amalgamated in December 2002.

Sibanye Gold sectors are found in Driefontein, kloof, Beatrix and Cooke Corporate. Sibanye Gold has numerous projects that are functioning in the West Rand and Burnstone projects that function in the Gauteng Province (South Africa, 2016). Sibanye Gold also plays a significant role by maintaining and fostering positive engagement to all stakeholders involved in delivering superior value.

1.5.2 AngloGold Ashanti

AngloGold Ashanti was formed in 1944 under the name of Vaal Reefs in South Africa. This mine is situated in Johannesburg (South Africa, 2015). AngloGold Ashanti is a global gold company that is known as the third-largest producer of gold in the world. AngloGold Ashanti operates 17 mines in nine countries such as Argentina, Australia, Brazil, Ghana, Guinea, Mali, the Democratic Republic of Congo, Tanzania and South Africa (South Africa, 2015). AngloGold Ashanti has been the primary listing mine that provides shares to Johannesburg Stock Exchange (JSE) in South Africa and has also been internationally diverse on other stock exchanges such as New York, London, Paris and Ghana (South Africa, 2015).

AngloGold Ashanti owns three mines in South Africa, the Tau Tona gold mine, Mponeng and Savuka mines. All these mines focus on producing gold. AngloGold Ashanti has five key strategic objectives, and they are described as follows:

- **Focus on workers, safety and sustainability**: they operate according to their values to ensure that the company remains sustainable for a long period of time.
- **Improve expenses and capital expenditure**: this means that all decisions taken by the company must be checked to ensure that they will benefit the core objective of the business.
- **Improve portfolio value of the company**: the portfolio of the company must always be aggressively managed to strive for a competitive valuation as a business.
- **Manage financial flexibility**: the balance sheet is the foundation of the company, and it must always be able to encounter the essential funding needs of the business.

The information indicated above further declares that AngloGold Ashanti has been in the existence for more than a decade and is also internationally diverse. AngloGold Ashanti is known for its contribution of gold globally; this company further generate a sustainable profit and is listed on the South Africa JSE and abroad. AngloGold Ashanti has been a legitimate player in the South African mining sector and has invested in the well-being of employees and contributed to the development of the South African economy (South Africa, 2015).

1.5.3 Goldfield mine

The Goldfield mine was formed in 1932 by two researchers, Cecil John Rhodes and Charles Rudd. This mine started to operate in 1887 and its main function was to produce gold (Ciarncross, 2004:119). The Goldfield mine is situated in Carletonville near Westonaria in the Gauteng Province. This mine has produced 70 million tons of gold during its 75 years of existence (Ciarncross, 2004:119). This mine is known as the richest mine in the world and has enormous gold mineral resources. A significant opportunity for this mine is that it increases mining flexibility through the development of investments and thus extends the life of this mine. The development of the gold mining sector in 1886 led to the development of industrialization in South Africa. This mine played an important role in infrastructures such as water, roads electricity and rail. In 1887, this mine was listed on the Johannesburg Stock Exchange which account for 98 per cent of gold (Ciarncross, 2004:119). The existence of the Goldfield mine in South Africa has played a major role as another mine in South Africa that contributes to benefiting this country economically. The researcher believes that South Africa has benefited economically by mining minerals that are produced by Goldfield mine which has therefore resulted in South Africa being the third richest country in minerals.

Based on the stipulated information mentioned above, South Africa has different mining sectors which produce different mining minerals; however, for the purpose of this case study, the focus will be on gold theft in the South African mining sector situated in the Gauteng Province. Mines that are affected the most are mines such as Sibanye Gold and AngloGold Ashanti, which are mines that are affected by illegal activities by illegal miners. The researcher will focus on the gold mining sector to determine the impact of criminal syndicates in the Gauteng mining sector. According to Crowley (2015:1), illegal miners are living underground for more than six months with the aim of digging for gold. The last-mentioned author further postulates that illegal activities have an impact on people who are permanent workers of mines dealing with gold. This has resulted in a huge loss in the production of gold.

1.6 CONTRIBUTION OF MINES TO THE SOUTH AFRICAN ECONOMY

The mining sector in South Africa employs thousands of people including those who migrate from their countries to work as mineworkers in South Africa (Killian, 2003:1). This sector attracts engineers, geologists, technicians and financial people from all over the world. This sector thus builds human capital through employment, training and numerous skills as part of

development. Mining has played a significant role in South Africa during the past 150 years by contributing to the economy and shaping the country's image (Africa Mining, 2015). This sector spends 78 billion on people's wages and salaries (Africa Mining, 2015). To date, this sector is still the source of income to many unskilled people as well as semi-skilled people. The pivotal role that has been played by the mining sector was the establishment of the Johannesburg Stock Exchange (JSE) in the 19th century and it still accounts for market capitalization which contributes 18 per cent of the Gross Domestic Product (GDP) (Africa mining, 2015). Mining has shaped the country economically; politically and culturally. This sector produces coal, gold, uranium and other precious metals and as a result, this led to the growth of the industry to other neighbouring countries. Coetzee and Horn (2006:1) describe the contributions made by this sector as follows:

- Stimulate the industry production by consuming 15 per cent of electricity produced by Eskom;
- Continue to act as an investment for Johannesburg Stock Exchange accounting for R534 billion,
- Contribute to South African exports to the amount of R89.4 billion,
- Contribute 7 per cent to the agricultural sector,
- Paid R34.billion in wages and benefits to mineworkers which account for 7 per cent of total compensation and,
- Play a vital role in supplying South Africa's banking industries, engineering manufactures and processing factors.

Even though illegal mining is seen as a cash flow business and a strategy to alleviate poverty to many citizens in South Africa, legitimate mining still adds a significant value to the country in terms of foreign exchange earnings, employment and economic activities. Likewise, to date, this sector is still the largest producer of chrome, manganese, platinum, vanadium and vermiculite. South Africa is the world's second-largest producer of ilmenite, palladium, rutile, and zirconium (Africa Mining, 2015). This shows that mining in South Africa will further contribute expressively to the country's economy and demonstrates the importance of South Africa on a global mineral production scale.

1.7 CHALLENGES FACING THE SOUTH AFRICAN MINING INDUSTRY

Different types of challenges have affected the mining sectors in South Africa. They are described below:

1.7.1 Life-threatening conditions in mines

According to Coetzee and Horn (2006:2), there are major challenges that mineworkers are faced with in mining sectors. One challenge that was discovered in the mining sector is life-threatening conditions such as hazardous gas that they inhale, welding fumes, collapsing ground and loud noise from heavy machines. According to Salamon (2010:1) mercury is one of the chemicals that are used in mines to refine mine products such as gold and silver. Moreover, illegal miners use mercury to extract precious pieces of gold which put their life at risks as they inhale it directly without protective clothes as operations are taking place illegally. Mercury is a poisonous substance that causes different diseases such as cancer and skin disease. The use of mercury in mines claims the lives of about 40 people per month. According to Oosthuizen (2009:1), mercury affects the brain and central nervous system in humans, which are regarded as permanent diseases. Rupprecht (2015:1007) designate different kinds of life-threatening conditions such as:

- Exposed to dust which can affect lungs;
- Exposed to mercury and other chemicals which results in skin cancer and;
- Exposed to noise and vibration of machines which may affect ears.

In this regard, the conditions mentioned above cause severe damage to mining employees as some are living with permanent illnesses that last for a lifetime. These conditions affect family members who must take care of their loved ones and ensure that they receive proper care.

1.7.2 Organised crime syndicates

According to the Mining Fact Sheet Report (2016:2), illegal mining activities of organised crime syndicates is arranged as follows:

First-tier: These are underground mineworkers, majority of them are illegal immigrants who came to South Africa without proper documents. Most of them have experience and are familiar with chemicals that are used in mining sectors, which makes it very easy to refine the product using the correct chemicals.

Second-tier: This is a group of people who support illegal activities in mining sectors. They provide illegal miners with food, protective clothing and equipment to use when performing illegal activities.

The third tier: These are the regional bulk buyers who trade stolen products with countries.

Fourth tier: They distribute precious metals nationally as well as internationally through legitimate companies.

Fifth tier: This last tier deals with top international receivers and distributors who are considered wealthy people.

The research conducted by Farmer (2020:1) on behalf of the Department of Mineral Resources, stipulates that mining injuries constantly increase each year and as a result, it becomes problematic for the Department of Mineral Resources to have precise statistics. Moreover, Farmer (2020:1) continue to elaborate that in 2019, more than 44 people perished underground at Sibanye Gold which made it difficult to identify legal employees and illegal miners. The number of accidents occurring in mining sectors constantly follow similar patterns where most people are stuck underground for days, this then means that once exhumed they are dead.

Figure 1: Mining fatalities from year 2016-2019

Year	Fatalities
2016	73%
2017	69%
2018	81%
2019	51%
Total	274%

The researcher believes that the above-stipulated table designates that crime still plays a major role in mining sectors which further distress the profit and the costs of this sector. This has therefore resulted in police having to investigate and arrest illegal mineworkers who conduct illegal activities within the mining sector. The research conducted by Coetzee and Horn (2007:1) illustrate that although police officials conduct investigations regarding illegal mining, it is vital to note that at times it is difficult to handle cases of illegal miners and cases of the community citizens simultaneously, this is evident where the SAPS fails to provide justice systems to the mining sectors. On the other hand, Gastrow (2011:4) postulates that the production of gold and profit are under the spotlight which elaborates that the theft of precious metals has been rendered as a high priority that needs urgent attention.

1.7.3 Labour protest

South Africa is the world largest producer of platinum, gold, diamonds and other precious metals; however, this industry is affected when mineworkers express their dissatisfaction through protest (BizNews.com, 2014). In 2014, 70 000 Lonmin mineworkers were involved in a strike demanding a salary increase of twice the salary they are earning which affect the

production of the platinum. The negative impact of protests affects this sector which loses billions of rands, and more concern, it also decreases the Gross Domestic Product (GDP) of the economy (BizNews.com, 2014). This sector to date remains the backbone of the country's economy. Furthermore, labour protests always have a negative impact as mineworkers are armed with dangerous weapons such as spears and knives (Enodo Global Report, 2015).

Labour protests and strikes are not new to South Africa and are not always peaceful, resulting in family members losing their loved ones during protests. In 2012, 34 miners died during the Marikana massacre in the Northwest Province, 78 mineworkers were seriously wounded and 250 were arrested (Enodo Global Report, 2015). While there are numerous examples of less violent incidents, strikes in the mining sector are more predominant and have caused operations to break down for a long period of time. These thus lead to foreign investors abandoning the industry and invest in another industry. Moreover, South African economists are very concerned about the major protests in mining sectors as it damages the South African economy and cuts employment (Independent Online News, 2015). Mining companies that are often affected are Anglo Platinum, Impala Platinum and Lonmin, which decreases the Gross Domestic Product by 0.6% (Independent Online News, 2015). According to Schussler (2014:1) Platinum Group Metals (PGM) lost R17.5 billion dues to labour protest which decreases the financial markets of South Africa.

1.7.4 Mine closure

A mine is closed when the government authorities grant a certificate to the owner or an operator to shut down the mine due to external and internal negative factors that occur. The reasons that lead to mine closure are sensitive matters that are not disclosed to the public. This issue affects permanent employees who are considered as breadwinners in their families (Killian, 2003:1). The negative impact on many employees is that they become stranded and without a job or food to survive. Semi-skilled people customarily migrate to other areas to seek fortunes in neighbouring countries. According to Robertson and Shaw (1999:3), three objectives should be considered when a mine is shut down, and they are described as follows:

- Community members need to be protected with a healthy environment when the mine is shuttered down;
- The land should be returned to its original condition and;
- Environmental damages caused by mines need to be improved.

The researcher believes that when a mine is closed, it does not affect only the economy but also mineworkers as they need to leave to other towns to seek employment. This then affects children who are at tertiary level to drop out due to enormous amounts of money that their parents fail to pay. Of concern, houses that were bought are sold as mineworkers migrate to other towns with their spouses and children's; flats and rooms that were leased to mineworkers no longer generate money which affects business owners.

1.7.5 Population growth

Population in areas that are bound with mines significantly increase because of mining sectors operating (Opokuware, 2010:40). This author further postulates that a major problem that leads to overpopulation in mining sectors is that majority of people migrate to South Africa to seek jobs, and this often led to the population increasing (Opokuware, 2010:40). Moreover, there is a perception that if the area is bordered by mines, the occupants who are residing in those areas considered to be "rich" people. This often led to businesses such as taverns opening without following correct procedures for opening a business.

Likewise, Opokuware (2010:40) states that communities extended their houses to lease rooms to mineworkers which they perceive as another way of making money. Such a situation often increases crime and corruption as some of the residents no longer feel safe. Alcohol remains the most prevalent substance that is abused in South Africa. This substance has a major impact on mineworkers during weekends and leads to an increase in violence on pay-days (Cronje, Reyneke & van Wyk, 2013:4). The misuse of alcohol often distresses women as majority of men do not return home after payday and they do not turn up to work for a period of two to three days. Women are constantly affected as they depend on their husbands for financial support. Health problems that are associated with alcohol are rape, HIV and AIDS and sexually transmitted diseases.

1.7.6 Health and safety

Health and safety are another concern that appears to be problematic in mining sectors in the Gauteng Province. The Mine Health and Safety, Act No 29 of 1996 protect the health and safety of legal employees in mining sectors (Department of Mineral Resources, 2011). The Acts states that all employees should be protected with regards to the physical, mental and social well-being of workers in all occupations. The objective of the Mine Health and Safety, Act No 29 of 1996 are described below:

- To promote health and safety to legal mineworkers always;
- To establish safety measures at mines;
- To promote training and human resource development;
- To provide the system that will inspect, investigate and enquire about employee's health and safety conditions.

The objectives are therefore established to ensure that legal mineworkers are protected; however, there are risk factors that are found in mining sectors such as skin disorders which develop because of using chemicals underground without getting appropriate fresh air, heavy noise from machines, exposure to dust and TB disease (Hermanus, 2007: 531). This author further denotes that the main aim of the Mine Health and Safety, Act No. 29 of 1996 is to examine the provisions of policy and safety of mineworkers to reassure that the place has been designed and constructed for a healthy work environment. Each day in South Africa, legal miners die due to the risks that they come across in mining sectors. Mine accidents such as falls of ground have been identified as one of the major issues that affect mining sectors in South Africa. This has led to poor performance of mine sectors that are situated in the Gauteng Province and it creates a bad image of the South African economy. This sector needs to be improved by looking at the best international strategies that were implemented in minimizing accidents in the mining sector.

1.8 PROBLEM DESCRIPTION

The problem investigated by this study involves how SAPS deal with illegal mining activities and the impact illegal mining has on the country' economy, crime rate and the feelings of insecurity by community members surrounded by mining industries. According to Kantor (2014:1) in 2010, South Africa lost about 10 per cent of the gold that was produced in the country's mining industry due to illegal mining. What complicates this matter is the fact that illegal mining activities take place in both licensed and abandoned mines involving both official employees of licensed mines as well as ordinary people. Formal employees use their leave days and after-hours time to participate in these activities. In most instances, illegal miners force their way inside the abandoned mines by making use of explosives such as mercury to open the sealed mine shafts (Munakamwe, 2015:4). In areas surrounded by mines, such as the Carletonville, Springs and Main Reef mines in Gauteng Province, illegal miners are feared by community members (Mail & Guardian, 2014). This has resulted in some of the community members not feeling safe around areas that are surrounded by illegal miners. Therefore, in

such communities, there is a dire need for police protection for the community members and the mining sectors in general and more so for the prevention of illegal mining.

Additionally, one of the major factors noted by the Department of Mineral Resources (DMR) was to conduct a thorough investigation on mining fatalities. The research conducted by DMR (2019:1) clearly states that more than 51 per cent of mining fatalities were recorded in 2019. This further emphasizes serious concerns in mining sectors owing to illegal mining activities. The following incidents were recorded in 2019:

- 53 per cent of deaths recorded in the Sibanye Gold Mining sector;
- 58 per cent of attempted murders and,
- 22 per cent of fatalities in the Westonaria mining sector.

The Department of Health further raised the concern that the safety of formal employees in mining sectors should be given special attention because mineworkers feel threatened and are being killed by illegal miners (Newzroom Afrika, 405:2020). The Department further noted that most of the above-mentioned incidents mainly occur owing to a lack of mine safety that needs to be constantly upgraded. Moreover, more than 2 406 injuries were recorded in February 2020, which served to alert the Department of Mineral Resources that the safety of formal employees is significant and as such, should be taken into consideration (Newzroom Afrika, 405:2020). The Minister of Mineral Resources, Mr Gwede Mantashe, suggested that the issue of illegal mining should also form part of the agenda when a Mining Indaba is held. This will further assist in discussing solutions that need to be implemented in mining sectors to curb illegal activities occurring in mining sectors (Newzroom Afrika, 405:2020). The researcher is of the view that addressing the challenges of illegal mining requires commitment and practical action from stakeholders involved in mining sectors. Better solutions should be discussed which will assist the mining sector to curb the scourge of illegal activities.

1.9 RESEARCH AIM AND OBJECTIVES OF THE STUDY

To address the research problem, the research study must have an aim and objectives. This study aims to explore how is the South African Police Service (SAPS) policing illegal mining activities in the country.

The objectives of the research study can, therefore, be summarized as follows:

- To explore the nature and extent of illegal mining in the Gauteng Province.

- To describe the roles of different stakeholders in the prevention of illegal mining in the Gauteng Province.
- To understand the relationship between the police and other stakeholders involved in the prevention of illegal mining in the Gauteng Province.
- To investigate the current strategies used by the SAPS to deal with illegal mining.
- To investigate the challenges facing the police when dealing with illegal mining.
- To propose guidelines that can be used by the police and other stakeholders to effectively combat illegal mining.

1.9.1 The research questions

The research question is described as a tool that directs the researcher's mind to answer the research problem for the envisaged study (Leedy & Ormrod, 2001:60). The research question for the study will narrow down what the researcher is planning to investigate. The main research question for the study is: How is the SAPS policing illegal mining activities?
To support the main research question, the following sub-questions are also answered in this study:

- What is illegal mining?
- What are the roles of relevant stakeholders in the prevention of illegal mining?
- How effective is the relationship between relevant stakeholders in the prevention of illegal mining in Gauteng Province?
- What are the current strategies used by the police in the prevention of illegal mining in Gauteng Province?
- Are there any challenges experienced by the relevant stakeholders and the police when dealing with illegal mining in Gauteng Province?
- How can the relevant stakeholders better deal with illegal mining in Gauteng Province?

1.10 VALUE OF THE STUDY

The main reason which led to the research in this study is that the policing of illegal mining in South Africa is a relatively under-researched subject. South Africa as a developing country faced serious challenges in mining industries from 1999 to date. This research study will benefit the mining industries and the SAPS by producing rich and descriptive findings that will explain the dynamics and challenges in illegal mining activities, thus informing policies makers on how to deal with illegal mining. This study will also contribute to the academic body of

knowledge by providing a model which can be used to regulate illegal mining activities not only in South Africa but also in other countries experiencing similar problems.

1.11 DEMARCATION OF THE STUDY

The study will be conducted in the Gauteng Province because as compared to other provinces, Gauteng has more mining industries within the country and recently in 2016 there have been several illegal mining incidences in this province. The research conducted by the Department of Mineral Resources (2017:1) further states that most mining sectors such as Anglo-Gold Ashanti, Kusasalethu mines, Benoni, Sibanye, Florida and Grootvlei experience majority of incidents owing to illegal mining activities. Therefore, this site was also selected because is it accessible and convenient for the researcher to conduct her research in Gauteng.

1.12 DEFINITION OF KEY CONCEPTS

The key theoretical concepts of the envisaged study are defined below:

1.12.1 Abandoned mines

Abandoned mines are described as old and unused mines that are no longer active, and their permission have been terminated (Minecraft Guides, 2013).

1.12.2 Active mines

According to Majoni (2013:1), active mines are described as licensed mines which, according to Mineral and Petroleum Resource Development Act 28 of 2002, are permitted to extract minerals from mines and contribute to tax.

1.12.3 Artisanal or small-scale mining

Artisanal or small-scale mining refers to illegal mining activities that are performed in groups, individuals and close family members without employing any paid assistant (Chakravorty, 2001:7). Therefore, an artisanal miner or small-scale miner refers to a person who engages in an artisanal or small-scale type of mining activity.

1.12.4 Crime prevention

Crime prevention is defined as a variety of approaches and measures that can be implemented to reduce crime (Morgan, Boxall, Lindeman & Anderson, 2012: 3). This is a process whereby law enforcers ensure that community members are protected against any harm.

1.12.5 Crime syndicates

According to Joubert (2004:34), these are a group of gangsters and criminals who perform illegal activities inactive mines as well as in abandoned mines.

1.12.6 Illegal mining

Illegal mining refers to mining activities without state permission which does not have a mining license to explore minerals that operate on surface and underground mining (Jimenez, 2012:12). For this study, any person engaging in illegal mining activity is referred to as an illegal miner.

1.12.7 Police

Police are described as the members of (SAPS) who are tasked with the duty of ensuring that everyone in the country together with their properties is protected against any harm (South Africa, 1996).

1.13 Chapters Layout

Chapter 1: General orientation. This chapter includes the problem description, research questions, aims and objectives of the study. This chapter also provides a background to the study.

Chapter 2: Research methodology. The researcher explains which research methods will be sought for this study. This includes research approach and design; ethical consideration will also be explained as well as which methods will be used to collect data will be described in this chapter.

Chapter 3: Illegal mining in South Africa. This section explained the type of illegal mining's, the nature and extent of this problem and their impacts thereof in Gauteng Province and/or South Africa as a whole.

Chapter 4: Overview of illegal mining activities in other countries. This section will give critical analyses of illegal mining and compare different strategies used in developed and developing countries around the world regarding illegal mining and identify best practices that can be implemented in South Africa to curb illegal mining.

Chapter 5: Presentation of research findings: This section will provide a detailed discussion and analyses of the data collected to inform the research.

Chapter 6: Recommendations and conclusion: This section will summarise the findings from the data collected, as well as make conclusions and recommendations on the findings of the research study.

1.14 SUMMARY

This chapter presented the overview of illegal mining in Gauteng Province. It also outlined the aim and objectives of the research study, which directed the researcher on how to answer the research questions and research objectives of the envisaged study. It was clear from the above discussion that illegal mining activities have a negative impact on the economy of this country and there is a serious need for more effective strategies to curb this problem. This chapter will be followed by chapter 2 which is the extension of the research report that painted a bigger picture on research methodology that was selected for the study.

CHAPTER 2: RESEARCH METHODOLOGY

2.1 INTRODUCTION

Research is “a process of systematic inquiry and empirically informed process to gain more insight of the research study conducted” (Bertram & Christiansen, 2014:6). Research methodology is one of the most imperative steps in any research study. This statement is further supported by the writings of Creswell (2009:145) that points out that research methodology is a method carried out by the researcher during the process of investigation to answer the research problem of the envisaged study. Scholars such as Pilot and Hungler (2004:233), Hollway (2005:293) and Igwenagu (2016:4), share the same sentiments that research methodology is the systematic method used by the researcher to acquire broader knowledge on the topic of study. In this study, research methodology will encompass those research techniques that the researcher adopts to achieve the aim of this study. The study aims to explore how the South African Police Service (SAPS) deal with illegal mining in Gauteng. The purpose of this chapter is to outline the research design and methodology used in this study, for example, the researcher will describe the research design, research approach, sampling procedures, ethical considerations, data collection, data analyses techniques as well the methods used to ensure the trustworthiness of the data. This chapter will conclude by highlighting the researcher’s reflexivity and the limitations experienced by the researcher during the data collection process.

2.2 RESEARCH DESIGN

Research design is a method that elaborates how the study is going to be examined (Fouche in De Vos, 2002:271). Babbie and Mouton (2001:74) explain that a research design is a map that directs the researcher on how the research study should be conducted. Research conducted by Dantzker and Hunter (2012:14) describe research design as the plan set out by the researcher on how research participants for the research study will be selected. Similarly, the researcher constantly follows the research plan to ensure that the study is developed for the specific purpose and that all resources will be available to complete the research report. For this research report, a case study was chosen by the researcher. The research study conducted by Fouche as quoted by de Vos (2000:275) define a case study as the research strategy that produces an in-depth analysis of the research study over a period. The researcher chose a case study as the process that takes place through adopting multiple sources of information that are rich such as interviews, document analysis and observation.

2.3 RESEARCH APPROACH

The work of Fouche and Delport (2011:63) reveals that there are two prominent types of approaches, qualitative and quantitative approaches. According to Babbie (2010:5), a qualitative approach refers to a group of methods used in the study to answer specific questions related to the research study. Quantitative research on the other side described as the research method that "explains phenomena by collecting numerical data that are analysed using mathematically based methods (Muijs, 2004:1). For this research study, the researcher espoused a qualitative research approach which was deemed for the study.

2.3.1 Qualitative approach

Qualitative research refers to an approach that produces rich and eloquent information from people's own knowledge and experiences (Babbie & Mouton, 2010:270; Fouche & Delport in De Vos, 2002:82; Creswell, 2007:36). Scholars such as Brynard, Hanekom and Brynard (2014:39) illustrate that the qualitative approach permits the researcher to understand people's personalities, how they live and how they deal with real-life situations. Moreover, the research by Denzin and Lincoln (1994:2) posits that a qualitative approach is "a set of non-statistics techniques and processes implemented by the researcher to gather data". The researcher adopted a qualitative study hence the scholar sought to investigate natural settings and to understand the life experiences around research participants involved in the research study. Likewise, Maxwell (2005:220-221) describes five goals to be attained through conductive qualitative research study:

- Understand the meaning, participants involved in the study, the events, situations and actions they are involved with and the explanations they give of their lives and experience.
- Understand the context within which participants act and the influence that this context has on their actions. Qualitative Researchers typically study a relatively small number of individuals or situations, and preserve the individuality of these in their analyses, rather than collecting data from large samples and aggregating the data across individuals or situations.
- Identifying unanticipated phenomena and influences, generating new, "grounded" theories about the study topic. Qualitative research has an inherent openness and flexibility that allows one to modify the design and focus during the research to understand discoveries and relationships.
- Understand the process by which events and actions take place (this is the natural/real setting talked about in qualitative studies).

- Developing causal explanations.

The qualitative method was espoused in this study as it facilitated an understanding of crime prevention in mining sectors and how law enforcement plays a role in preventing crime. Furthermore, the qualitative method will assist the researcher to explore more about the topic at hand by obtaining insight information on the policing of illegal mining in Gauteng.

2.4 RESEARCH POPULATION AND SAMPLING

According to Brynard, Hanekom and Brynard (2014:57) “population refer to a group in the universe which possesses specific characteristics such as individual human being’s organisation”. For this research study, the population group include the members of the SAPS from Westonaria, Langlaagte, Roodeport, Fochville and Carletonville. Illegal miners from different squatter camps around Gauteng formed part of the study. Owing to large number of this population group, the researcher selected a sample group that will represent the entire population of potential research participants. A total of (47) SAPS members from various police stations participated in the study and a total of (23) illegal miners also participated in the study envisaged.

2.4.1 Non-probability sampling

Non-probability sampling was followed in the study. Non- probability sampling means that not all research participants have an equal chance of being selected to participate in the study (Strydom and Venter in De Vos et al., 2002:207).

2.4.2 Purposive sampling

The research participants were selected using purposive sampling. Scholars such as Babbie (1995:287) explain that purposive sampling in the research study is used to gather more data on the topic being investigated and to have a better understanding of the matter from a group of people. This means those research participants that will partake in the research study will be chosen purposively because they fit into the criteria that the researcher is using. Denscombe (2002:15) further explains that in purposive sampling, researchers select informants with a specific purpose in mind based on prior knowledge about specific people or events and thereby deliberately selects participants who are likely to produce the most valuable data. In the case of this study, police officials with experience from five years upwards

were requested to participate in the study, provided such police officials have dealt with illegal mining cases before and have broader knowledge concerning illegal mining in Gauteng. Purposive sampling enabled the researcher to identify the research participants for the envisaged study.

2.4.3 Snowball sampling

Snowball sampling is also known as “chain referral sampling” is considered as another sampling technique that was adopted in the research study. The research conducted by De Vos (2011:233) declares that snowball sampling involves interviewing one person, thus the participants direct the researcher to other potential participants that fit the criteria of the study. For this research study, other illegal miners were interviewed using snowball sampling because it was difficult for the researcher to locate them hence, they reside in areas that were dangerous for the researcher to go alone. With the assistance of the research participants that were interviewed at Langlaagte police station, the researcher managed to interview twenty-three (23) illegal miners that are located at Zami Mpilo squatter camp located in the South of Johannesburg. All three illegal miners were interviewed using snowball sampling, which was very simple for the researcher to interview them.

2.5 METHODS OF DATA COLLECTION

Data collection refers to the process of gathering data to answer research questions for the study, thus the process includes among others, the use of focus group discussions (FDG’s), face-to-face interviews, document analysis and observations of the research study. For this study, all methods of data collection mentioned in this research study were espoused, thus using multiple sources for data collection is appropriate for the triangulation purposes that is to ascertain the trustworthiness of the data obtained.

2.5.1 Interviews

The anticipated study will use a semi-structured interview style as a primary tool to collect data for the study. According to Greef (in De Vos et al., 2002:302) semi-structured interviews are described as types of interviews that are conducted by the researcher to achieve information from the participants selected for the research study. Moreover, Lewis-Back, Bryman and Liao (2004:10) argue that semi-structured interviews are used to gain knowledge from participant’s experiences and the understanding of the topic being studied. The research conducted by

Flick (1998:76) adds that semi-structured interviews consist of open-ended questions where research participants incorporate attitude, feelings and the understanding of the subject at hand.

According to Greef (in De Vos et al., 2002:302) semi-structured interviews are described as those types of interviews conducted by the researcher to achieve in-depth information from the research participants. Moreover, Lewis-Back, Bryman and Liao (2004:10) postulate that semi-structured interviews are conducted to gain the knowledge of contributors, involvement and the understanding of the topic being studied. Marshall and Rossman (2016:150) postulate that semi-structured interviews are "scripted" this simply means that, the researcher asks specific questions, related to the research study. For this study, the researcher used semi-structured interview as part of collecting data from the participants which allowed her an opportunity to probe the answers given by the research participants and allow the research participants a chance to add relevant information to the study. The following types of interviews were followed in this study:

2.5.1.1 Face to face interviews

Face-to-face interviews are seen as a direct communication towards the data collection process; thus, interviews are constantly regarded as the most common process to gather data (Mouton & Babbie, 2014:249). The research conducted by Babbie and Mouton (2014:249) hypothesizes that face-to-face interviews permit the researcher to ask questions and to record responses with the permission of research participants involved in the research study. Moreover, scholars such as Easwaramoorthy and Zarinpoush (2006:2) share the same sentiments with Babbie and Mouton (2014:249) that a face-to-face interview is a conversation between the researcher and the participant as a method of gathering information. The research by Maxfield and Babbie (2012:175) agree that face-to-face interviews are an operational tool in data collection, thus it increases the chances for all research questions to be answered by research participants.

According to Denzin and Giardina (2015:114), face-to-face interviews in any qualitative research study are seen as the method that allows the researcher to go deeper to obtain answers regarding the study conducted. Denzin and Giardina further agree that face-to-face interviews guarantee the validity of the study. Moreover, face-to-face interviews will consent the researcher to query answers by asking the research participants to clarify or elaborate more on a specific response. The writings of Davies, Francis and Jupp (2011:65) elaborate the researcher determines the venue and time for the interviews to be conducted.

Consequently, for this study, the researcher opted for all interviews with the police to be conducted in the police station. The main motive for choosing the workplace was, SAPS members work different shifts, and it became easier for the researcher to interview them after assembly has been conducted in the morning. Another reason was the researcher wanted all research participants to feel free when answering research questions.

The police interviewed include crime investigators, visible policing, detectives and station commanders from different SAPS police stations that participated in the study. The interview was scheduled for 15-20 minutes to obtain more research answers and all interviews were recorded for the research study. Five (5) police stations were chosen for the research study, namely, Langlaagte, Westonaria, Fochville, Carletonville and Roodeport as the police stations that encounter majority cases of illegal mining activities. A total of forty-seven (47) SAPS members were interviewed by the researcher. Members of SAPS were interviewed using purposive sampling method and all participants participated in the research study were the ones with more direct experience in dealing with illegal mining activities.

Moreover, the reason to include different ranks was to gather more information pertaining to the study. Detectives and station commanders draw a monthly plan that assists them on how to deal with illegal miners. The researcher believes that face-to-face methods played an important role, thus research participants were free, laughing and sometimes being questioned about the way illegal miners perform illegal activities in different mining sectors. This method further assisted not only the researcher but the members of the SAPS by permitting individual perspectives to emerge, thus at the end of every interview, the researcher allowed few minutes for the participants to ask questions, comments or even input that was not mentioned during the interview process.

2.5.1.2 Document analysis

The research conducted by Strydom and Delport as cited in De Vos (2011:377) asserts that document analysis is the study of the existing documents, for example, personal reports of the department, minutes from the previous meetings, agendas and internal office memos. Bowen (2009:27) defines document analysis as a technique that is used by the researcher to analyse documents that are available electronically. Likewise, Strydom and Delport as quoted in De Vos et al. (2011:377) hypothesize that there are different documents of the organisation or the department that can be analysed for the envisaged study. The main purpose of analysing documents electronically was to discover answers for the following questions:

- To what extent has illegal mining-affected mining sectors in South Africa?

- Which key parts of the city are often damaged by illegal miners?
- Which strategy (s) are used by the SAPS to deal with illegal mining?

Due to permission not being granted by the Mineral Council of South Africa, the researcher relied on information from media such as newspapers, Television and Radio. Moreover, document analysis comprises advantages and disadvantages. The advantage of using document analysis is that it does not require the researcher to visit selected research sites for the research study, and it allows the researcher to analyse documents electronically which is more efficient. A disadvantage of document analysis is that it is time-consuming for the researcher to analyse documents that are based on the computer. Of concern, some of the documents analysed by the researcher did not answer all research questions, hence such information was not mainly written for the study conducted.

2.5.1.3 Focus group discussion (FGD's)

Focus group discussion (FGD's) is another process followed by the researcher to gather data for the research study. A focus group discussion is described by Moore (2006:144) as the engagement between the researcher and research participants by engaging more on the topic investigated. Similarly, Babbie and Mouton (2010:292) define a focus group discussion as an approach that is used by the researcher to interview more participants in the form of a group. Moreover, scholars such as Dennis, Carspecken and Carspecken (2013:138) maintain that a focus group discussion is regarded as a "spontaneous form of choreography between the researcher and participants involved in the research study". Likewise, Babbie and Mouton (2014:291) share some valuable sentiments in that focus group discussions normally takes place in one room where a research participant shares their feelings, knowledge and experience regarding the topic. The last-named mentioned scholar further elaborate that the advantage of focus group discussions is that it saves time and money, thus permitting more research participants to be interviewed simultaneously.

The advantage of using FDG's in any research study is that, first, it allows the researcher to interview research participants in a form of a group with insightful knowledge and experience and secondly, it creates a collective voice of information for the study conducted. For this study, FDG's were used to interview illegal miners. Illegal miners gave verbal concern for their participation in the study, while the researcher was taking field notes during the interviews. The researcher interviewed twenty (20) illegal miners at Amatholesville squatter camps near Roodepoort, Johannesburg. In Amatholesville, one group of participants which consist of 10 members were interviewed, while other 10 participants were interviewed at Zami Mpilo

squatter camps. The FGDs allowed all illegal miners who participated in the research study to be comfortable when answering questions and to use their home language when providing answers. The information shared by Greeff, as quoted by De Vos (2011:360), emphasise that FDG's serves as the means to understand how people feel about the problem encountered, therefore through their narrative information sharing, the researcher obtained more knowledge. The main aim of FDG's is not to force all participants involved in the research study to share their views, experiences, or concerns regarding the topic under the study, but it allows contributors to feel free and not feel pressured to answer questions.

2.5.1.4 Participant observation

In this research study, a participant observation study was implemented to gather more information pertaining to the research study conducted. Participant observations are considered the primary methods for data collection. The research conducted by Bertram and Christiansen (2014:84) define observation as the place where the researcher sits and observe what participants do on daily basis. Furthermore, scholars such as Minichiello and Kottler (2010:93), posits that observation allows the researcher to identify the research site to sit, witness and write down every single piece of information that may assist in answering the research question(s) of the research study. Concurrent with the above, Strydom as cited by De Vos (2011:333) denotes that data is gathered using observing research participants on daily life experiences, thus action constantly permits the researcher to write field notes for the study conducted. The researcher utilised three days to sit and watch movements of illegal miners at Roodepoort, Main Reef Road near Durban Deep Mine to accumulate information for the study conducted.

During the three days observation of illegal miners, the researcher noticed that illegal miners walk without any fear of the police official and such observations made the researcher to be more careful when taking pictures as they seem to be arrogant in the road. The researcher also noticed that illegal miners wear their own clothing which they regard as their own PPE's, carry lunchboxes and their own tools. Furthermore, researcher noticed that illegal miners have different shifts, those who worked in the morning knock off in the afternoon, while others took over from the last shifts. These observations were done during the same period of data collection process.

The research led by Strydom, as quoted by De Vos (2011:328) denotes that an observation study is the most significant tool to observe research participants moving around the area and making field notes. The writings of Brynard, Hanekom and Brynard (2014:48) posits those

observational techniques allow the researcher to record a true reflection of the real-life of research participants. Moreover, Strydom, as cited by De Vos (2011:335), hypothesize that field notes taken during the observation study should include everything the researcher sees and hear. The researcher chose to observe the external behaviour of illegal miners as they are well known for murder and attempted murders.

2.5.1.5 Field notes after the interview process

During the interview process, participants that were interested in the research study, for example, three illegal miners that were detained at Westonaria Police Station, refused to be recorded by the researcher for the exploration of the study. Furthermore, Phillippi and Lauderdale (2017:381) state that there is no right or wrong way of taking notes during the interview process. The research conducted by Greeff as cited in De Vos (2011:359) highlight that note written down after the interview process serves as an advantage to answer the research questions of the study envisaged. Likewise, Greeff as quoted in De Vos (2011:359), denotes that to save time, the researcher can write notes to capture all information from research participants, this will then be followed by more detailed notes.

The researcher further allowed illegal miners to speak in any language that they are comfortable in answering research questions. Likewise, most of the languages used by illegal miners were Sotho, Zulu and Fanakolo languages. Fanakolo language is a combination of Zulu, English and a little bit of Afrikaans, thus the language was not complicated for the researcher to understand and to write the report for the study. Similarly, the researcher implemented the process of writing keywords that assisted in writing the full detailed report. After all illegal miners were interviewed by the researcher, the researcher sat down immediately at the police stations to write down every single piece of information postulated by illegal miners regarding the study conducted. The notes taken after interviews allow the researcher to record each solitary body language as some of the research participants were expressing themselves by shaking their heads when answering questions.

2.6 METHODS OF DATA ANALYSIS

Data analysis is a method of converting the information collected by the researcher to highlight the most imperative information to answer the specific research questions of the study. Data analysis is defined as methods or techniques used by the researcher to analyse data (Babbie & Mouton, 2014:490). Furthermore, De Vos (2002:339) describe data analysis as a method of bringing order and structure to the data collected. Moreover, scholars such as Hancock,

Ockleford and Windridge (2009:15) completely agree that data analysis involves summarising all mass data collected by the researcher to answer research questions. The researcher believes that data analysis literally means breaking down raw data into bits and pieces. This simply means that the researcher will separate the important information from the less significant information using themes, codes and categories.

2.6.1 Transcription and translation process

The term transcribing “refers to a process by which an audio recording is interpreted or translated into words that can be studied” (Davidson, 2009:1), while translation is the interpretation of words from one language to the other. For this research study, transcribing was done as soon as the data was collected. The writings of Bailey (2008:129) denotes that “transcription and translation involve close observation of data through listening to tape recorder numerous times to avoid misinterpretation of data”. Early transcription further allows the researcher to allude to all information postulated during data collection. Of major concern, the researcher encountered few challenges during the transcribing and translation process. Some of the audios were inaudible because, during the interview process, colleagues were calling each other on the premises while the interview was conducted in the office. Another challenge encountered by the researcher was the ringing of the landline and cell phone, thus more time was taken by the researcher in transcribing and translation. The last third challenge encountered during transcribing was that most research participants especially illegal miners used different native languages and Fanakalo which took the researcher more time to translate to English.

2.6.2 Thematic analysis

Thematic analysis was used to analyse data for the study conducted. According to Miles and Huberman (1994:11) thematic analysis (TA) is a method of identifying themes, categories and patterns that relates to data. On the other hand, Braun and Clarke (2006:78) fully agree with the above-mentioned scholars that thematic analysis “is a process of identifying, organizing, describing and reporting themes found within data”. Thematic analysis was used to analyse and interpret the data collected for this research study. The six steps of thematic as explained by Braun and Clarke (2006:78) and Richard and Morse (2013:142) is depicted below:

- **Step 1: Familiarization with the research data –** Braun and Clarke (2006:78) postulate that the researcher read and re-read all transcription numerous times. This process assists the researcher to gain more understanding of the data collected for the study. The researcher then jots down some initial ideas to provide a good foundation of analysis. This step allows the researcher to engage actively with the data collected and give the researcher a comprehensive understanding of the information gathered, thus patterns and ideas become shaped in this process.
- **Step 2: Generate initial code -** once the researcher is familiar with the research data collected, the researcher then generates codes. The purpose of generating codes reduces lots of data into small chunks. The research conducted by Richards and Morse (2007:137) asserts that "coding involves transforming raw data into the idea". This simply means that all codes generated will appear meaningful hence they are transformed into an idea. Richard and Morse (2007:137) further discuss that qualitative coding in the research study, is a way of reflecting on the data collected, thus the process is significant for identifying important sections.
- **Step 3: Search for themes –** this step begins after codes have been generated by the researcher. This phase is important for sorting all themes generated for the study conducted. Braun and Clarke (2006:362) explain a theme as an "abstract entity that brings

meaning and identity to a current situation". The researcher is of the view that themes capture significant information for the research study.

- **Step 4: Reviewing of themes –** the fourth stage commence after codes are sorted for the research study. This step allows the researcher to identify whether the themes generated reflect the real meaning of the data collected. During this process, the researcher identifies new information that is not covered in the existing codes **(step 2)** of thematic analysis, then the researcher generates a new code. Moreover, during this stage, the researcher noticed that some of the themes generated are not themes. For example, if there is no enough data to support themes, the researcher then kept such information in a separate file.
- **Step 5: Definition of themes –** this step is associated with identifying the purpose of each theme created by the researcher. In this stage, all themes created are defined and determines the information captured by each theme (Braun & Clarke, 2006:362). The researcher writes a detailed analysis identifying the story of each theme; thus, the process is significant in connecting it to the full report of the research study.
- **Step 6: Writing reports –** the last step begins when all themes, sub-themes and codes are analysed. This step allows the researcher to write a full report for the research study. The purpose of writing the report is to tell the complete story regarding the study investigated by the researcher. Likewise, the writing of a report provides logical, coherent and non-repetitive words to deliver a clear report. This last step of thematic analysis further encourages the researcher to keep in mind trustworthiness in case of reporting, thus also make the report easy for the reader to understand how exactly the conclusion was reached.

The researcher is of the view that thematic analysis (TA) played a significant role in analysing data collected for the research study. For the research study, thematic analysis was used to gain an understanding of the research data collected for the topic at hand. The researcher believes that thematic analysis is implemented to analyse data for the research study as it is the simplest method that any emerging researcher can espouse in any qualitative research study.

2.7 METHODS TO ENSURE TRUSTWORTHINESS

According to Van As and Van Schalkwyk (2004:63), trustworthiness and authenticity have been established as viable standards of measuring consistency in qualitative research. Babbie

and Mouton (2014:277) accurately illustrate four aspects of trustworthiness and they are described as follows:

2.7.1 Credibility

Credibility is one of the principles of ensuring the trustworthiness of the research study. It measures or tests what the researcher is intending to investigate. Credibility is described by Babbie and Mouton (2014:277) as the confidence in the accuracy of the research findings. This principle determines whether the researcher has obtained confidence in the research envisaged. Furthermore, Babbie and Mouton (2014:277) argue that credibility inaugurates how confident the researcher is with the results obtained from the research study. In a qualitative study, credibility is constructed on assumption that reality needs to be tested or measured. The researcher also used the triangulation process (face-to-face, Focus Group Discussions and documentary analysis) during the data collection period to ascertain the credibility of the data obtained. According to Babbie and Mouton (2014:277), the accuracy of the data in a research study is constantly achieved through triangulation and member checking to correct errors and provide additional information. Triangulation is applied as a powerful tool to establish the quality of the research.

Triangulation further assists the researcher to not be biased from the information obtained through research participants. Triangulation refers to more than one method used by the researcher to gather data for the topic at hand (Creswell, 2012:251). Likewise, Joslin (2015:7) postulates that different method of triangulations exists in qualitative research such as data triangulation, investigator triangulation, theory triangulation and methodological triangulation. For this study, methodological triangulation was best suitable for this research hence it involves several methods of data collection such as interviews, observations, focus group discussions (FDG's) and document analysis. Moreover, triangulation allows the researcher to check the reliability of outcomes generated from different methods used by the researcher in collecting data. Similarly, the researcher finds methodological triangulation useful, because "it broadens the researcher's insight into different issues underlying the phenomenon being studied" (Creswell, 2012:251). Member checking is another instrument that was espoused in this study. Member checking is an instrument used to determine if the information obtained is accurately translated or not (Babbie & Mouton, 2014:277), Member checking also improves the quality of data obtained. Moreover, member checking permits the researcher to include the voices of the participants from the analysed data.

2.7.2 Transferability

This norm is concerned with the extent to which the findings of the study can be applied in other situations (Babbie & Mouton, 2014:277). Babbie and Mouton further describe transferability as a principle that requests the readers to make relations between elements of the research and their own experience. The principle accurately elaborates that the researcher will provide a thick description of the research findings; transferability, therefore, implies that the results obtained can be compared to other situations. According to research conducted by Anney (2014:278), thick descriptions in research studies assist other researchers to repeat the study within similar circumstances. To ensure transferability in this study, the researcher collected a thick description of data. A thick description in qualitative research means the researcher will collect detailed information from the field to enable the scholar to answer research questions for the envisaged study. This further means that the information collected by the researcher for this study can be applied to other countries or provinces facing challenges of illegal mining activities such as nations that are close to South Africa.

2.7.3 Dependability

This principle elaborates whether the study can be repeated using the same methods followed by the researcher to achieve the same research findings (Babbie & Mouton, 2014:278). It is, therefore, according to Anney (2014:278) that dependability involves participants partaking in a research study to evaluate all research findings related to the study and to ensure that they fully agree about the interpretations of research findings. This norm relates to the consistency of the research findings. Babbie and Mouton (2014:278) further postulate that this principle includes evaluation of the research findings, interpretation and recommendation for the research study. Dependability, therefore, ensures that the research findings are consistent and could be repeated. This is measured by the standard by which the research is conducted, analysed and presented. Each process in the study should be reported in detail to enable an external researcher to repeat the inquiry and achieve similar results. This also enables the researcher to understand the methods and their effectiveness (Babbie & Mouton, 2014:278). For this study, the researcher will ensure that the research process including the limitations encountered in the study are presented rationally and well documented.

2.7.4 Confirmability

Confirmability is the last principle of trustworthiness in a qualitative study. This norm explained how the research findings were obtained (Babbie & Mouton, 2014:278). Confirmability clarifies whether the researcher has not been biased during the research study. To improve confirmability in the research study, an audit trail was used throughout the study to demonstrate how each decision was made. Babbie and Mouton (2010:278) highlight that conducting a trial in a qualitative study includes the following steps:

- Raw data: the information collected by the researcher stored in a recorded tape recorder,
- Data reduction: the researcher ensured that only important information will be used for the envisaged study,
- Data reconstruction: after data reduction has been done, the researcher will develop themes and codes to answer the objectives of the study and to write the final report.

According to De Vos (2011:421), an audit trail are the steps taken by the researcher for the study conducted to produce research findings at the end of the project. To ensure confirmability for this study, the researcher kept all details of literature conducted to certify that information collected did not originate from the researcher's personal views. The researcher will also ensure to apply the principle of 'bracketing', which means the researcher will not influence the outcome of the research study with her ideas or beliefs. For any research study collected by the researcher, bracketing comes into place. According to Minichiello and Kottler (2010:64), bracketing is a method where the researcher creates a distance between herself and unproven theories under the topic investigated. The main purpose of bracketing is to ensure that the researcher does not motivate research participants to answer research questions that may taint the research process. The researcher should from onset refrain from commenting on the experience or information the researcher has that will shape the outcome of the research study.

2.7.5 Ways of recording data

The research conducted by Greeff as quoted by De Vos (2002:304) maintains that when the researcher interviews the research participant, the information needs to be recorded using a tape recorder. The advantage of using a tape recorder it "allows the researcher to capture direct voices of the participants rather than taking notes" (Greeff in De Vos, 2002:304). Furthermore, the advantage of using a tape recorder is that it grants the researcher more time

to concentrate on the interview conducted. As such, the digital tape recorder will be used. For the persistence of this research study, it is significant for the researcher to ask permission from participants before using a tape recorder. If permission is not granted, the researcher will write down the notes on a piece of paper. The research conducted by Moore (2006:148) emphasizes that if the participant did not permit to be recorded, the interviewer should write notes down while they are still fresh. This skill requires the researcher to listen attentively to capture everything that was spoken during the interview process. Likewise, De Vos (2011:359), elaborate that the notes will assist the researcher on the findings of the study explored.

2.8 ETHICAL CONSIDERATION

As stipulated by Strydom in De Vos (2011:114), “ethics refers to a diverse set of values and norms and institutional regulations that help constitute and regulate science activity”. According to Strydom (in De Vos et al., 2011:114) “ethics is a set of moral principles which is suggested by an individual or group which is subsequently widely accepted, and which offers rules and behavioural expectations about the most correct conduct towards experimental subjects”. Scholars such as Babbie and Mouton (2010:520), Strydom in De Vos et al. (2002:63) and Brynard, Hanekom and Brynard (2014:3) explain ethics as the term often used by the researchers to ensure that the anonymity and confidentiality of the data collected, and the participants involved will be maintained throughout the study. Brynard et al. (2014:94) further postulate that “ethics relates to what is right and wrong when conducting the research”. It emphasised that when often seen as morals, behaviour, principles and values that a researcher should implement in research studies.

According to Strydom (in De Vos et al., 2011:113), ethical issues should be based on trust, cooperation of the research participants and promises made between two parties, the researcher and participants. This study was conducted with what constitutes appropriate moral behaviour in the field of science as well as what are rights or interests of the participants are. This can therefore be through protecting individual’s privacy based on the information collected about illegal mining in Gauteng. Therefore, no data should be published without the consent of the research participants. In this study, ethics will be taken into consideration as the guidelines adopted by the researcher in this study. It is significant to add that data collection for the research study was conducted from September to November 2018 before the outbreak of COVID-19.

2.8.1 Informed consent form

Before any research can be conducted with the research participants, the researcher ensured that informed consent is distributed to each research participant. An informed consent form is a form that elaborates the risks involved in the research study. The participants were required to read and understand the risks involved in the envisaged study before signing the document. This allows the participants to be aware of the risks that might appear during participation. Strydom in De Vos et al. (2002:68) hypothesise that informed consent is usually connected with the cooperation of the research participants involved in the study to obtain the specific data required, knowledge of the research problem, while on the other hand, it reveals possible tension and insecurities of the problem at hand. Moreover, Brown, Cozby, Kee and Worden (1999:5) further argue that informed consent explains that participants involved in the study envisaged should not be pressurised to partake in the study. The informed consent includes the following:

- Explaining the purpose of the research.
- The time span of the interview.
- The aims and objective of the research study.
- Guaranteeing research participants that information revealed during the interview, will not be disclosed as part of ensuring anonymity and;
- Signatures of both participants and the researcher, agreeing to these requirements.

The researcher is of the view that any participant involved in the research study should partake without being pressurised. This statement is further supported by the writings of Barlow and Durand (2009:16) who state that an informed consent letter contains all essential information that will assist research participants to make an informed decision whether to partake in the research study or not. For this study, an informed consent letter was drafted and distributed to the participant. The letter contains information such as the purpose of the research study, research risks, research procedure, voluntary consent and privacy and confidentiality. Additionally, it was conveyed verbally and in writing that should a participant wish to withdraw from the research study at any given point, the participant is welcome to do so.

2.8.2 Voluntary participation

This means that research participants should participate voluntarily in the research envisaged without any violation and no force used to persuade them to participate in the research study. This means that the researcher explained the goals and objectives of the research study to

allow participants to understand their roles in partaking in the study intended to investigate. The research conducted by Gray (2009:74) highlights that research is harmful only if it causes awkwardness or if it produces anxiety or stress towards research participants. Babbie and Mouton (2001:522) denote that voluntary participation is often easy theory but difficult in practice. Therefore, this means that should the participants agree to participate in the study, then the participants are expected to sign informed consent form affirming that he/she understand what is expected of them. If at any given point, the participant decides to withdraw from the research, the researcher will respect the participant decision.

2.8.3 Harm to research participants

The most fundamental rule of research is that participants are not abused or injured during data collection, and the study should not bring harm to research participants. According to Strydom (in De Vos et al., 2011:115), the research study should not bring any harm to the research participants. This principle allows the researcher to protect research participants and to limit the harm that may emerge in the study.

2.8.4 Violation of privacy, anonymity and confidentiality

Confidentiality and anonymity are among the fundamental rules of research ethics. The research study-maintained anonymity and confidentiality, this norm states that people or participants involved in the research study have the right to privacy and remain anonymous throughout data collection in Gauteng. It is every individual's right to decide to what extent his or her beliefs can be revealed (Christian, 2003:145). For this study, the researcher must always protect the privacy of research participants. Privacy means that the researcher will ensure that the participant's name remains anonymous, so for example participants will be referred to as Participant A or Participant B to hide their identity and information stated or mentioned regarding illegal mining will be kept confidential.

It is the responsibility of the researcher to ensure that the information obtained from research participants will be kept confidential. The evidence will be kept in a universal serial bus USB which will require a password when one needs to access information. According to Richards and Morse (2013:142), data can be managed by creating a folder where it can be stored. The data collected for the research study stored in a computer and external hard drive will be used

as backup storage should the computer be damaged or stolen. Research necessitates that after data has been collected for the research study, the tape recorder is stored and locked in a safe filing cabinet to ensure that it is not accessible to anyone therefore, such action can only be maintained by locking the filing cabinet permanently.

2.8.5 Deception of subjects

Loewenberg and Dolgoff (1988:70) as quoted by Strydom in De Vos et al. (2002:66), describe the deception of subjects as misinterpreting the information stated during the interview process and to make other people believe that the information presented is true. Moreover, deception further involves offering inappropriate information or withholding of information. According to Strydom (in De Vos et al., 2002:66) deception mostly occurs when the researcher intentionally misleads the information which is presented by research participants by writing it in an incorrect manner. This further leads to the information being incorrectly written. This statement is further supported by the writings of Babbie and Mouton (2010:525) in that deception of subjects may result in truth not being told as the researcher wants to impress the readers about the results found for the research study. In this study, the researcher will therefore be firm towards all the information obtained to present the information the way it is, and this will ensure that the formulation of deception does not occur.

2.9 LIMITATIONS DURING RESEARCH STUDY

Despite the success of obtaining a permission letter to gather data in Gauteng police stations, the researcher encountered a few challenges. During the interview process, senior colleagues were interrupted by junior colleagues at various police stations and some point, the research participants had to attend to a matter immediately. This became problematic for the researcher as well as the participants involved in the study because the researcher had to start the process of asking a question(s) all over again. At times, the participants answered cell phones during the interview process, this led to other interviews scheduled on the same day being delayed which resulted in time wasted and becoming cost-ineffective for the researcher. This action further led to some of the interviews that were scheduled on the same day being cancelled, however, this did not result in the withdrawal of any research participants.

Other limitations encountered in this study were that research participants that were selected for the research study did not trust the researcher enough to participate in the study. The research partakers believed that the researcher is not a scholar but a spy who wants to take

the information to the media in exchange for money. For utmost of interviews to be conducted, all research participants sought to see proof of registration and student card to ensure that information divulged during the interview will not jeopardise their work. Despite all encounters faced by the researcher during data collection, the information gathered for the research study generated positive results. The researcher wanted to interview mining managers and mining security working at mines that are affected by illegal mining. The application for the permission from Chamber of Mines now formally known as Mineral Council South Africa (MCSA) was not successful. Regardless of follow-ups made via emails, telephone calls and one appointment made with the secretary of the Head of Legal Department, no positive response was received by the researcher. It appears that the members of the MCSA are also not comfortable with sharing information regarding illegal mining issues. As a result, the input of the members of the MCSA in this study could not be obtained.

2.10 RESEARCHERS REFLEXIVITY

As an outsider, during the data collection process, the researcher was expected to arrive at SAPS by 6:30 am before assembly can be conducted at 7:00 am. The station commander would then give the researcher a few minutes to introduce herself to SAPS employees and the reason why the study ***"THE POLICING OF ILLEGAL MINING IN GAUTENG"*** is conducted. This process made every single interview to be successful when gathering data for the topic at hand. At one police station that will not be disclosed in this report, the researcher felt undermined and intimidated by a few members of the SAPS. The researcher was told, "*Why don't you do research on another topic, because clearly, you know nothing about illegal miners*, *we can even write a book about your topic"*. Such a statement gave the researcher more strength and confidence to continue with the study. The topic of illegal mining is broadly known to media such as Television, Radio and Newspapers, thus news about the topic is constantly broadcasted. One morning, as the researcher was waiting for the detective to be interviewed, the researcher witnessed two warrant officers talking to each other concerning issues of illegal mining activities. After hearing important points discussed by these police officers, during the interview session, the researcher managed to ask questions related to such points to acquire full information on the points raised by the two warrant officers. This made the researcher realize that out of their discussion, imperative information for the research study was revealed.

The beginning of this journey was difficult for the researcher especially when illegal miners were interviewed at Amatholesville and Zami Mpilo informal settlement in Langlaagte. The researcher was accompanied by a colleague as it was not safe for the researcher to approach

illegal miners alone. Upon arrival at Amatholesville informal settlement, the researcher together with her colleague was referred to the kingpin who is the boss of illegal miners who then informed his employees about the researcher and why they need illegal miners to participate in the study. To the researcher's surprise, all illegal miners were friendly enough to answer all research questions that were posed to them by the researcher. At times, illegal miners demonstrated to the researcher how they hide when they see police vans approaching the area where they conduct illegal mining. The discussions between illegal miners and the researcher took longer than anticipated as all participants were partaking, freely raising different opinions about the study conducted. The initial appointment was supposed to be an hour interview session, but the discussion continued for about three hours. This further shows that illegal miners were free to talk about their illegal activities without any doubts and fear.

After such a long biographic conversation, the discussion immediately switched off to more general topics. For example, illegal miners were interested to know what the researcher does for a living and what motivated the scholar to research this topic. The beginning of this journey was extremely dangerous as some of the SAPS employees mentioned to the researcher that she might get killed or harmed by illegal miners. Likewise, SAPS members revealed to the researcher that illegal miners are known to be heartless people, but after the researcher spoke with them in their comfort zones, the negative perspective regarding illegal miners changed completely. At the end of the interview, the mind-set of the researcher entirely changed as the researcher observed illegal miners as people who want to support their families even at the risk of their own lives. This interesting discovery will be elaborated more on data presentation.

2.11 SUMMARY

Chapter 2 of the research study outlined methodologies that were suitable for the study. The researcher adopted a qualitative research approach. One of the significant benefits of using a qualitative method is that it provides a deep understanding of the topic being investigated by the researcher. In this chapter, a short description of the methods used to research the study were explained. A qualitative approach was adopted in the study which includes aspects such as research design, research approach, population and sampling were explained in this chapter. The qualitative research method enables the researcher to use different methods to gather data such as interviews, semi-structured interviews and focus group forms part of this chapter. Finally, ethical considerations were espoused as its summaries the critical part of the research. This chapter will be followed by chapter 3 which discusses illegal mining in South Africa.

CHAPTER 3: ILLEGAL MINING IN SOUTH AFRICA

3.1 INTRODUCTION

South African's mining sectors have played a significant role in the country's economic development for decades. According to Elgstrad and Vingard (2013:1), this country's economy is built through the mining sectors that exists to date. For many years, the South African mining sector was considered one of the major significant sectors that have generated employment opportunities for millions of people locally and globally; however serious concerns including illegal mining activities have affected the South African mining sectors negatively (Elgstrad & Vingard, 2013:1). This chapter will discuss in detail the nature and the impact of illegal mining activities in this country as well as the legislations and policy frameworks regulating mining sectors in South Africa.

3.2 PROFILE OF ILLEGAL MINERS

The profile of illegal miners includes both men, women and children of various age groups. In countries like Brazil and Namibia, it was found that women and children also partake in illegal mining operations, and of greater concern, the age and number of children who are involved in illegal mining vary from one country to another, like that of women (Viega, 1997:4). In Asia, 10 per cent of women form part of illegal mining whereas, in Latin America, 20 per cent of women are involved in illegal operations (Hinton, Viega & Beinhoff, 2003:2). Moreover, Hinton's study (2003:2) further hypothesise that women in Latin America are not involved in illegal undertakings full time owing to their household roles. The roles of women and children in illegal operations include transporting, sifting, washing and processing materials as opposed to men who have other roles (Hinton et al., 2003:3). According to Hinton' study, in Burkina Faso women are more dominating in mining sectors. Women in Burkina Faso conduct 90 per cent of mineral processing, as they no longer fear other group members who participate in illegal activities. Additionally, in Burkina Faso's women spend countless hours underground extracting minerals, as such activity tends to dominate in the illegal mining sectors.

The involvement of men in illegal mining sectors also varies according to different ages. Research conducted by Moloi (2015:1) confirms that unemployed youth and men aged between 22 to 54 years in South Africa participate in illegal activities. The number has increased from 22 per cent to 54 per cent of people participating in illegal mining activities in 2015. Furthermore, men participating in illegal activities are mostly found in sectors that are

active and abandoned mines. Men enter the gold mining sector to find pieces of gold. Of great concern is the fact that illegal miners are known as “cruel” human beings as they do not fear killing other group members in clashes to control mining territory. Moloi (2015:1) reports that 200g of gold is worth R700.000 therefore, this further encourages illegal miners to continue partaking in such unlawful business because of the amount received once a piece of gold is sold. In addition, the falling rocks and the death of some of the illegal mines do not prevent others from continuing with these illegal activities.

The participation of women in these illegal mining activities in South African appears to be on the rise. For this reason, Mills (2016:1) maintains that Johannesburg gold mining sectors are concerned about the issue of illegal activities occurring in targeted mines. It is worth noting that women are also involved in illegal mining in gold mining sectors. Research conducted by Moloi (2015:1) declares that women dig for pieces of gold, wash and refine them. Moreover, Moloi (2015:1) agree that majority of women are illegal immigrants who work long and irrational hours to support family members and earn R100 a day by grinding 20 litres of rocks. Likewise, women participating in illegal activities crush pieces of gold on cement blocks until it is in the form of powder, and the process continues while waiting for it to be cleaned. Moloi (2015:1) further hypothesize that women hide in bushes as soon as police officials arrive at the scene because of a fear of being arrested. Additionally, the number of women involved in illegal mining increases due to the roles they play in the production process.

3.3 THE EXTEND OF ILLEGAL MINING INCIDENTS IN SOUTH AFRICA

Mining sectors in South Africa are not only challenged by illegal activities but also the increasing mining incidents that occur in these sectors because of illegal mining undertakings. To substantiate this statement, several mining incidents have occurred in different provinces concerning various resource materials and chemicals. Illegal miners are frequently associated with many of these incidences. Steyn (2012:1) indicated that on 5th March 2012, an incident occurred at the Barberton mine where 22 illegal miners between the ages of 22 to 35 were found dead owing to illegal activities. Steyn (2012:1) further denotes those illegal miners often take risks and are not scared to enter the underground mining sector with the aim of mining pieces of rocks and as result, various incidents materialise. The last-named mentioned author declares that illegal miners consider themselves as “mining rocks of God” that do not belong to anyone. This perception shows that they feel they have as much right to extract resources from underground the same way as legal miners do because, in their understanding, these rocks or ground belong to God.

Another incident occurred on 5th August 2014, where three illegal miners were found dead in Orkney while the other three were severely injured while performing illegal mining activities (Cowan, 2014:1). On 15th February 2016, three miners were trapped 80 meters underground in Mpumalanga. The rescue operation team stopped to search for missing bodies due to rockfalls that prevented them from searching, as a result, one miner was found dead (Mail & Guardian, 2016). This was followed by an incident on the 18th of May 2017 at Rustenburg Impala Platinum, where four illegal miners were trapped after a shaft collapsed, while the other two illegal miners were found dead (News 24, 2017). Broadcasted news further highlights that on 19 May 2017, in Eland mineshaft situated in the Free State Province, 31 miners died as a result of an explosion. Kilian (2017:1) postulates that incidents occurring in mining sectors require "vast investments of funds, technology, knowledge and expertise" to ensure collaborative efforts to curb this problem. Of significance to this study, the death of illegal miners and legal miners from various sectors not only affect mining managers but also the role that needs to be played by South African Police officials to prevent these illegal activities from happening.

Moreover, on the 2nd of February 2020, nine illegal miners from Lesotho were stoned to death by other rival groups of illegal miners. The incident occurred at Amatholesville squatter camp in Roodepoort. Bodies of illegal miners were lying on Enock Sontonga, a road which is one of the busiest roads in Roodepoort, and commuters and pedestrians were shocked to see such a pile of bodies (News 24, 2020). The incidents occurred at midnight after SAPS members conducted the operation "O Kae Molao" with the assistance of the Johannesburg Metropolitan Police Department (JMPD) and the Nation Investigation Unit (NIU). Subsequently, 87 suspects were taken to the police station for a thorough investigation (News 24, 2020). Police conducted a thorough investigation to find the suspects who killed the Lesotho nationals. On the 3rd of March, the Minister of Minerals, Gwede Mantashe, postulated on Power FM that the SAPS should dedicate a unit that will focus on illegal miners only, thus the unit need to be trained to tackle all issues related to illegal mining activities. The information postulated by the police indicates that the Basotho nationals claim that the mines belong to them and all those who want to partake in mining should pay an amount of R300.00 when they go underground and another R300.00 when going out, which is why such fights lead to deaths. Illegal miners from Lesotho take bags of soil by force from other ethnic groups who were underground and force them to return underground to work for them. Other ethnic groups are often forced to fight with other groups because they no longer make any money (News 24, 2020).

3.4 FACTORS CONTRIBUTING TO ILLEGAL MINING ACTIVITIES

Various factors contribute to the existence of illegal mining in the country. These factors attract both ordinary unskilled people and organised crime syndicates as well as skilled miners nationally and internationally. Such factors include:

3.4.1 Poverty

Poverty has affected the South African economy negatively. Research conducted by Cilliers and Aucoin (2016:4) illustrates that poverty has been in existence in developed and developing countries. The Department of Statistics South Africa (2016) indicated that over 60 million people in South Africa live in life-threatening poverty situations. In addition to that, South Africa remains a country that is summarised by a high number of shacks and homeless people (Cilliers & Aucoin, 2016:4). Moreover, the lack of education, financial resources and poor households often push some people to be involved in illegal activities such as illegal mining for financial gain (Holtman & Swart, 2007:108). This is also evident in the research conducted by Cilliers and Aucoin (2016:4) who found that poverty leads to unlawful business such as selling drugs, which eventually leads to an increase in crime. It can be deduced from the above discussion that the illegal mining business financially benefits desperate people who are living below the standard of living.

3.4.2 High unemployment rates

The high unemployment rate in South Africa is also a major concern that contributes to people being involved in unlawful criminal activities to overcome their disadvantaged situation (Weatherburn, 2001:6). According to Statistics South Africa (2020), in South Africa alone, the unemployment rate has reached 32 per cent in the fourth quarter of the year 2020. Moreover, Weatherburn (2001:6) states that the youth commit crime when there are incentives or money to gain. Owing to that, the mining sectors suffer as a result of factors contributing to crime (Holtman & Swart, 2007: 109). Scholars such as Mafiri (2002:1) illustrate that unemployment is a universal problem that increases day-to-day. In the United State of America, unemployed youth are forced to work in neighbouring villages to alleviate poverty. Mafiri (2002:1) believes crime (including illegal mining) increases as a result of factors such as unemployment, which forces the youth to engage in such activities.

3.4.3 Easy access to old mines

Despite illegal mining activities threatening mining sectors globally, easy access to mines is considered another significant challenge facing the mining sectors. According to Olawumi (2011:6), the mining sectors have difficulties in supervising and controlling easy access to both abandoned and active mines. This is because these mines have deeper holes to close which costs huge amounts of money that could benefit the sectors in many different approaches, for example, to improve security measures. Olawumi (2011:16) reveals that in instances where holes have been closed, illegal miners blast their way using explosive chemicals to open the shafts. Owing to that, police officials become scared to police such areas as illegal miners are often armed with heavy weapons.

The situation in mining sectors has led to private security companies being employed to assist in minimising the easy access to abandoned mines. Johnson (2016:1) maintains that during the night, illegal miners set fires around the gates mixed with toxic chemicals to suffocate security guards to enter unused mines, forcing security personnel to vacate the premises due to lack of proper oxygen. The explosion of chemicals causes major concerns as some security guards' health becomes negatively affected. For example, on 22 June 2017, four illegal miners were found dead with gunshots wounds at Langlaagte abandoned mines (Chamber of Mines Fact Sheet, 2017). Police officials further elaborate those illegal miners become hesitant to be rescued as they fear arrest, thus situations become problematic for police officials to curb illegal mining (Chamber of Mines Fact Sheet, 2017). According to Johnson (2016:1), to prevent access to abandoned mines in South Africa, an amount of about 2.7 billion is needed, however, some companies no longer exist which makes it difficult for the state to raise such an amount.

Furthermore, Johnson (2016:1) agree that easy access to old and abandoned mines result in different challenges that need to be resolved by both the Department of Mineral Resources and the police. In many abandoned mines, mineral resources such as gold are not washed out which leads to such mines being targeted by illegal miners. For example, in 2016, 35 illegal miners were found dead in abandoned mines, which indicates an increase in these activities. To this effect, dangers to the environment continue to grow. Likewise, illegal miners are more dangerous to security personnel, police officials and feared by other illegal miners due to violence that occurs in mining sectors. This discussion shows that the measures used to police illegal mining activities in these countries are not effective.

3.4.4 Human trafficking

Human trafficking is defined by Whittles (2017:1) as “recruiting, transporting, selling and harbouring of people by force, deceit and abuse of exploitation”. More than 30 000 people including children are trafficked to South Africa to work in different mining sectors (Driver, 2017:1). South Africa has encountered human trafficking in gold mining sectors where victims are not fully aware that they are trafficked (Driver, 2017:1). Owing to that, children who are trafficked spend numerous hours underground working as gold slaves for criminal groups. Driver (2017:1) acknowledges that in Zimbabwe, children from 19 years old spend more than five months underground working as slaves and accept food from criminal gangs. Mwareya (2017:1) illustrates that criminal gangs target abandoned mines where they can control victims and often underpay them with amounts as little as R100 a day. He also adds that victims perform different occupations underground as some dig and others polish and crush hard rock metal on behalf of powerful criminal syndicates (Mwareya, 2017:1).

Mwareya (2017:1) further argues that in South Africa most victims suffer due to insufficient law enforcement that should protect them. This includes the illegal immigrants who face numerous challenges such as being exposed to xenophobic attacks once trafficked to South Africa (Harvey, 2014:1). Whittles (2017:1) reports that the police treat some people who are trafficked to South Africa as criminals because they work underground. Moreover, Whittles (2016:1) posits that criminal’s gangs gain profit from human trafficking, and the situation contributes more to human trafficking activities.

According to Whittles (2016:2), human trafficking is exacerbated by law enforcement officials who often take bribes from criminal syndicates involved in human trafficking. As such, corruption by law enforcement officials is one of the reasons that increase human trafficking due to the massive amount of money received from criminal gangs. It appears that, despite challenges encountered in mining sectors due to illegally mined gold, human trafficking is also on the rise, which create more challenges for the government to bring strategies on how to resolve the issue.

3.4.5 Prostitution in mining sectors

According to Gemerts (2015:9), prostitution is extremely prevalent in some of these illegal mines due to the high populations of single men separated from their partners. Gemerts (2015:9) further postulates that prostitutes include children as young as 12 years old who

pursue this activity as part of gaining an income. Moreover, countries such as Tanzania also experience the issue of prostitution. Likewise, Gemerts (2015:10) further illustrates that 80 per cent of women are involved in prostitution globally. Gemerts (2015:10) add that prostitution is one of the major contributing factors that result in different diseases found in these sectors. Schulze (2016:12) maintains that the major underlying root cause of prostitution in mining sectors is the lack of proper education and lack of knowledge of the youth who are involved in such negative activity.

Schulze (2016:2) is of the view that young children and women escape parental homes to become sex workers in mining sectors. Of major concern is that the number of women and children involved in prostitution increases annually. Poverty is considered one of the push factors for women's participation in prostitution in mines and it leads to the spread of different diseases. Schulze (2016:13) concurs that majority of women involved in prostitution in mining sectors are illegal immigrants who come to South Africa to seek job opportunities. Furthermore, Schulze (2016:13) pointed out that most women who are working as prostitutes are trafficked from one country to the other to make extra money for criminal syndicates involved in this activity. Owing to that, this negative activity is seen as transnational business to criminal syndicates as well as kingpins involved.

3.4.6 Smuggling of gold

Across South Africa, the issue of smuggling gold brings immense challenges to mining sectors. Hosken (2017:1) maintains that the smuggling of gold is on the rise in South Africa, thus unemployed and desperate job seekers see it as a great opportunity for them to make money. The smuggling of gold is a global issue, and African countries such as the Democratic Republic of Congo (DRC), Tanzania and Zimbabwe also suffer from such issues. In Latin America, criminal gangs often transport frequent amounts of gold to receive enormous amounts of money from kingpins. Furthermore, Hosken (2017:1) declares that the smuggling of gold creates environmental damages, corruption, money laundering and labour exploitation. Illegally mined gold transported by organised crime syndicates without the authority of the law, easily moves from one country to another (Hosken, 2017:1).

According to Shoko (2014:1), in African countries such as Zimbabwe, illegal miners transport illegally mined gold to neighbouring countries to gain a higher amount of money. Shoko (2014:1) further states that illegal miners managed to extract 17 tonnes of gold in 2004; then in 2013 about 959 tonnes of gold were extracted by illegal miners. These figures further prove that illegal mining is increasing. Moreover, the Mineral Marketing Corporation of Zimbabwe

(MMCZ) announced that the country is no longer benefitting from gold mining sectors due to illegal mining. During 2014, the sectors lost $50 million worth of gold through smuggling. In Zimbabwe, there are 22 mining legislators governing mining sectors, however, the presence of illegal mining further continues.

Gatimu (2016:2) concurs that the smuggling of gold in the Democratic Republic of Congo (DRC) started in 1980, however, the activity was not as well-known compared to today. Gatimu (2016:2) agrees that illegal miners transport illegally mined gold in areas in the Eastern parts of DRC such as Bukavu, Butembo, Bunia, Ariwara and Kisangani. Likewise, the smuggling of gold is well coordinated by a group of criminal gangs and state officials involved in the smuggling of gold. Moreover, Gatimu (2016:3) posits that a group of criminals operate in a deep valley where such activity is invisible to police officials. The literature review further confirms that South Africa is not the only country suffering as a result of the smuggling of gold, but that other African countries also experience similar challenges.

3.5 THE IMPACT OF ILLEGAL MINING ACTIVITIES ON LEGAL MINES

Chamber of Mines Fact Sheet (2016) pointed out that the government has identified illegal mining as a national threat to the economy. These mining sectors are under pressure, thus forcing companies to make short-term decisions (Guzek & Antwerpen, 2015:3). Moreover, 10 per cent of gold worth an amount of seven billion a year is smuggled out of the country, as a result of illegal mining. This statement affirms that illegal operations in mining sectors continue to grow and affect the country's economic development. Apart from the negative impacts illegal mining activities have on the economy of this country, illegal activities also affect some of the operational and human capacity of the legal mines as follows:

3.5.1 Security challenges

The South African mining industry has embarked on improving this country's economy; however, security challenges emerge from the illegal mining activities that access the minerals extracted illegally in the legal mines. The security problem in the mining sector is not unique to South Africa; it is a global challenge that also affects the mining sectors in other international countries (Mining.com, 2016). To this effect, mining sectors in countries such as Australia and New York City (NYC) experience security challenges within their mining sectors. Consequently, this led to illegal activities taking place in mines that specifically deal with diamonds, gold and other precious metals produced in mines, targeted by illegal miners for

financial gain (Mining.com, 2016). Compared to previous years, the South African mining industry experiences more problems related to illegal mining than before. This is despite the efforts made by the government or legal mines to close off unused mines; nevertheless, illegal miners continue to find access to these mines (Mining.com, 2016).

To ensure better security of legal mines, security personnel are employed in legal and some of the old unused mines to protect the mining assets and resources produced in those mines. However, the theft of precious metals poses a substantial threat to security personnel (Nasiorowska, 2010:129). Furthermore, the operations of illegal miners in active mines similarly affect legitimate miners faced with threats and corruption from illegal miners. Although the services provided by the private security companies continue to grow in the mining sectors, illegal mining activities still emerge in these mining sectors (News 24, 2017).

To increase security, mining sites have installed cameras that are designed to withstand areas affected with flammable liquids, extreme heat, dust, vaporous gases and combustible elements while they record day-to-day activities (Nasiorowska, 2010:129). Of greatest concern, some of the security guards are in collaboration with illegal miners due to the low salary they receive each month; this has affected mining sectors due to a high number of precious products stolen annually (Nasiorowska, 2010:129). Some of the security personnel in mining sectors allow illegal miners to enter mineshafts without having access cards, protective personnel equipment (PPE) and the uniform that legal miners wear during working hours. As such, this poses a risk to the health of these miners as well as the daily operation of the legal mines.

3.5.2 Employee resignation

Currently, employee resignation is of major concern to legal mining sectors in South Africa. Illegal mining contributes to the resignation of legal miners. Provinces dealing with gold are under siege, thus the situation has created some permanent employees to take early retirement due to illegal operations taking place in mining sectors (Sunday Times, 2017). In comparison to South Africa, in countries such as Brazil, South America, Chile and Colombia, semi-skilled people tend to leave their permanent jobs to participate in illegal activities (Willden, 2014:577). Illegal miners are further involved in other business syndicates such as trafficking drugs and gold. Willden (2014:577) declares that the government cannot monitor such a situation in mining sectors, as it requires relevant stakeholders who may assist in bringing solutions to mining sectors.

Crime in the mining sector is considered a “red flag” pointing at permanent legal employees resigning. Willden (2014:577) maintains that legal employees are concerned about the criminal activity occurring in mining, thus the situation forces them to resign. Research conducted by Njau (2013:3) illustrates that the resignation of mining employees disrupts many activities in mining sectors. For example, performance, mining productions and costs considered to be impacted by illegal mining. Of greatest concern, some of the resignations are a result of illegal mining which causes legal employees to be greedy to make extra cash. According to Njau (2013:2), illegal miners perform the same job as legal mining employees, however, illegal miners work for criminal syndicates, and to feed their families. On the other hand, Njau (2013:3) add that permanent employees resign due to dissatisfaction because of low salaries and shorter leave days, thus the situation leaves other employees being overloaded with work. Therefore, to ensure safety in mining sectors, the government, mining managers from relevant stakeholders and the Department of Mineral Resources should engage in implementing and improving the security measures that will benefit mining sectors burdened by illegal mining.

3.6 HEALTH ISSUES EMANATING FROM ILLEGAL MINING

Miners in general are exposed to various health threats while underground. Health in the mining sector is regarded as a substantial issue that needs the intervention of different stakeholders. The International Labour Organization (ILO) has been actively involved in dealing with health issues that affect miners (Jennings, 2001:3). Workers in mining sectors have often received less attention concerning their safety, therefore the situation has created a bad image for the sectors. Hermanus (2007:534) notes that there are major health risks encountered in mining such as noise-induced hearing loss, lung diseases, skin disorders, and ergonomic stress. These types of diseases are classified as permanent diseases and even when treated by specialists, they remain in the body permanently. The health challenges experienced by illegal miners are as follows:

3.6.1 Noise-induced hearing loss

Noise-induced hearing loss (NIHL) in mining is one of the leading and extensive challenges because of the use of heavyweight machines and equipment implemented underground to perform the acquired job. Noise is one of the major concerns in mining sectors considered as a risk factor even to date. NIHL is a concern to miners employed permanently and considered

as a permanent disease. NIHL is defined as an occupational disease that occurs because of exposure to heavy excessive noise that affects the inner eardrum, as illegal miners use shovels and pixels to extract mineral resources. (Viljoen, 2007:14). Heavy machines used in mines causes' excessive noise that is unbearable. It is further hypothesized that miners spend ten to eleven hours underground; as a result, such an issue affects many legal miners. To this effect, 90 per cent of miners globally suffer from noise-induced hearing loss (Hermanus, 2007:534). Noise-induced hearing loss is impacted by the following factors:

- Age of employee;
- Diseases of the ear;
- The time span to the level of noise;
- Period of the employment and;
- Condition of the workplace.

McBride (2004:290) further agrees that noise-induced hearing loss is a global issue as it has affected thousands of miners nationally and internationally. Noise exposure is considered a predominant issue in mining sectors that has not changed during the past decade. McBride also stipulates that in the United States of America (USA), miners spent approximately 80 per cent of their time underground. Of concern, hearing protective devices (HPD's) are not often used which consequently results in noise-induced hearing problems (McBride 2004:292). Owing to that, miners find the protective hearing device uncomfortable to use and that communication is not clear enough when hearing protective device used. The situation underground forces employees to use signal signs when communicating. According to McBride (2004:292), attempts to reduce noise in mining sectors has not been successful for many decades. Likewise, most of employees are not well equipped with training on how to use machines, therefore this is one of the major concerns faced by employees.

In the United States (US), more than 9 million miners are exposed to time-weighted average (TWA) sound of levels underground (Nelson, Barrientos & Fingerhut, 2005:1). These scholars further denote that the high level of sound occurred not only in mining sectors but in other different sectors such as metal products factories, food manufacturer factories and fabric factories. The NIHL is recognised as one of the most common diseases that cause other effects in the human body such as blood pressure, sleeping difficulties, stress, annoyance and decreases work performance (Nelson et al., 2005:2). According to Nelson' study (2005:3), occupational noise in 12 African countries ranges from 7 per cent to 21 per cent of adults who are suffering from hearing loss. It is concerning that when these miners resign from mining sectors, they cannot be employed in other sectors due to hearing problems. Hazardous noise

in mining sectors is a long-standing problem in mining sectors that can only be resolved when solutions are found.

3.6.2 Lung diseases

Occupational lung disease (OLD) is a work-related disease that is common in mining sectors. The disease has affected an enormous amount of people who are working in mining (Ross & Murray, 2004:304). The disease occurs due to airborne hazard exposure levels, the environmental conditions underground, inhaling of dust, inhaling of chemicals and a longer period of working in mines. The disease has been in existence for more than 40 years in mining sectors. Of concern, 128 575 cases are said to be reported to the Mineral Bureau for Occupational Diseases (MBOD). It is worrisome that the number of infected human beings increases annually, and as a result tuberculosis (TB) occurred as lung disease (Hermanus 2007:534). Moreover, between 9-50 per cent of mineworkers were exposed to dust owing to most activities performed in these sectors. Hermanus (2007:534) further denotes those employees are suffering from lung cancer, which is a permanent disease.

Ross and Murray (2004:304) denote that lung cancer is one of the chronic diseases that result in symptoms like breathing problems, persistent coughing, fever and chest pain. These scholars further stipulate that in 1930, ventilations were implemented to control dust in mining sectors, however, the prevention was not enough as drilling machines operate day and night. During 2005, 251 cases of lung diseases were reported. Lung disease further contributes to other diseases such as bronchitis, pneumoconiosis and silicosis. According to Roberts (2009:6), mineworkers are challenged with health issues, and they do know what causes lung disease as they have little understanding and inadequate information regarding the disease. Furthermore, Roberts (2009:10) add that miners discover all sorts of different disease during their retirement. The circumstances, therefore, do not allow them to be compensated by the Compensation Commissioner. Roberts further points out that miners lack proper education that will assist them in handling burden challenges. Roberts (2009:12) agree that bronchitis, pneumoconiosis and silicosis are an incurable disease that is associated with several complications such as loss of lung, as such this situation requires miners be compensated from the Medical Bureau for Occupational Diseases (MBOD).

Additionally, apart from the inhalation of dust and various chemicals in mining sectors, asbestos products cause lung disease. Asbestos in the human body creates the accumulation of long fibres in the lungs from the inhalation of chemicals used in mining sectors (Becklake, Bagatin & Neder, 2007:356). These scholars are of the view that asbestos forms

mesothelioma which is a white tissue in the lungs. These scholars further hypothesise that white tissue causes symptoms such as breathlessness and cracks in the lungs. Asbestos is a mining product that generates occupational risks to mineworkers and damages respiratory functions and lungs. Of concern, mineworkers globally are affected with lung diseases because of breathing smaller particles of asbestos (Becklake et al., 2007:357). Lung disease is caused by asbestos and is a permanent disease. Mineworkers exposed to lung cancer through inhalation of asbestos, are workers who have been in mining sectors for more than ten years (Stephens & Ahern, 2001:16). These health challenges are not exclusive to legal miners, illegal miners also experience the same health risks however due to the nature of their work as illegal miners it is difficult for them to access good health treatment.

3.6.3 Occupational skin disorder

Mineworkers are exposed to numerous harmful chemicals that lead to incurable diseases such as occupational leukoderma. According to Hermanus (2007:534), occupational leukoderma is an occupational skin disorder that changes skin colour from brown to rose pink. The utmost concern of occupational leukoderma is that it is incurable. The disease occurs as a result of cutting of blades, razors and the use of mercury to perform the acquired work, as well as cleaning detergent and hand wash soaps used after the completion of certain tasks underground (Hermanus 2007:534). Occupational skin disorder (OSD) in mining sectors is a communal disease that miners are confronted with. Moreover, 2.9 billion people globally suffer from exposure to hazardous chemicals that result in skin disorders (Hermanus, 2007:534). Mercury is one of the chemicals that cause occupational skin disorder, being a chemical used to process gold (Hermanus, 2007:534). Furthermore, Willden (2014:578) indicates that the dangers of using mercury cannot be diagnosed at an early stage but the risk symptoms take years to be revealed. In Japan, more than 2000 miners were found dead in 1960 due to mercury. To date, the chemical remains a poisonous substance to mine employees. Mercury has another negative effect on the human body, being the cardiovascular system (Willden, 2014:578). Likewise, the harmful chemical jeopardises the kidneys, lungs, causes neurological disorders, and impacts the nervous system of the human body and immune system (Willden, 2014:579). Of further concern, high exposure to mercury results in the following symptoms:

- Memory loss;
- Weakness of muscles;
- Mental disturbances and;
- Skin rashes dermatitis.

Additionally, some incidents occur in mining sectors resulting from the use of mercury. Lack of proper training on substances used in mining sectors results in health issues. Owing to that, mining sectors situated far from health facilities consequently affect mineworkers receiving proper treatment in the case of an accident. Moreover, majority of chemicals are poisonous and dangerous to the skin resulting in many diseases the mineworker can be diagnosed with. Of concern, miners find it difficult to use personal protective equipment (PPE) while on duty. The need to educate mineworkers on such important factors concerning mercury is extremely significant. Hermanus (2007:535) further postulates that skin diseases in mining sectors situated in South Africa are under-researched topics regarding the health and safety of mineworkers.

Globally, all mines are classified as dangerous sectors dealing with poisonous chemicals. Furthermore, not only do chemicals cause chronic diseases in mining sectors, but also the heavy lifting of resources results in severe injuries. Working underground in height limited conditions lead to injuries such as back pain, swollen legs and arm cramps. Vibrating machines used to drill rock damages nerves and blood circulation and cause dangerous infections such as gangrene that may lead to death. Mineworkers are exposed to fuels, diesel particulate matter (DPM), welding fumes, poisonous plants and mental dust. These chemicals are dangerous, poisonous and unsafe to use without proper training (Scott & Grayson, 2001:1). The diseases occur as a result of harmful chemicals that are incurable. Health issues are a great concern in mining sectors, consequently, other symptoms are recognised but with not given medical treatment (Scott & Grayson, 2001:1). Furthermore, some mineworkers are not attentive to their illness; in some cases, mineworkers do not report their health concerns as they become afraid to lose their jobs. Eventually, full-time workers are exposed to chronic sicknesses. A chronic sickness develops over a period in mining sectors. Scott and Grayson (2001:2) allude that mineworker suffer from asthma caused by welding fumes underground. Illegal miner's experience the same challenges since they are exposed to similar health challenges which eminent from underground climate.

3.6.4 Work musculoskeletal disorder

Another disease that develops while working in mining sectors is work musculoskeletal disorder (MSD). According to Dias (2014:1), work musculoskeletal disorder is a disease that damages nerves, joints, vessels and body structure. The disease is common to numerous mining sectors worldwide that causes sick leave, disability and decreases the production of work required. Furthermore, thousands of mineworkers are suffering from work

musculoskeletal disorder, as roads in mining sectors are bumpy, rough, and muddy (Dias, 2014:1). During the production process, mineworkers find themselves in difficult positions where heights are restricted underground that forces them to bend for a long time. The risk factors in the human body accumulate due to limited height restrictions. Dias (2014:1) further postulates that miners are challenged with a situation where they must use heavy machines underground that demands them to stand upright, such a situation forces them to kneel when drilling and to bend which results to work musculoskeletal disorder.

According to Tawiah, Yeboah and Bello (2015:2), the body parts that are affected are the neck, elbow, hand, shoulders, wrist and lower back. These scholars further hypothesise that mineworkers perform heavy-duty jobs that cause different diseases in the human body. Furthermore, work musculoskeletal disorder causes discomfort and pain that prevents the employee to perform the sought job (Tawiah et al., 2015:2). The pain of work musculoskeletal disorder often decreases and disappear only to return later, in consequence, the external forces encountered by mineworker's results to trauma. In addition to that, miners suffer from fatigue due to work-limited conditions in mining sectors. It is further elaborated that mineworkers affected by such disease are workers who have been in these sectors for more than ten years (Dias, 2014:14). According to Tawiah and colleagues (2015:3), factors contributing to work musculoskeletal disorder stated below:

- Handling of heavy loads;
- Repetitive motions of body segments;
- Operating irrational hours and;
- Not relaxing enough.

According to Dias (2014:3), mineworkers face difficult positions underground, which is an issue that has no solutions to resolve. Moreover, the last named-mentioned author further posits that some mineworkers are forced to take early retirement due to fatigue and diseases affecting them. In the Philippines, 16 per cent of mineworkers are diagnosed with work musculoskeletal disorder, the USA 24 per cent, Mexico 17 per cent and South Africa 36 per cent. Work musculoskeletal disorder is a worldwide concern that does not only affect South African employees but also international countries. The same challenges also face the illegal miners who have also been long involved in the business of illegal mining.

3.7 LEGISLATIONS AND POLICY FRAMEWORK REGULATING THE MINING SECTORS IN SOUTH AFRICA

In South Africa, different legislations are governing the mining sectors, for example, the Mineral and Petroleum Resource Development Act 28 of 2002 (MPRDA), National Water Act 36 of 1998 (NWA) and National Environmental Management Act 107 of 1998 (NEMA). According to Swanepoel (2014:1), the mining sectors in South Africa have played a significant role by contributing to the establishment of the Johannesburg Stock Exchange (JSE). This is one of the significant reasons that make mining sectors exclusive. Swanepoel (2014:1) further stipulates that the growth of mining sectors will rely on the legislations mentioned above to have a solid foundation and to certify that this sector will remain sustainable for such a long period. The mining legislations are categorised as follows:

3.7.1 Mineral and Petroleum Development Act (MPRDA) Act 28 of 2002

The Mineral and Petroleum Resource Development (MPRDA) Act 28 of 2002 regulate South Africa's mining sectors. The MPRDA Act was approved in June 2002 as a legislature that will commit to achieving reasonable access to the development of South African mineral resources. The Act became effective on 1 May 2004 (Busacca, 2013:33). The purpose of the Act is to ensure that all mining activities in South Africa are evaluated from the beginning of the operation until closure and beyond, this will encourage the employees to maintain good standards across the globe in all mining sectors. The MPRDA Act 28 of 2002 further permits all mining rights to be monitored and require companies to follow the legislation that has been developed by MPRDA. According to Busacca (2013:33), the objective of the MPRDA Act 28 of 2002 is to ensure that mining companies in South Africa contribute to the South African economy.

The MPRDA also serves as an application for mining rights in mining sectors. The Act makes provision for equitable access and sustainable development of the nation's minerals. The MPRDA act 28 of 2002 precisely forbids mining sectors to continue with operation without proper statutory authorization of Section 54 of the MPRDA Act. This statement further explains that illegal mining is considered an illegal activity that includes the belongings of mining sectors without proper documentation. The Department of Mineral Resources (2011), describes the objectives of the MPRDA Act 28 of 2002 as follows:

- Recognize the internationally accepted rights of the state to exercise sovereignty over all minerals and petroleum resources within the republic;
- Give effect to the principle of the state's custodian of the nation's mineral and petroleum resource;
- Promote equitable access to the nation's minerals and petroleum resources to all the people in South Africa;
- Sustainably and meaningfully, expand opportunities for historically disadvantaged persons including women and communities to enter and actively participate in the mineral and petroleum resources.

The researcher is of the view that it was for these objectives stated above that the implementation of MPRDA would provide opportunities for disadvantaged people to work in mining sectors. The MPRDA has introduced an innovative framework that provides all rights to minerals and petroleum resources to candidates whose officials comply with the requirement as the aim of this act is to avoid discrimination that may arise from designated groups (Busacca, 2013:36). Likewise, Section 3 of the MPRDA declares that one of the major roles of primary activities is that mining minerals and petroleum resources are the common inheritance to all South African citizens. The state is in this regard considered the custodian of the mineral resources (Busacca, 2013:37).

3.7.2 Mine Health and Safety Act 29 of 1996

The Mine Health and Safety Act (MHSA) Act 29 of 1996 was established to ensure that employees are protected against any harm during the operation process (Department of Mineral Resources, 2015). Health and safety are consequently another challenge encountered in mining sectors due to the poor practice of illegal miners when extracting gold and other precious metals (Hentschel, Hruschka & Priester, 2003:28). Unorganised camps and shacks in the surrounding areas grow virtually overnight which led to unlicensed shebeens been opened in the surrounding areas and diseases such as HIV and AIDS which is common infections that occur in mining sectors (Hentschel et al., 2003:28).

The health and safety of legal miners should be the main priority of this sector. In 2014, cases such as fatality and injury rates were high which frequently affect this sector. According to Nelson and Murray (in Elgstrad & Vingard, 2013:1), the number of injured miners frequently increases annually. In 2014, 578 miners died, and 8 532 miners were seriously injured (Elgstrad & Vingard, 2013:1). Despite illegal activities taking place in mining sectors, safety is

one of the drastic issues that need to be improved. From 2013-2016, there were different cases reported that point to legal employees not being protected according to Section 2, Act 29 of 1996. The Acts states that all employees should be protected with regards to the physical, mental and social well-being of workers in all occupations. According to the Department of Mineral Resources (2015), statistics consequently proved that miners are often injured while on duty. According to Hentschel et al (2003:51) pointed out that other issues that are a significant concern in mining sectors are described as follows:

- Rockfall;
- Lack of ventilation;
- Misuse of explosives;
- Lack of knowledge;
- Violation of regulations and;
- Poorly maintained equipment.

Table 1 below illustrates cases reported per region of illegal mining activities.

Table 1: Fatality rates per region

	2013	**Injury rate**	**2014**	**Injury rate**	**Percentage change in rates**
All mines	3 126	2.88	2 700	2.74	-49
Gauteng	631	3.53	696	4.26	21
Western Cape	6	0.42	11	0.84	100
Northern Cape	67	0.83	113	1.31	58
Eastern Cape	0	0.00	5	1.31	100
KwaZulu Natal	44	1.30	25	0.77	-40.8
Mpumalanga	277	1.43	273	1.48	3.5
Limpopo	156	1.47	239	2.03	38
Northwest Klerksdorp	319	7.16	261	6.64	-7
Northwest Rustenburg	1 321	3.82	764	2.82	-26

Source: *Mine Health and Safety report (2015)*

The above-stipulated statistics in Table 1 designate those injuries in mining sectors continue to be a major challenge. The situation in mining sectors has resulted in police having to investigate incidents that occur in mines. Each day in South Africa, legal miners die due to risks that they expose themselves to in mining sectors. Mine accidents such as falls of ground are identified as one of the utmost major issues that affect mining sectors in South Africa. This has led to poor performance of mine sectors situated in the Gauteng Province and it creates

a bad image of the South African economy. According to the researcher, all mining sectors needs to be improved by looking at the best international strategies implemented in minimizing accidents in mining sectors. These sectors need to be improved by looking at all negative impacts that affect this sector. Apparently, in all mining sectors, Health and Safety seem to be major problems. Likewise, no correct data could be found that stipulates how many miners are injured annually. According to Hermanus (2007:532), death, injuries and fatality rates continue to rise in mining sectors, and some injuries occurred due to illegal activities that took place in mining sectors.

Hermanus (2007:532) further reiterates that majority of legal miners have left their permanent jobs as they fear for their lives. Moreover, the last-named author stipulates that there is no exact amount of people employed permanently in mining sectors as the number of illegal miners continues to grow. In addition, when a miner is found dead in mining sectors, the legal authorities such as the South African Police Service (SAPS) must play an important role in ensuring that post-mortems are performed to determine the cause of death of the deceased. Poor working conditions which exist in South African's mines further continues to increase risks in mining sectors. Improving health and safety in mining sectors, which is a global concern, requires the interventions of mining stakeholders to come up with a better strategy in dealing with health and safety issues.

Within the Mine Health and Safety Act 29 of 1996, some objectives can assist mining sectors to promote safety in mining sectors. The objectives are as follows:

- To promote health and safety to legal mineworkers always;
- To establish safety measures at mines;
- To promote training and human resource development;
- To provide the system that will inspect, investigate and enquire about employee's health and safety conditions.

The objectives were established to ensure that legal mineworkers are protected; however, there are risk factors found in mining sectors that lead to skin disorders, which develop because of using chemicals underground without getting appropriate fresh air, heavy noise from machines, exposure to dust and TB disease (Hermanus, 2007: 531). This author further denotes that the main aim of Mine Health and Safety Act no 29 of 1996 is to examine the provisions of policy and safety of mineworkers to assure that a place is designed and constructed for a healthy work environment. In 2016, fatalities and injuries reduced from 615 to 73. The sectors further recognize that there is more to be done to reduce such incidents in

mining sectors (Chamber of Mines, 2016). On the other hand, different stakeholders need to collaborate to promote health and safety in workplaces, to provide joint planning and to make decisions that will not negatively affect this sector.

3.7.3 National Water Act (Act 36 of 1998)

Section 36 of the National Water Act of 1998 explain that the act was mainly used to provide for fundamental reform of the law relating to water resources; to repeal certain laws and to provide for matters connected therewith. The act was published in 1998 to improve the past laws that relate to water resources in South Africa (Department of Water Affairs and Forestry, 2013:7). This act applies to mining sectors to ensure that water is managed and controlled in a manner that will benefit the production of the mining sectors. South Africa is a dry country that has experienced a shortage of rainfall for the past three years. This has led other companies such as Sasol to scale back in producing liquids that require an enormous amount of water (Department of Water Affairs, 2013:7). The purposes of the National Water Act 36 of 1998 are described below:

- To facilitate the proper management of the nation's water resources;
- Provide a framework that will assist in developing the use and control of water resources for the country as a whole;
- Provide a framework within which water will be managed at a regional level and
- Identify water-related development opportunities and constraints.

The National Water Act 36 of 1998 (NWA) distinguish that a variety of approaches can be used to prevent and manage pollution in mining sectors. Of concern, this act does not prescribe which procedures need to be followed to ensure that water will be controlled and protected in mining sectors that are situated in the Gauteng Province.

3.7.4 National Environment Management Act 107 of 1998

The National Environment Management Act 107 of 1998 (NEMA) was established in 1998 to cooperate environmental governance by establishing principles for decision making on matters affecting the environment (Mackintosh, 2008:19). One significant aim of the National Environment Management Act 107 of 1998 is to promote cooperative governance in organising a health and safe environment and to provide legislation that allows mining sectors to explore, produce and manufacture mining minerals with an obliged authority (Mackintosh, 2008:19).

NEMA promotes cooperative governance and procedures for coordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith (Mackintosh, 2008:19). The author further posits that this act is a major piece of legislation that deals with the environment in mining sectors in South Africa. Above all, the Constitution of the Republic of South Africa Section 24, Act 108 of 1996 states that:
Everyone has the right to:

- To an environment that is not harmful to their health or well-being;
- To have the protected environment for the benefit of present and future generations through passed legislative and other measures such as:
- To prevent pollution that comes from mining sectors;
- To promote conservation and;
- To secure ecology the environment and the use of the resources in mining sectors.

The improved guidance that has been developed by NEMA will ensure that the environment is protected at all levels. The success in preventing the environment from being damaged will depend on the understanding and adoption made by the constitution of South Africa to ensure that mining sectors, the public, practitioners as well as contractors will implement the objectives in securing a health and safety environment.

3.7.5 Draft Mining Charter III, 15 June 2018

The Draft Mining Charter III aims to improve the version of the mining charter drafted in 2017 to improve mining risks, and transformation in mining sectors situated in South Africa (News 24, 2018). The proposition made by the Minister of Mineral Resources is that historically disadvantaged South Africans (HDSA) are only allocated 8 per cent blocks to extract minerals to assist disadvantaged communities, and 8 per cent granted to qualifying mineworkers with the service of five years in the mining industry (News 24, 2018). In 2017, mining sectors contributed 6.8 % to the economy of South Africa, this includes the contribution of 3.7% to Gross Domestic Products (GDP) (Chamber of Mines Fact Sheet, 2018:2). Moreover, it highlights the importance of mining sectors in South Africa in increased job opportunities, for example, 464,667 being the total number of employers employed by mining sectors by November last quarter of 2017 (Chamber of Mines Fact Sheet, 2018:2). The significant role of mining sectors in South Africa encourages positivity, which declared the year 2017 as the year for gold and platinum.

South Africa as a developing country plan to legitimise illegal mining activities. Illegal mining in South Africa was legalised, with the Northern Cape being recognised as the first province to receive recognition. During the Mining Indaba held on 23rd January 2018 the Kimberly Ekapa Mining Joint Venture (KEMJV) with the Department of Mineral Resources, and Sol Plaatjie Municipality (SPM) took a major decision to formalise illegal mining activities (Swart, 2018:1). The research conducted by Khumalo (2018:1) stipulates that the Department of Mineral Resources granted 800 illegal miners permits to partake legally in mining sectors to extract gold. Moreover, 400 hectares of land was approved for illegal miners to extract mineral resources and to improve their living conditions. However, illegal miners need to conduct work by hand while the use of machinery prohibited from them.

Furthermore, Khumalo (2018:1) posits that the Department of Mineral Resources clearly stipulates that no permit is granted to illegal miners that damage the building structures of mining sectors. The research conducted by Khumalo (2018:1) concurs that legalisation of illegal mining in the Northern Cape will constantly minimise murders and attempted murders amongst illegal miners, resulting in no illegal miners are victimised by police officials and private security personnel. Moreover, the legalisation of illegal miners brought reunion amongst illegal miners owing to difficult challenges facing them before legitimisation of illegal activities. All illegal miners now partake in mining activities without disturbances from police officials and private security personnel, resulting in illegal miners' restored dignity and no longer being considered "illegal miners" (Khumalo, 2018:1).

The formalisation of illegal mining in the Northern Cape supported by the Minister of Mineral Resources, Gwede Mantashe, indicated that the ratification of illegal miners will not only minimise murders amongst illegal miners but will protect the productivity of all mining sectors dealing with gold (Northern Cape News Network, 2018:1). Furthermore, one of the pivotal roles illegal miners sought to contribute to the Gross Domestic Product, the building of schools, and clinics. The apprehensions raised by the Minister of Mineral Resources include the revision of the Mining Charter of 2017 to include the rights of illegal miners (Northern Cape News Network, 2018:1). One of the imperative changes to illegal miners is that they can sell precious metals through Batho Pele Primary Cooperative and Goedemoed Trading. The trading companies were established to support illegal miners to trade precious metals for money (Northern Cape News Network, 2018:1). To substantiate the above-mentioned statement, the sale and registration of diamonds need to be documented and registered by Batho Pele Primary Cooperation for record purposes.

Ledwaba (2018:1) postulates that the Department of Mineral Resources (DMR) needs to introduce medical aid for illegal miners, pension funds, and register all illegal miners to South African Revenue Services (SARS) to pay tax. The legalisation of illegal mining in the Northern Cape brought happiness to majority of illegal miners and normalised lives. Ledwaba (2018:1) maintains that instead of fleeing from fear when recognising police officials and security personnel, illegal miners now wave to them. Likewise, mining security personnel work together with illegal miners to maintain peace and order in mining sectors. The success of illegal miners in the Northern Cape was celebrated by Black First Land First (BLF) (Northern Cape News Network, 2018:1).

A major concern raised by the Chamber of Mines, Association of Mineworkers and Construction Union (AMCU) and National Union Mineworkers (NUM) is that the Minister of Mineral Resources circulated no invitation to them to revise the Mining Charter (Magubane, 2018:1). The stakeholders mentioned above further denotes that the third Mining Charter is seen as a guideline and not legislation. Moreover, Magubane (2018:1) postulates that no transformation was made in previous years in mining sectors which further elevate a major concern regarding the new third Mining Charter. The emphasis raised by the association of mineworkers is that the third Mining Charter should be clear, concise and contain achievable timeframes.

It is evident from the above discussion that various policies and legislations were established to regulate the mining sector in the country, however, very little has been done to regulate the illegal mining sectors simply because the ‘act’ of mining without a license is considered a criminal activity. Owing to that, illegal mining activity is currently dealt with according to the South African Criminal Procedure Act (Act 51 of 1977) Section 3 which outlines provisions and the procedure related to criminal matters (South Africa: 1977) providing that should the police have reasonable grounds to make an arrest, a person (in this case an illegal miner) found carrying gold or any other minerals without a license is liable for arrest.

3.8 OVERSIGHT BODIES TO MINING SECTORS IN SOUTH AFRICA

The following oversight bodies are responsible for overseeing that the mining sectors in the country adhere to human rights values and the required working conditions.

3.8.1 Mine Health and Safety Council (MHSC)

The main responsibility of the Mine Health and Safety Council is to ensure that health and safety strategies in all mining sectors are consequently implemented (Hermanus, 2007:540). According to the Chamber of Mines Fact Sheet (2017), the MHSC was established in 1996, intending to direct safety in mining sectors. The MHSC is funded under public revenue as part of assisting and advising the Minister of Mineral Resources on occupational health safety legislation for employees and improving safety conditions for all mining sectors (Chamber of Mines Fact Sheet, 2017). In addition, the MHSC works closely with the Mining Qualification Authority (MQA) that plays a critical role in addressing and focusing on skills shortages to legal mines employees. The MQA, in this regard, ensures that mining sectors are equipped with competent mine workers (Chamber of Mines Fact Sheet, 2017).

The statement is further validated in that the MHSC certifies and ensures that all mineworkers are under healthy working conditions and consequently, often represented in various provinces dealing with mining minerals. Furthermore, Hermanus (2007:540) asserts that the significant role of MHSC provides the necessary leadership to partake in mining initiatives and activities related to the sectors, to promote health and safety conditions, and to add valuable solutions to minister resources on occupational health and safety of legal miners. Likewise, the Mine Health and Safety Act, 29 of 1996 was established by the MHSC to safeguard and protect legal employees of mining sectors (Hermanus, 2007:540). The then minister of Mineral Resources, Ngoako Ramathlodi, further agrees that the collaboration of the Mine Health and Safety Council and Mine Health and Safety will decrease fatality rates, injuries, silicosis and noise-induced hearing loss in mining sectors.

According to the Chamber of Mines Fact Sheet (2017), mining sectors spend an enormous amount of money to ensure that safety and health conditions become improved. The major significance of this is proved by the fact that from 1993 to 2016, fatality rates have decreased from 615 to 73 per cent. The mining sector focuses on improving zero harm tolerance to mineworkers and protects the image of these sectors. Likewise, this sector has improved injury fatality rates by 88 per cent, these further states that the positive role played on occupational health and safety is recognised (Chamber of Mines Fact Sheet, 2017). Additionally, the fatality rates, death and illness that often occurs in mining sectors convey a burden to mine owners and causes financial crises to families and co-workers.

3.9 SUMMARY

From the above discussion, it can be argued that illegal mining in South Africa is on the rise, and it does not only affect the economy and the daily operation of the legal mines. However, the legalisation of the illegal mining sector will also reduce war amongst illegal miners. This further means that all illegal miners with licences will partake in mining sectors with gold and other precious metals. As such, thousands of illegal miners will be welcomed in all mining sectors to extract minerals. The door is now open for illegal miners to partake in mining sectors without fear of police officials and security personnel, to support loved ones with money generated through illegal activities. This chapter will be followed by chapter 4 which is also the extension of the research report that discusses the overview of illegal mining activities in other countries.

CHAPTER 4: OVERVIEW OF ILLEGAL MINING ACTIVITIES IN OTHER COUNTRIES

4.1 INTRODUCTION

The purpose of a literature review, according to Baker (2016:265), is to gather relevant information on the topic under research and be acquainted with the different opinions and views on the subject matter. Furthermore, the purpose of a literature review is to involve related research conducted to establish the gaps that need resolutions. The universal occurrence of illegal mining remains a worldwide problem. Illegal mining has impacted negatively not only South African mining sectors but also African and international countries. These countries also experience the same phenomenal problem of illegal mining activities. Researchers such as Gordasevich (2016:3) state that international countries also encounter challenges of illegal mining in the respective sectors dealing with gold. The purpose of this chapter is to discuss the global overview and best strategies implemented in dealing with illegal mining activities. The chapter will therefore give critical analysis and compare different strategies used in developed and developing countries to identify the best practices implemented to reduce illegal mining occurrences.

4.2 OVERVIEW OF ILLEGAL MINING ACTIVITIES IN AFRICAN COUNTRIES

4.2.1 Burkina Faso

Burkina Faso is one of the African countries that have encountered major challenges in its mining sectors for the past thirty-seven years. The situation in Burkina Faso as described by Cote (2013:2) as a low-income country with limited natural resources to mine. To elaborate further, Burkina Faso is a country endowed with natural resources; however, the commencement of illegal mining in some of the mining sectors decreased the production of minerals produced. Scholars such as Zabsonre, Agbo, Some and Haffin (2015:4) state that Burkina Faso has been exporting gold since 1960, however in 1980 the country experienced major challenges owing to the emergence of illegal mining. Illegal mining activities in Burkina Faso attracted most farmers who left agricultural farming to participate in illegal mining activities. Moreover, Cote (2013:2) postulates that illegal mining in Burkina Faso is more commonly known as “Orpaillage” a French word describing illegal mining activities. Most illegal miners originate from different neighbouring villages such as Central Plateau, Bakou and Seguenega and of major concern, they reside close to mining sectors to avoid walking long distances (Cote, 2013:2).

Werthmann (2015:19) concurs that mining camps were formed as homes for illegal miners. Likewise, mining camps are continually related to prohibited businesses such as liquor shops and brothels which opened to generate additional money (Werthmann, 2015:19). The research conducted by Werthmann (2015:20) asserts that men do not bring along their wives as they believe that women should take care of children. This arrangement forces men to use amenities available in brothels. In Dagara village, women are not allowed to participate in mining activities, thus women survive by selling beer, snacks, sorghum, clay pots and baskets. The business of selling does not generate enough money, however, due to instructions given to them, women consider selling as a business to generate money and for survival purposes (Werthmann, 2015:19). The last-named mentioned scholar further explains that as opposed to other African countries such as Tanzania, women do not participate in mining sectors in Burkina Faso as they believe is "women get scared easily and may fall into the pits by accident", however, women are obliged to store and sell gold in local markets (Werthmann 2015:19).

Burkina Faso still to date encounters challenges of illegal mining activities in mining sectors specializing in gold and other precious metals. Of concern is the fact that no reliable statistics confirm the number of illegal immigrants involved in illegal mining activities. To elaborate further, the research by Cote (2013:3) highlights that those illegal miners use ropes to enter the targeted mine but that no protective clothing is worn to protect themselves while conducting such illegal operations. Only a torch and flashlight are used to light dark pits or holes. Additionally, in such operations, illegal miners encounter difficult conditions because no proper ventilation of fresh oxygen exists underground, and holes are considered extremely hot (Cote, 2013:3). Moreover, children also form part of illegal mining activities, thus the situation has a negative impact on children's education. Zabsonre and colleagues (2015:12) believe the increase of illegal mining occurrences further lead to child absenteeism in schools, as many children spend more time extracting mineral resources than attending school. Furthermore, children together with illegal miners crush gold without dust masks and sharpen metal by grinding without eye protection. Such an environment consistently led to permanent diseases to members involved in illegal mining activities (Cote, 2013:3). The diseases encountered in mining sectors could further lead to permanent conditions for children owing to difficult conditions that exist in mining sectors.

4.2.1.1 Strategies to combat illegal mining in Burkina Faso

Burkina Faso developed a strategy to support mining sectors affected by illegal mining activities. Ouoba (2017:183) confirms that what is known as illegal mining activities in

countries like South Africa is an acceptable activity in Burkina Faso; therefore, more than 200 illegal miners have registered to become artisanal miners. Ouoba (2017:183) further asserts that more than seven sectors were legalized for artisanal miners to extract precious metals, in the same way, the sector consequently became a source of employment to unemployed citizens of Burkina Faso. Moreover, Burkina Faso instigated a pilot training program as a strategy that provides technical and geological advice to artisanal miners. The main aim of the program minimizes accidents and to ensure that artisanal miners deliver enhanced services expected from them (Ouoba, 2017:183).

Likewise, Dorin (2018:1) comments that the council of ministers in Burkina Faso grants artisanal miners' licenses to extract minerals. Furthermore, a license in Burkina Faso is applicable for three years and renewable twice for five years (Dorin, 2018:1). An area of 250 square kilometres of land was approved for artisanal miners to extract minerals, and twelve-hour shifts are considered normal working conditions applicable to illegal miners. A concern raised by Dorin (2018:1) is that the amount of money received through illegal activities is not sufficient to pay rent and food; therefore, illegal miners hide money to avoid paying tax revenues. Furthermore, artisanal miners sell precious metals in a specific area assigned to them by the government of Burkina Faso. The research conducted by Luning (2008:391) denotes that the selling of precious metals in Burkina Faso is considered a normal business that generates money for artisanal miners involved in illegal activities. Furthermore, Luning (2008:391) illustrates that only legalized illegal miners have the right to sell the precious metals extracted by them. Concerns raised by Cote (2013:4) is that in one of the villages of Burkina Faso, Central Plateau, artisanal miners are forced to sell precious metals at an inexpensive price, such apprehensions convey unhappiness to artisanal miners.

4.2.1.2 Legislation and regulatory framework of illegal mining in Burkina Faso

The regulation of artisanal mining in Burkina Faso began in 1986 as the legislation that supports artisanal miners mining activities. Two legislations were established in Burkina Faso for being Comptoir Burkinabe Des Metaux and Mining code of 1997 which are regarded as the legislations that provide provision to illegal miners (Ouoba 2017:190). Moreover, the government of Burkina Faso realizes that the two legislations mentioned above are not sufficient owing to several mines affected due to artisanal mining. The research conducted by Dorin (2018:1) highlight that during 2015, a new Mining Mineral Act 36 of 2015 was implemented in Burkina Faso thus the following objective was implemented to improve the situation in mining sectors:

- Improve social, health and safety for artisanal miners;
- Improve working conditions for artisanal miners to boost gold extraction;
- Protect and restore the environment while extracting precious metals; and
- To curb unregistered artisanal miners involved in mining sectors.

The researcher is of the view that the above-mentioned objective will address shortcomings facing illegal miners in Burkina Faso after artisanal miners are not being supported by the law. Moreover, the improvement of the mining sector further benefited artisanal miners and other stakeholders involved in artisanal mining activities.

According to Ouoba (2017:190), authorization for artisanal mining aims to grant rights to illegal miners and licenses to extract pieces of gold, however, licenses are only valid for two years. Moreover, Dorin (2018:1) illustrate that artisanal miner from neighbouring countries such as Mali, Benin, Niger and Togo participate in artisanal mining in Burkina Faso, however, the Mining Mineral Act 36 of 2015 does not allow for other citizens from other countries to participate in artisanal mining. Additionally, AAM further allows artisanal miners to sell and export gold to areas assigned to them by the government of Burkina Faso. The formalization of artisanal miners in Burkina Faso formulated better practices to conduct artisanal mining activities in mining sectors. Ouoba (2017:190) further denotes that artisanal miner are not allowed to enter premises without licenses, such an initiative is considered as important and a reminder to all artisanal miners to carry their licenses always. In the village of Bakou, situated in the north of Burkina Faso, artisanal mining is supervised by farmers. Of major concern is the fact that no legislative framework is established. The research conducted by Ouoba (2017:190) hypothesizes that the government of Burkina Faso insisted to implement a framework in this village to improve safe labour practices, better knowledge on explosives chemicals and how the environment should be protected.

4.2.2 Ghana

The research conducted by Adu, Amponsah and Osei (2016:1) denotes that illegal mining activities were legalized and accepted in Ghana in 1989 to alleviate poverty. The authorization for illegal mining as postulated by Adu et al. (2016:1) includes the permission to use mercury during production and require illegal miners to register and acquire licenses to become small-scale miners. The research conducted by Asamoah and Osei-Kojo (2016:7) denotes that the acceptance of small-scale mining in Ghana contributed to major responsibilities such as building schools, clinics, houses and local infrastructure such as recreation centres. Moreover,

in Bekwai Municipality, the practice of small-scale mining benefits most citizens and provide financial support to those engaged in it. The formalization of small-scale mining in Ghana generated regular employment for non-working citizens, for example, citizens employed as washers of gold, carriers, supervisors and bookkeepers.

Small-scale mining in Ghana is welcomed by stakeholders involved in small-scale mining such as non-Governmental Organizations (NGOs) and social environment advocacy (McQuilken & Hilson, 2016:5). The last two named mentioned scholars further express that in January 2016, a dialogue between small-scale miners and stakeholders involved in mining sectors was hosted by the Institute of Environment and Development (IED) to facilitate rights based on the formalization of small-scale miners. It is, therefore, according to McQuilken and Hilson (2016:5), that the purpose of the Institute of Environment and Development supports small-scale miners to perform the sought occupation professionally. In Ghana, a vital role in formalizing illegal mining activities played was in creating job opportunities for many of unemployed youth and adults. Likewise, McQuilken and Hilson (2016:5) assert that small-scale mining activities support diverse groups of citizens involved in illegal activities, for example, a student now can afford to pay university fees and family members can maintain loved ones. Lungu (2007:19) illustrates that the economy benefits from illegal activities, for example, mining operations are usually owned by local Ghanaian citizens which confirms that money generated through small-scale mining activities remains in Ghana.

4.2.2.1 Strategies to combat illegal mining in Ghana

The research conducted by Hilson (2001:9) declares that in 1989, the Small-Scale Mining Project (SSMP) was developed as the project that assists small-scale miners with institutional support. Additionally, four institutions namely Geological Survey, Mines Department, Mineral Commission and Precious Mineral Marketing Corporation (PMMC) were developed as part of the four pillars of the project. Hilson (2001:13) further highlight that each institution has its own responsibilities. For example, a Geological Survey is responsible to ensure that a suitable area is identified for small-scale miners to mine, the Mines Department is accountable for recruiting mines supervisors, the Mineral Commission is liable to grant licenses and the Precious Mineral Marketing Corporation in this regard ensure that all products mined by small-scale miners are captured in a safe place (Hilson, 2001:13). Despite challenges experienced in Ghana owing to illegal activities, the Government legalized the business to promote illegal miners to work in mining sectors dealing with natural resources. The Government of Ghana recognized that small-scale miners in this country support family members by working in mining sectors. For that reason, Ghana recognized that the legalization of small-scale mining is considered as the

only key that will minimize illegal mining activities (Mineral Commission, 2015:6). One of the specific requirements for small-scale miners is that they first need to register with the Mineral Commission of Ghana and be assigned a specific area to mine. Of concern is that licenses, take two years for approval, such a condition is seen as a major challenge to small-scale miners, and may push some of the small-scale miners to resort to illegal mining while waiting for documentations (Mineral Commission, 2015:6).

Moreover, scholars such as Arkorful, Acheamfour, Aryeetey and Owusu (2017:20) elaborate that only Ghanaian citizens from 18 years and older are granted licenses to mine specific areas located to them. The Minister of Land and Natural Resources issue licenses to small-scale miners, thus the permission allows illegal miners to extract gold and other precious metals in mining sectors situated in Ghana (Arkorful et al., 2017:20) Moreover, the method of application include submitting ten copies of documents for the government to process such application. Likewise, the approval of the application confirms that small-scale miners were granted licenses to extract gold. The researcher is of the view that other African countries facing the issue of small-scale mining activities can acquire strategies implemented in Ghana in dealing with illegal mining activities. Furthermore, law enforcement plays a significant role in the mining sector. Van Oevelen (2017:46) hypothesize that each small-scale miner should produce a license as a permit that allows him to extract minerals in mining sectors. The mineral commission together with police officials, the army, fire services, security councils and Bureau of National Investigations confiscate equipment from unregistered small-scale miners who partake in the mining sector without licenses, thus encouraging small-scale miners to register for licenses.

The research by Nopriadi (2016:123) alludes that education is regarded as one of the key strategies to educate small-scale miners and perpetrators about the dangers of using chemicals deprived of comprehensive knowledge, thus seminars were formulated as an educational approach to assist small-scale miners regarding the use of explosives chemicals (Nopriadi, 2016:123). To ensure that such activity is conducted in a good manner, posters, leaflets and advertisements on the radio were employed to invite small-scale miners to attend seminars as part of teaching different groups how to use different chemicals in mining sectors. One of the radical changes implemented in Ghana is that small-scale miners and perpetrators are given new job opportunities to provide for family members. For example, farming is one of the sectors that employ small-scale miners to crop rice, peppers, onions and fruits (Nopriadi, 2016:124). To elaborate further, farming in Ghana was established as an additional strategy that will assist small-scale miners and underprivileged community members to alleviate poverty by working in farming sectors.

Scholars such as Asamoah and Osei-Kojo (2016:7) postulate that the Mineral Commission is responsible for identifying applicable land for small-scale miners to extract minerals. Moreover, Asamoah and Osei-Kojo (2016:7) reasoned that all registered small-scale miners, mine a certain piece of land granted to them by the Mineral Commission of Ghana, thus the following approaches are adopted:

- The state should always enforce all regulations stipulated to various sectors dealing with illegal activities, thus, to ensure that small-scale miners do not leave the pits opened after operations;
- Small-scale miners should ensure that they are not congested with pollution from mercury;
- All small-scale miners registered should obtain licenses that permit them to engage in extracting gold in an area allocated to them, thus the situation will be easier to monitor.

It is worth noting that the government plays a major role to ensure that small-scale miners are further equipped with safety equipment and personal protective equipment (PPE). It is, therefore, according to Asamoah and Osei-Kojo (2016:7,) that small-scale miners are not expected to exceed a minimum space granted to them to extract minerals. The government of Ghana together with stakeholders involved in mining sectors play a major role to formalize small-scale mining, thus this activity considers alleviating poverty in this country.

To elaborate further on skills development, small-scale miners were provided with training on how to use chemicals such as mercury and other relevant compounds used during operation. A small number of small-scale miners have experience on how to use various chemicals in mining based on the experience obtained from former mining sectors jobs (Mineral Commission, 2015:7). In addition, other small-scale miners attained skills development by working close to former miners to observe how chemicals are mixed, and which chemicals were applied to different minerals. In this regard, some measures relating to the formalization of small-scale miners include the establishment of district offices operated by the Mineral Commission to give technical support to small-scale miners, education and training to support small-scale miners, and the safety of illegal miners during operations (Mineral Commission, 2015:6). Moreover, illegal miners were further provided with mine engineers and mine inspectors to register all necessary claims that may arise during the operation. Lungi (2007:19) posits that the minerals extracted by small-scale miners are sold to marketing agencies and contribute to generating more foreign currency, thus the government emphasizes that small-scale miners should sell extracted minerals to marketing agencies only.

4.2.2.2 Legislations and regulatory framework of small-scale mining in Ghana

Ghana developed a new Act that permits small-scale miners to partake in mining sectors legitimately. The research conducted by Bansah, Yalley and Dupey (2016:10) acknowledged that The Provisional National Defense Council Act 217 of 1989 and the Provincial National Defense Council Act 218 of 1989 were established as an Act that certifies small-scale miners to work in mining sectors. These acts authorize Ghanaian citizens above 18 years old to register as permanent miners. Moreover, Bansah et al (2016:11) further illustrate that 420 small-scale miners were granted licenses, 411 were gold licenses and nine were diamond licenses. The Provisional National Defense Council Act 217 of 1989 and Provincial National Defense Council Act 218 of 1989 certify that small-scale miners are protected from numerous activities that may appear as a danger to them. The Provisional National Defense Council Act 217 of 1989 and Provincial National Defense Council Act 218 of 1989 further register all small-scale miners specifying each small-scale miners' details to the Secretary of the Mineral Commission. Such registrations provide small-scale miners with permission to mine lawfully in mining sectors. To this end, small-scale miners are consequently supervised to ensure that operations are conducted in a good routine and provide necessary training on chemicals used in mining sectors (Bansah et al., 2016:11). Moreover, the above-mentioned Act further allows the Mineral Commission of Ghana to open other branches to legalize illegal miners in villages such as Bibiani, Asankrangwa, Assin Fosu and Akim Oda (Bansah et al., 2016:11). The objectives of the Provisional National Defense Council Law 2018 Act described by are as follows:

- Small-scale miners shall not engage in any small-scale gold mining operation unless proper licenses are granted to them by the secretary of the Mineral Commission.
- An application for a license takes place in a relevant district centre of the designated area.
- A person may qualify for a mining license if the person is a citizen of Ghana and not a foreigner. The person must attain the age of eighteen (18) years and has registered by the district centre in the designated area.
- The duration of the licenses to small-scale miners shall not exceed three years from the date of issue, renewed when it expires.

Moreover, Bansah et al (2016:11) explain that the above-mentioned objectives clarify that small-scale miners should not engage in illegal mining activities without licenses, this is because most unlicensed small-scale miners will partake in mining sectors deprived of proper documents. Moreover, the Mineral Mining Amendment Act (MMAA) No 9000 of 2014, developed as another act that supports the Provisional National Defense Council Act 217 of

1989 and Provincial National Defense Council Act 218 of 1989. These acts legalize the purchase of mercury from legitimate dealers. Additionally, the Provisional National Defense Council Act 217 of 1989 and Provincial National Defense Council Act 218 of 1989 prohibits any unlawful business conducted in all mining sectors dealing with gold (Wilkinson, 2016:1). The Mineral Mining Amendment Act no 9000 of 2014 was approved in 2015, with the mandate of confiscating all equipment used by unregistered small-scale miners. The research conducted by Wilkinson (2016:1) postulates that the Mineral Mining Amendment Act (MMAA) will not only benefit mining sectors affected by small-scale mining activities but also stakeholders affected by such activity. The one challenge with MMAA is that there is no specific regulations or measures to ensure the safety of small-scale miners (Bansah et al., 2016:11).

The research conducted by Mensah, Mahiri, Owusu, Mireku, Wireko and Kissi (2015:83) agrees that after the legalization of small-scale mining in Ghana, three mining acts were implemented. Mensah et al (2015:83) signify those laws such as the Small-scale Mining Law, Mercury Law, and the Precious Mineral Marketing Law were established as part of overseeing mining responsibilities each of the mining laws has its own responsibility. For example, the Small-scale Mining Law is responsible for registration, issuing of licenses, and establishing support centres for small-scale miners. Mercury Law on the other side is to legalize the purchase of mercury and precious mineral marketing provides necessary marketing services for small-scale miners to promotes and trade in precious metals, gold, diamonds and jewellery outside Ghana (Mensah et al., 2015:83). The researcher believes laws formulated to deal with small-scale miners in mining sectors, will ensure that all small-scale miners have proper licenses, thus the situation allows illegal miners to mine without any destructions such as war, murder and attempted while extracting minerals (Mensah et al., 2012:3). The purpose of the laws established to assist small-scale miners to participate in gold mining sectors, the Provisional National Defense Council Act 217 of 1989 and Provincial National Defense Council Act 218 of 1989 are to strengthen small-scale miners to observe good mining practices and protect the environment of Ghana (Mensah et al., 2015:83). Moreover, small-scale miners are legally obliged to pay minimum incentives to landowners, this further allows small-scale miners to continue extracting minerals in gold mining sectors. Aboagye, Thomson, Hassan, Akabzaa and Ayamdoo (2004:7) believe that small-scale miners being granted permission to sell extracted products to licensed buyers only plays a vital role in ensuring that the selling of precious metals follow the correct routes and to minimize small-scale miners without licenses (Aboagye et al. 2004:71).

4.2.3 Namibia

Namibia is a country populated with two million people and has a high rate of unemployment. Mining in Namibia has been regarded as the cornerstone of the economy for the past two decades. According to Nyambe and Amunkete (2009:12), Namibia has 13 regions widely affected by illegal mining activities. Erongo is one of the active mines in Namibia challenged with illegal mining occurrences, to this effect, the production of natural resources declined to owe to illegal mining occurrences. Furthermore, Nyambe and Amunkete (2009:12) posit that illegal miners operate in four various groups as mineral specimens, ornamental, tantalum and building material groups. It is of concern that such groups are controlled by crime syndicates. In addition, crime syndicates employ more than 50 unemployed youth to work in various groups established by kingpins who own a certain portion of deep holes in Namibia. To this end, children from six to 17 years are involved in illegal activities with countless activities to perform. Of major concern is that majority of young children in Namibia are uneducated owing to the illegal mining activities that they partake in (Nyambe & Amunkete, 2009:19). Additionally, Angula (2007:14) concurs that illegal mining activities impact negatively the environment. The concern raised by Angula (2007:14) illustrates that illegal miner's focus on short-term strategies to extract minerals for survival purposes, however, majority of illegal activities are practised in a sensitive environment. De Beers is one of the companies producing gold and other precious metals, however, this sector shut down in 2009 as the result of illegal mining operations (Swingler, 2009:1).

The research conducted by De Jongh (2009:5) reveals that majority of illegal activities are practised in rural areas where there is a lack of appropriate tools needed to perform such jobs. Moreover, De Jongh (2009:5) asserts that citizens of Namibia see illegal mining as an activity that alleviates poverty. Likewise, child labour is one of the major distresses; children do not attend schools owing to illegal mining activities. The concern raised by De Jongh (2009:5) illustrates that even though women are actively involved in illegal mining activities, they do not equally earn the same payment as compared to men. The reason for this is the fact that men are considered as the head of household that should earn more salary than women should. The involvement of women in illegal mining in Namibia comprises of extraction of fluorite, topaz, aquamarine, quartz and garnet unlike the extraction of gold as compared to activities conducted by women in other countries (Nyambe & Amunkete, 2009:12). The last-named mentioned author further highlight that the marketing of precious materials takes place in Usakos-Henties Bay, a local and nearby town where most of tourists from different countries gather each week to buy precious stones and gold.

As previously stated, children do not attend schools as majority of children do not regard education as an important instrument to alleviate poverty, and children choose to participate in illegal mining activities (De Jongh, 2009:9). Likewise, illegal mining activities have become a major concern that hinders children's education. The health risks faced by these children are the same as adults. The research conducted by Nyambe and Amunkete (2009:13) postulate that children are exposed to unsafe conditions such as noise, dust, the vibration of walls through machines, and various chemicals used during the operation process. In addition to boys forming part of illegal mining activities, girls are also involved in illegal activity in Namibia, they assist parents to generate more income (Nyambe & Amunkete, 2009:13). The last-named mentioned authors further allude that girl from six to 15 years partake in illegal mining activities, doing anything instructed to do by the kingpins. Additionally, the roles of girls differ from boys, girls kneel to fill buckets with sand associated with natural resources, while boys dig for precious metals. Nyambe and Amunkete (2009:13) concur that girls stoke a fire in the kitchen to burn mercury to process gold and other precious metals. Moreover, girls are responsible for grinding, washing, crushing, sieving and panning. The major concern regarding children participating in illegal mining activities is that children do not know how to protect themselves during operation.

4.2.3.1 Strategies to curb illegal mining in Namibia

Illegal mining in Namibia is acknowledged as an activity that alleviates poverty in this country. The research conducted by Ross (2011:80) alludes that during 2005, several stakeholders in Namibia created a forum for small-scale mining stakeholders. The stakeholder's function to assist all illegal miners situated in Namibia to be registered as small-scale miners and be protected when performing their mining activities. Moreover, the forum for small-scale mining stakeholders sees small-scale mining as an initiative that benefits the citizens of Namibia. Likewise, small-scale miners are trained in various skills such as first aid training programs; the use of various chemicals in the sector; how to protect water from spillage of mercury and how to protect themselves when working underground (Ross, 2011:81). The last-named mentioned scholar further posits that the Community Enterprise Support Project (CESP) support all small-scale mining activities by ensuring that all equipment is leased at a very low cost. This statement further guarantees that all small-scale miners will break the cycle of poverty. The formalization of small-scale miners required various skills. Of concern is the fact that the amount spent on small-scale miners to obtain appropriate skills is constantly regarded as a loss to the economy, nonetheless, the aim is to assist small-scale miners to have proper skills. Moreover, Collins and Lawson (2014:21) contend that to avoid spending an enormous amount of money on small-scale miners, international donors and multilateral organizations

offer free training to small-scale miners, despite the government of Namibia no longer spending money on training. Additionally, the material used to train small-scale miners include a handbook, a toolkit for baseline studies and the facilitator to conduct the required workshop (Collins & Lawson, 2014:21).

In the formalization of small-scale mining in Namibia, the country gained support from the World Bank in 2003 to grant all small-scale miners a program that implements various practices sought by small-scale miners (Collins & Lawson, 2014:25). This “train-the-trainer” program comprises different techniques such as focusing on occupational safety of small-scale miners, health impacts and usage of different chemicals in mining sectors. The situation is described by Collins and Lawson (2014:25) as those one thousand small-scale miners are trained per month with the positive attitude of equipping small-scale miners with knowledge.

The “train-the-trainer” program improve the knowledge of illegal miners and transfer business skills that may assist small-scale miners to sell their products. Collins and Lawson (2014:26) concur that the program offer presentation related to dangers of not following the rules in mining sectors, radio jingles also offer information to those who cannot afford to watch on television and brochures contain significant information regarding rules and protocols in mining sectors. The program classifies small-scale miners as workers with limited education and skills, thus the objective of this program is to improve the knowledge of small-scale miners (Collins & Lawson, 2014:26). The last-named mentioned scholars further highlight that, besides equipping small-scale miners with knowledge and skills, the program further encourages a clean environment, and minimizing pollution as a result of mercury. It is worth noting that the program will focus on all necessities associated with small-scale mining and implement new technologies to keep small-scale miners abreast of new information implemented in other countries (Collins & Lawson, 2014:26).

4.2.3.2 Legislations and regulatory framework of illegal mining in Namibia

The government of Namibia committed to developing a policy that formalizes small-scale mining activities in mining sectors. Leonard, Hauptfleisch and Ellmies (2011:2) comment that the Mineral Prospecting Mining Act 33 of 1992 is regarded as the main legislation that controls the mineral rights of Namibia. To such an extent, Leonard and colleagues (2011:2) agree that illegal miners should constantly adhere to different acts applicable to them. For example, the Communal Land Reform Act 5 of 2002, the Soil Conservation Amendment Act No 76 of 1969 and Nature Conservation Ordinance Act 4 of 175, all relate to the issue of small-scale mining in Namibia. Various legislation mentioned above supports the activity conducted in the mining

sectors of Namibia. The various acts deal with issues emanating from mining sectors, support small-scale mining activity and promote goodwill (Leonard et al., 2011:2). The Namibian government further denotes that legislation deals with illegal occurrences in mining sectors, turn all problems encountered in mining sectors into possible solutions hence each legislation plays its significant role.

4.2.4 TANZANIA

Tanzania is a country located in East Africa surrounded by countries such as Rwanda, Burundi, Mozambique and Kenya. Tanzania is classified as the fourth leading country to produce the largest pieces of gold. The country has experienced the issue of illegal mining ramifications for the past 15 years. Illegal mining activities in Tanzania take place in abandoned waste dumps, abandoned shafts and pits where illegal miners extract precious metals (Shija, 2008:3). Illegal mining in Tanzania is also known as “Small-scale miners”. The research conducted by Kabote and Niboye (2013:1) states that the Acacia mine (formerly known as African Barrick Gold (ABG)) has also experienced different kinds of ramifications owing to small-scale mining occurrences. Poor equipment used by small-scale miners in Tanzania poses major dangers not only to small-scale miners but also to the community who are constantly harmed and even killed by pits or holes left open during operations. Moreover, Kabote and Niboye (2013:3) state that the practice of small-scale mining in Tanzania benefits small-scale miners by leading to investment in shops, restaurants and guesthouses to improve living conditions and to support immediate families. On the other hand, Tanzania’s economy suffers as a result of small-scale mining activities (Kabote & Niboye, 2013:3).

The Tanzania Report (2016:8) alludes those mineral resources are ring-fenced in different categories. The economy has not benefited from these categories due to small-scale mining operations (Tanzania Report, 2016:8). Small-scale mining in Tanzania grew in the 1980s and have affected productive industries and agricultural sectors that support markets with food because of people leaving prospective jobs for small-scale mining activities (Tanzania Report, 2016:8). Moreover, the Tanzania Report (2016:8) illustrates that the closure of active mines forced several workers to be involved in illegal activities. To substantiate this statement, the Tanzania Report (2016:8) further declares that the number of small-scale miners increased from 500,000 to 1.5 million annually. This statement further affirms that illegal mining has drawn more attention from Tanzanian communities and surrounded neighbouring villagers to be involved in small-scale mining activities.

Likewise, gemstones are regarded as the most demanded minerals extracted by small-scale miners in Tanzania and include diamonds, tanzanite, ruby, garnets, pearls and gold. The circumstances further increase the corruption in mining sectors dealing with gold and other precious minerals. To this effect, the research conducted by Moloo (2013:1) concurs that community members of Nyakalabe village fight with one another owing to small-scale mining activities. Of major concern, people in Nyakalabe village are constantly beaten, legs were broken, others become permanently disabled and some are often killed when fights occur from different groups that exist as some result of small-scale performances in mining sectors. Furthermore, Moloo (2013:1) postulates that bodies were dumped in the Nyankanga dam located near mining sectors. Of major concern is that no investigation was conducted for such incidences. The researcher is of the view that Tanzanian community members who witnessed killings because of small-scale mining activities fear for their lives, therefore some of the cases are not reported because they have felt unsafe since small-scale mining started in this area.

Children from 8 to sixteen years are involved in small-scale mining activities. To this end, Makoye (2015:1) contends that 12,000 children are forced to partake in unlawful activities. Furthermore, the research conducted by Makoye (2015:1) maintains that children from Northern, Western and Geita regions were identified as unhealthy owing to different chemicals they were exposed to. Furthermore, the research conducted by Mwami, Saga and Nyoni (2002:1) stipulates those children work in harmful conditions leading to health problems. In addition, children work in mining sectors during weekends and school holidays; however, the majority of them are not registered in schools. Moreover, Makoye (2015:2) asserts that children are involved in various phases in the mining sector, for example, digging, drilling and washing of precious metals.

The major significance of such activity is that children carry heavy bags which result in back pain and severe conditions. The last-named mentioned author reports that girls also participate in small-scale activities. Of great concern is that girls face sexual harassment including pressure to engage in sex work. Moreover, Makoye (2015:2) postulate that some girls in mining sectors become victims of commercial sexual exploitation which results in human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS) and sexually transmitted diseases (STD). The concern raised by Makoye (2015:2) demonstrate that children miss an important part of education, some drop out of school, and others skip classes owing to small-scale activities existing in mining sectors. Likewise, the main ethnic group of children's partaking in small-scale activities are Nyantuzu, Nyamwezi, Jaluo and Sukumao. To this end, children work more than 12 hours a day and earn little incentives (Mwami et al., 2002:9).

Women in Tanzania participate in small-scale mining activities, to this effect; the number of women involved increases day to day. The research conducted by Mambi (2009:18) postulate that ten to 15 per cent of women are directly involved in small-scale mining. Women take part in different tasks, for example, transporting, carrying water needed for crushers and processing mineral resources (Mambi, 2009:18). Furthermore, the research conducted by Mambi (2009:18) highlights that woman are bound to produce babies while involved in small-scale mining activities, and their involvement affects their babies in several ways. The above-mentioned scholars further concur that babies inhale various types of chemicals used underground and drink unclean water. Women in mining sectors are mainly involved to improve the life of family standards and eradicate poverty. Eftimie, Heller, Strongman, Hinton, and Mutemeri (2012:7) state that women in Tanzania are not considered miners due to the insubstantial activity they perform. The last-named mentioned scholars further maintain that women work from four to eight hours per day and to such effect women suffer from back pain. Despite women partaking in small-scale mining activities, men control the majority of assets, for example, tools, crops and money generated through unlawful activity are controlled by men (Eftimie et al., 2012:9). The researcher believes that due to the lesser amount received as payment, children could not afford to attend private doctors to obtain better medical intervention they use their income to buy food and less effective medication when necessary.

4.2.4.1 Strategies to combat illegal mining in Tanzania

The Tanzanian government distinguished the significance of small-scale mining occurrences as one of the activities that support the community through participating informally in mining activities. Dreschler (2001:89) posits that the government of Tanzania supports illegal mining by facilitating and transforming all the activities in one group, this further means that all small-scale miners involved in small-scale mining activities will have one common rule applicable to any small-scale miner partaking in small-scale mining sectors (Dreschler, 2001:89). Moreover, another strategy implemented by the government of Tanzania encourages a good selling approach to the market that promote clean business transactions. Tanzania developed a business strategy to involve foreign companies such as the Tembo mining sector to invest and to participate fully in informal mining activities (Dreschler, 2001:89). Furthermore, the main aim of the Tembo mining sector is to process and market all products to other companies dealing with gold, and the strategy prevents the illegal selling of precious metals.

The study conducted by Dreschler (2001:90) denotes that supporting small-scale miners promotes mineral marketing to stimulate good business transactions. Moreover, the government of Tanzania granted small-scale miners 295,000 hectares of land to mine

precious metals. However, small-scale miners consider the land not enough compared to their needs (Dreschler, 2001:90). Additionally, a few more strategies emerged as part of supporting small-scale miners, including technical assistance, training and education that were granted to small-scale miners as ways of supporting them. To elaborate further, the Tanzanian government supports small-scale miners by ensuring that training skills are provided to the majority of small-scale miners to perform an activity at a good standard. In this esteem, the Ministry of Minerals and Energy formulated a strategy aimed at supporting illegal miners through technology skills; this will enable small-scale miners to have more knowledge on how to operate different machines in mining sectors (Lugoe, 2012:1). Additionally, the Tanzanian government further implemented a pilot program that combines all essential training for small-scale miners in one group. The main aim of this initiative is to save amount money and pay when applicable (Dreschler, 2001:90).

4.2.4.2 Legislation and regulatory framework of illegal mining in Tanzania

African countries such as Ghana and Tanzania both permit illegal miners to work in mining sectors dealing with gold and precious metals. The research conducted by Fisher (2007:16) states that the mining policy of Tanzania highlights the importance of participation in small-scale mining as an activity that alleviates poverty. The Mining Act 28 of 1979 created opportunities for small-scale miners situated in Tanzania to become informal miners in mining sectors (Lugoe, 2012:1). On the other hand, the research conducted by UNEP (2014:4) illustrate that the Act further encourages all members involved in small-scale mining activities to supplement the income to mineral commission; subsequently, this initiative further elaborates those small-scale miners will further partake in mining sectors specializes with gold and gemstones (UNEP, 2012:4). Of further concern is that small-scale miners are granted small sites to mine thus becomes difficult not to interfere with other sites located close to them (UNEP, 2012:4). The Mining Act 28 of 1979 further permits small-scale miners to obtain Primary Prospecting Licenses (PPL) and Primary Mining Licenses (PML), these licenses are granted for one year with the possibility of renewal (Lugoe, 2012:1). The above-mentioned licenses provide small-scale miners with the authority to mine up to ten hectares per day. Of major concern is that some of the small-scale miners make extra money by leasing their licenses to other small-scale miners not registered with a mineral commission to extract mineral resources.

According to Mwakaje (2012:12), the Primary Mining License grant small-scale miners a portion to mine, therefore the portion should not exceed ten square meters. The land granted

to small-scale miners should consist of geographical coordinates to assist small-scale miners where to stop when mining gold and other precious metals (Mwakaje, 2012:12). Additionally, the Commission of Minerals will consequently inspect the area for the safety of illegal miners during operations. Moreover, the government of Tanzania established the legislation known as the United Republic of Tanzania Act 123 of 1997 to assist the transaction of small-scale mining activities and mining operations in Tanzania *(*Lugoe, 2012:1). Furthermore, the Mineral Act 1997 and Mineral Act 1998 recognize the importance of small-scale mining that constantly promotes the surveys and development of mining activities. The investigation conducted by Mwakaje (2017:2) asserts that the Mineral Act 1997 together with the Mineral Act of 1998 formulated to improve the economic environment of the sector, exploit the benefit of the sector and facilitate value additions of the minerals. The mining act will thus influence and determine decisions and actions related to mining sectors. The Acts mentioned above will play a pivotal role in helping small-scale miners to operate in an organized custom (Mwakaje, 2017:2). Additionally, the study by Mwakaje (2017:2) further maintains that small-scale miners have 20 offices that are responsible for the administration of all difficulties that may arise, thus the role is to ensure that all matters of small-scale miners are constantly taken care of.

4.2.5 ZIMBABWE

Zimbabwe a country located in Africa obtained independence in 1965, which is considered one of the countries affected by illegal mining activities. “Gold panning and Makorokoza” are the term used to describe illegal miners in this country. The history of illegal mining in Zimbabwe began in 1890, and in 1908, illegal mining was described as “small working activities” (Maponga & Ngorima, 2002:147). Furthermore, the research conducted by Bello and Bybee (2014:1) contends that illegal mining activities are growing in Africa, for example, more than 15 million people participate in illegal mining activities. In 2002, Zimbabwe experienced major problems were utmost of people from neighbouring places form part of illegal mining activities. Moreover, illegal mining activities take place in active mines and abandoned mines, and of major concern, some illegal miners are trapped in disused mines with some dying while others become injured during the process of extracting precious metals (Bello & Bybee, 2014:1). Illegal miners use simple tools such as picks, shovels, digging rods and plastic dishes during operations. Illegal miners do not have proper claims regulated by the state as they operate illegally in gold mining sectors (Rutsate, 2010:47).

Illegal miners in Zimbabwe pay police officials, soldiers and security personnel (News 24, 2016). Moreover, $10, equivalent to R130.00 according to the South African rand, is an amount paid to the stakeholders mentioned above to access mining sectors. In villages such

as Jesi, Tonhorai, Chirasika and Nengomasha, illegal miners work with police officials to gain access to the mining sector (News 24:2016). The research conducted by News 24 (2016), expresses those police officials allow illegal miners to enter mining shafts at night where there is less visibility of community citizens. In most occurrences in Zimbabwe, police officials form syndicates with illegal miners allowing those who cannot afford to pay sought amount of money to enter mining sectors in return for a share made.

Additionally, illegal mining further spread to majority of existing mining sectors in Zimbabwe to alleviate poverty, as result, money obtained through illegal mining activities are used for food, own assets and decent living. Unlawful businesses such as selling food, clothing, liquor and prostitution houses opened in residences near mines. The research directed by Bello and Bybee (2014:1) comments that in the Tarka village, majority of farmlands were destroyed owing to illegal mining activities. Illegal miners in Zimbabwe use labour intensive and manual procedures such as the use of homemade tools for example panning dishes (Mambondiyani, 2017:2). At the start of illegal mining activities, illegal miners used to focus on extracting gold only, however other resources such as chromite and tantalite were also considered significant precious metals targeted by illegal miners (Maponga & Ngorima, 2002:147). Chimanimani is one of the areas affected by illegal mining activities. Members of the community in Chimanimani reside in wards three, five and eight where the Marange diamond fields are located. Moreover, community members generate a lot of money owing to diamonds obtained through illegal mining activities (Maponga & Ngorima, 2002:147). Furthermore, the research conducted by Mambondiyani (2017:1) maintains that illegal mining activities contributed to the destroying roads, land, buildings and the environment. The last-named mentioned author further confirms that illegal mining affects the economy, direct employment, the foreign currency that leads to the environmental degradation of Zimbabwe.

Women participate in gold mining sectors due to the need for income, food and to afford medical bills. Illegal gold mining in Zimbabwe is considered an activity that alleviates poverty. Rutsate (2010:44) maintains that other mining sectors found in Muchira and Chiambuka experienced numerous challenges such as crime, corruption, rape and murder cases and that crime often occurs to women involved in the mining sector. Moreover, despite challenges encountered by women in the mining sector, women continue to be involved regardless of the major risks involved in mining sectors. The research by Rutsate (2010:44) reports that a minority of women work part-time in mining sectors due to household responsibilities. Besides the involvement of women in mining sectors, Rutsate (2010:47) maintains that some of the illegal activities in Zimbabwe occur near rivers where illegal miner's clean precious metals. The community was challenged with the situation of drinking unclean water owing to illegal

mining activities. Moreover, Rutsate (2010:47) further postulates that nine major rivers are polluted with mercury, thus the situation increases diseases in the community affected by drinking uncleaned water.

4.2.5.1 Strategies to combat illegal mining in Zimbabwe

Zimbabwe accepted illegal mining activities and allowed them to register as small-scale miners. To support this statement, the research conducted by Economic Commission for Africa (2002:27) postulates that the formalization of small-scale mining promotes employment to most of illegal immigrant miners and Zimbabwean citizens to partake officially in mining sectors dealing with gold, gemstone and other precious metals. The investigation conducted by the Economic Commission for Africa (2002:27) highlight that majority of African countries that specialize in gold mining sectors and other precious metals cannot curb illegal mining activities in mining sectors, this situation further led to unlawful activities for example small-scale not having permissions to participate in mining sectors. Illegal miners in Harare, Gweru and Bulawayo access equipment from the mining department to conduct processes in mining sectors (Economic Commission for Africa, 2002:27). Likewise, small-scale miners also access crushers, compressors, stamp mills, concentrating tables, diamond drills, chain blocks and shears. This equipment allows them to perform the required jobs at good professional standards. The research piloted by Economic Commission for Africa (2002:27) asserts that although the small-scale miners have access to mining equipment, an amount of R200 needs to be paid to the office of regional Mining Engineers to gain access to specific equipment required. The office reports to the Mining Commission stating the equipment required by small-scale miners, therefore, due to the high demand for equipment by small-scale miners, costs and interests often increase (Economic Commission for Africa, 2002:27).

The facilities of small-scale mining are managed by the Department of Metallurgy, and of prominence, small-scale miners obtain free services on technical assistance. In addition, Shamva Mining Centre (SMC) was developed as one of the significant centres to assist small-scale miners to acquire appropriate skills (Economic Commission for Africa, 2002:28). Of relevance to this study is that the centre further inspires the establishment of a safe environment during the operation, thus encouraging small-scale miners to attend courses on safety and risk management that will assist them to be safe and to sustain the environment as required. Furthermore, a collaboration between the Small-Scale Miners Association of Zimbabwe (SSMAZ) and the Zimbabwe Ministry of Mines offers small-scale miner's unrestricted workshops to promote safe working conditions to all small-scale miners participating in small-scale mining activities (Economic Commission for Africa, 2002:28). The

Small-Scale Miners Association of Zimbabwe (SSMAZ) and Shamva Mining Centre (SMC) play a significant role in all gold mining centres situated in Harare, Gweru and Bulawayo to ensure that support system is given to all small-scale miners partaking in small-scale mining activities.

Donors such as the Canadian International Development Agency (CIDA) and Swedish agencies work with the Zimbabwean government to promote small-scale mining activities in mining sectors. On the other hand, Spiegel (2015:44) asserts that rural districts of Zimbabwe adopted the program implemented in Namibia, *"Train-the-trainer",* which was developed to assist illegal miners to reduce pollution during the process of burning precious metals. Additionally, Spiegel (2015:44) denotes that the main aim of *"Train-the-trainer"* is to educate all illegal miners involved how to use various chemicals in mining sectors and how to reduce pollution formulated owing to small-scale mining activities (Spiegel, 2015:44). Moreover, the *"Train-the-trainer"* program further attract small-scale miners from neighbouring villages to educate themselves on various skills provided by the programs, successively this further means that small-scale miners will acquire appropriate skills to mine precious metals in mining sectors. The researcher is of the view that the program does not only assist illegal miners situated in Zimbabwe but also other small-scale miners in neighbouring villages; this further confirms that the program brought massive knowledge to small-scale miners as activities were conducted appropriately. The research conducted by Spiegel (2015:41) reports that the Canadian International Development Agency (CIDA) together with German and Swedish agencies work with the government of Zimbabwe to encourage small-scale miners to participate in mining activities. Furthermore, the main function of CIDA and the agencies involved is to control small-scale miners not to smuggle and sell precious metals illegal but to follow proper networks.

4.2.5.2 Legislation and regulatory framework of illegal mining in Zimbabwe

In 1991, the government of Zimbabwe formulated an Act to curb illegal mining in all various mining sectors affected by illegal mining activities in Zimbabwe and neighbouring villages. The situation in Zimbabwe as described by Spiegel (2015:547) who concurs that all small-scale miners are granted licenses from 18 years and above as part of allowing them to participate in mining sectors. The Ministry of Mines issued another license that falls under the Mines and Mineral Act 274 of 1996 to support small-scale miners. Furthermore, small-scale mining activities are also governed by the United Nation Environment Program (UNEP) as one of the stakeholders that ensure all mining activities thus include exploration, mine operations, mine sites and small-scale mining are taken care of (Dreschler, 2001:11). Moreover, the

environmental management regulation of 2014 (EMR) postulates that all small-scale miners be registered to operate in mining sectors legally, this further means that licenses will be granted to only registered small-scale miners with the purpose of renewal once expired (Dreschler, 2001:17). An important consideration regarding the renewal of licenses, it grants small-scale miners' additional years to partake in mining sectors. The Zimbabwe situation as pointed out by Dreschler (2001:1) maintains that one major concern facing small-scale miners regarding the procedure to follow when registering for licenses is lack of education as the majority of them are not educated, the situation creates a lack of understanding and what's expected from them (Dreschler, 2001:1). Likewise, the process to apply for licenses sought numerous procedures such as moving from one office to the other, thus circumstances lead to miners becoming tired before licenses were issued.

In all of the above-mentioned African countries, it was clear that the participation of community members in mining activities allowed and was recognized as small-scale mining. Hence, their government has taken steps and implemented policies and legislation to support the community members involved in informal mining activities. This means South Africa compared to the other African countries it is different in terms of how it deals with issues pertaining to community members showing interest in small-scale mining activities. Likewise, the South African mining sectors also encounter issues such as miners fighting and killing each other as well as breaking the law by using under-aged children, involving organized crime syndicates and making use of prostitution to enhance their operations.

4.3 OVERVIEW OF ILLEGAL MINING ACTIVITIES IN AMERICA AND AUSTRALIA

4.3.1 Bolivia

Bolivia is in the continent of South America, surrounded by countries such as Peru, Brazil, Paraguay, Argentina and Chile. Mining is considered the most important sector in Bolivia and remains one of the key sectors that increases the economy of the country (Markland, 2012: 24). Moreover, Markland (2012:24) further highlights that 37-indigenous people live in Bolivia, thus the situation creates a high unemployment rate. One of the major challenges that affect Bolivia is the issue of illegal mining activities in gold mining sectors. Illegal mining in Bolivia have existed for more than three decades, and of major concern in 1985, Bolivia National Mining (BNM) shut down some of the gold mining sectors owing to illegal mining activities (Markland, 2012:25). Additionally, Amaya Pampa is one of the mining sectors challenged with illegal mining activities. The sector does not produce the number of minerals expected as the

result of unlawful occurrences in gold mining sectors. Illegal miners have specific minerals that they mine. Markland (2012:26) maintains that the minerals targeted by illegal miners include gold, silver, zinc, antimony and arsenic. One of the challenging circumstances is that Amaya Pampa no longer generates the amount of money due to illegal mining occurrences that emerged in this sector.

Illegal miners in Bolivia use sluice boxes made from wood to extract pieces of precious metals (Bocangel, 2001:7). Bocangel further alludes that illegal mining activities damage the environment in Bolivia, as such, rivers and beaches are constantly polluted with particles of mercury. Furthermore, illegal miners use explosives chemicals to systematically cut large pieces of stone into smaller pieces, such practice is considered dangerous to them and the surrounding communities. Additionally, Bocangel (2001:7) postulates that illegal miners formed different groups, and the most dangerous groups that exist in Bolivia are Jikus and Barranquilleros. The Jikus group enter mines during the night to extract more pieces of precious metals without being disturbed (Bocangel, 2001:8). Likewise, the Jikus groups are known as mobile groups of illegal miners where they can move from one sector to the other to explore pieces of precious metals. Furthermore, Bocangel (2001:8) maintains that despite the hard labour performed by illegal miners, they earn little money and that such conditions lead to illegal miners living from hand to mouth with no amount of cash to be saved. The conditions of illegal miners remain unsatisfactory, and of major concern, they continue to participate in illegal mining activities as they are unable to find suitable jobs in Bolivia.

The Barranquilleros on the other hand performed illegal activities during the day. The equipment used by such groups is the same as the Jikus group. According to Bocangel (2001:9), this group is specific with the amount of money they need. Bocangel (2001:9) alludes that woman are paid 20-30 per cent of what they produce during their shifts. One major challenge is that women work in difficult conditions yet are expected to perform the acquired job in a good manner, for example, women are expected to work long hours and in high-temperature pits with no fresh air. Such circumstances lead to women having permanent diseases. The researcher believes that due to poverty, women often find themselves in male-dominated sectors and performing hard labour jobs. The conditions for women in mining sectors are considered unsatisfactory as they are expected to perform jobs equivalent to men.

Children in Bolivia are involved in illegal mining activities and are exposed to dangerous working conditions while performing an unlawful activity. Bocangel (2001:10) illustrates that children work long hours, carry heavy loads and use dangerous machines such as machetes to perform the required job. Likewise, Bocangel (2001:10) highlight those children extract

pieces of gold and silver in mining sectors. The other challenge faced by children in mining sectors is that they are exposed to different chemicals used, and such circumstances further lead to permanent diseases such as lung cancer. Moreover, Bocangel (2001:10) concurs that adults face several challenges in mining sectors and consequently children face the same challenges. Additionally, children breathe air filled with dust, risks death from explosions, rock falls and the effect of noise ventilation and collapse of tunnels. A worrying factor in this regard is that children will grow with permanent diseases as a result of working in the mining sector. Although illegal mining exists in Bolivia, it also spread to neighbouring countries such as Arcopongo in the Inquisivi Province.

4.3.2 Best strategies to combat illegal mining in Bolivia

Illegal mining operation in mining sectors of Bolivia is considered as an activity that damages the environment, a threat to the community and dangerous business that attract man, women and young children. Gonzalez (2016:1) denotes that illegal mining activity is not approved in this country owing to numerous challenges encountered in mining sectors. Gonzalez (2016;1) believes various approaches need to be applied to halt illegal mining activities inactive mines and abandoned sectors. Different stakeholders constantly implement objectives to reduce illegal mining activities, these include stakeholders such as security personnel, police officials and soldiers stationed in all various entrances of mining sectors to foresee any illegal activity that may occur and to conduct consistent procedures against active mining sectors. Moreover, the research study conducted by Gonzalez (2016:1) further highlights that more than 86 illegal mining camps were destroyed as another strategy to minimize illegal miners in this country. Furthermore, another holistic approach focuses on criminal networks created by illegal miners, for example, illegal miners from neighbouring countries such as Brazil left Bolivia due to limited opportunities to enter mining sectors (Gonzalez, 2016:1).

4.3.3 Legislations and regulatory framework of illegal mining in Bolivia

The research study conducted by Cremers, Kolen and Theije (2013:12) states that owing to several damages encountered owing to illegal mining occurrences, illegal mining is not approved in Bolivia. The main concern as raised by Cremers et al. (2013:12) highlight that the government recognized the significant damages owing to illegal mining, for example, the environmental damage and polluted rivers further which increase challenges as the community must adjust to such conditions. To elaborate further, no act, policy, legislation or framework is developed to sustain illegal mining activities, thus small-scale mining in Bolivia

is considered informal and illegal because national laws of this country do not approve such activity.

4.4 COLOMBIA

Colombia is considered the second wealthiest country to produce gold and other mineral resources located in the continent of South America. The gold mining sector in Colombia is regarded as one of the major keys that contribute economic growth of the country, however, the decline of gold in market share caused major implications of challenges. Colombia is regarded as the wealthiest country to produce mineral resources. Cremers et al. (2013:51) identified that 14 per cent of natural resources are produced each day; this further confirms Colombia as one of the richest countries. Furthermore, illegal gold mining activities are considered as the source of living in rural areas, thus the situation further contributes to majority of villagers being involved in illegal gold mining activities (Cremers et al., 2013:51). Illegal mining in Colombia started in 1940; however, in 1970 the decline of gold and other precious metals was attributed to illegal mining activities operations. A downside of illegal mining is that all mining sectors situated in Colombia face numerous challenges owing to illegal mining activities. Majority of illegal activities in Colombia occurs in Choco, South Bolivar, Nariño and Cauca (Le Billion and Masse, 2017:1). The study conducted by Yagoub (2016:1) posits that 70 per cent of precious metals and gold are mined illegally in Colombia. A major concern in this regard is that illegally extracted minerals do not benefit the country's growth; such challenges are regarded as difficult challenges to defeat (Yagoub, 2016:1).

Furthermore, Yagoub (2016:2) posits that illegal mining has attracted a group of gangs known as "Bacrims" who specifically deals with drugs, and increasingly turns to gold mining sectors to form part of illegal miners. Yagoub (2016:1), further concurs that apart from drug dealers forming part of illegal mining endeavours, various groups exist in Antiqua mining sectors. For example, paramilitaries, criminal gangs and guerrilla groups all form part of illegal gold mining activities, and such groups control all gold mining sectors. Yagoub (2016:2) continue to state that Urabenos and Paisas groups were developed by crime syndicates to create more destruction in mining sectors. The main function of the above-mentioned groups is to supervise any activity that arises in the mining sector. The Urabenos and Paisas maintain a low profile by pretending to act as security guards, thus situations become difficult for police officials to identify (Yagoub, 2016:2). Moreover, the concern raised by Yagoub (2016:2) is that an illegal armed group assists illegal miners by facilitating entry levels in mines to ensure that no inconvenience may arise during the operations. Antiqua mines has 1, 224 mining sectors focusing on producing gold, however, the production has dropped owing to illegal activities

conducted by various groups exist in mining sectors. Masse and Munevar (2016:35) further report that illegal miners have accumulated local trading shops to supply them with gold. In the same way, illegal miners have offices located near mining activities, such offices operate in EL Barge and Segovia, and illegal miners have an alliance that assist with protection (Masse and Munevar, 2016:35).

Another major concern is that illegal mining activities provide 200,000 jobs to the Colombian population, groups such as Bactrim and Guerrilla promote illegal activities in Colombia's mines (Masse and Munevar, 2016:37). Furthermore, Masse and Munevar mentioned further denotes that the above-mentioned groups control whoever working in mining sectors rather than extracting minerals for themselves. Likewise, the minerals extracted in Colombia's mines are consequently stored in adjacent properties waiting to be processed. Masse and Munevar (2016:37) illustrate that the groups hire bulldozers to the costs of R1000 – R1, 500 per month to enter targeted mines. Owing to this status illegal miners produce 1, 5 million particles of mineral resources annually (Masse & Munevar, 2016:37). Another challenge that exists in Colombia is that armed illegal miners recruit children to form part of illegal mining activities, thus forcing children to work under the supervision of criminal gangs (Masse & Munevar, 2016:35). Of major worry is that children are often removed from the home to work in mining sectors, others become prostitutes in various brothels. The research conducted by Goni (2014) further highlights that majority of brothels are controlled by criminal gangs associated with illegal mining occurrences. To this effect, children are often expected to do various kinds of occupations when instruction is given. Such actions have consequently solicited police officials and local authorities to intervene (Masse & Munevar, 2016:35).

Choco is one of the mining sectors situated in Colombia that experience the challenges of illegal mining. The research conducted by Masse and McDermott (2017:9) maintains that local communities engage in illegal mining to survive. Moreover, 50,000 ethnic groups form part of illegal mining in Choco, using dredges, bulldozers and backhoes. Foreign citizens known as Brazilians capitalized on illegal mining activities. The Brazilian groups operate in illegal mining activities with an agreement with armed groups to share profit made from selling precious metals (Masse and McDermott, 2017:9). Additionally, illegal armed actors and communities engage in illegal activities where previous agriculture is considered as the main source of living (Masse and McDermott, 2017:10). Masse and McDermott postulate that Illegal miners participate more vigorously in the extraction and trafficking of minerals. Sanchez (2017:1) denotes that the community of Colombia is traumatized by the violence occurring in mining sectors owing to illegal mining activities. In sectors such as Segovia, illegal miners were forced to accept a small amount of money, which creates war amongst illegal miners.

4.4.1 Strategies used to combat illegal mining in Colombia

Various approaches were implemented in Colombia as part of reducing illegal mining activities in different mining sectors affected by unlawful occurrences. Masse and Munevar (2016:16) declare that the Ministry of Defence launched a joint operation to close illegal mining operations that exist in villages of Colombia. The government of Colombia further established a unit against criminal mining (UNIMIC) as another strategy to assist mining sectors affected by illegal mining activities. The main aim of UNIMIC is to combat the theft of precious metals and illegal sales of gold (Cawley, 2014:1). Furthermore, in 2014, 52 machines operating during the process of illegal activities were confiscated including crushers, diesel engines, granulators, pulley systems and tailing ponds which were demolished by units against criminal mining to reduce illegal mining activities in affected mines.

To this end, 3,000 abandoned mines exist in Colombia that was closed which further led to 5,000 miners being arrested. Moreover, Cawley (2014:1) concurs that 400 police and soldiers were sent to areas such as Remedios, Segovia, Vegachi and Yali to halt illegal mining activities. To this effect, authorities such as mining managers, civilians and law enforcers declare that the model applied to reduce illegal mining is significant to all mining sectors dealing with gold (Cawley, 2014:1). The National Police of Colombia also implemented another strategy to better deal with illegal miners. Law ranking police rotate regularly in mining sectors to prevent security personnel from taking bribes to illegal miners, therefore such methods will minimize illegal mining activities (Cawley, 2014:1).

The research conducted by Pelcastre (2017:1) denotes that the Colombian army in collaboration with the Colombian Navy, Air force and National police were deployed to monitor the negative effect of illegal miners in mining sectors. One major challenge highlighted by stakeholders involved while dealing with illegal miners was that illegal miners carry firearms, and thus situation turns out to be difficult for investors involved to curb illegal miners. Moreover, Pelcastre (2017:1) further declares that the guerrilla groups carry numerous weapons to fight police officials in mining sectors. Likewise, the research conducted by Sivalingam (2015:2) contends that the government of Colombia implemented a global positioning system (GPS) to areas affected by an illegal mining system. The GPS assist to detect specific locations that illegal miners hide; thus, this system supports stakeholders to know other sites where illegal activities take place. In addition, the government provided a minority of Colombian citizen's residing near mines with smartphones to assist stakeholders involved in reducing unlawful activities in gold mining sectors (Sivalingam, 2015:5). The

citizens in this endeavour take pictures of the mining sites affected by illegal occurrences. The research discovered by Sivalingam (2015:5) postulates that pictures consequently assist the government to search all mining sectors and shut them down.

4.4.2 Legislations and regulatory framework of illegal mining in Colombia

The study conducted by Cremes, Kolen and De Theije (2013:53) maintains that illegal mining in Colombia refers to an illegal mining activity that does not have an act that supports it. Moreover, Cremes, Kolen and De Theije (2013:53) further concur that illegal mining cannot be legalized because it is considered an unlawful business affecting Colombia's economy. Different stakeholders in Colombia do not want to formalize illegal miners in mining sectors due to the amount of money lost owing to illegal activities. The research conducted by Echavarria (2014:1) highlight that in 2012, the government of Colombia formulated a law that prohibits illegal mining activities. Decree 2235 is used as a law that supports police officials and other stakeholders involved in confiscating all equipment used during illegal operations in mining sectors affected (Echavarria, 2014:1). Of major concern is that Colombian mining sectors received 314 applications to formalizing illegal mining, however, such applications were rejected. Additionally, 9 500 applications were sent to the government of Colombia with the belief that the government will approve them (Echavarria, 2014:1). The National Mining Agency (NMA) on the other hand state that it is not possible to formalize illegal mining in Colombia due to a high number of illegal miners involved in illegal activities. It is worth noting that illegal miners in Colombia become victims due to the informality of the industry (Echavarria, 2014:39).

Echavarria (201:80), declares that there are fundamental barriers associated with the formalization of illegal mining activities in Colombia. One of the major challenges is that weak governance is considered another barrier, for example, political will and a limited understanding of regulations all deliberated as fundamentals that do not want to formalize illegal mining activities. Additionally, the majority of well-established mined closed down as part of halting illegal mining activities in mining sectors. Echavarria (2014:84) posits that there is no legal mechanism put in place to ensure that the Colombian government will legalize illegal mining in this country. Another bottleneck in the formalization of illegal mining is the lack of inadequate funding to ensure that all procedures are taken care of. Echavarria (2014:84) mentioned scholars hypothesize that for any sector to legalize such unlawful activity, the plan requires an amount of USD25 million, therefore the government recognized the sector does not have such amount of money owing to precious metals lost as a result of illegal mining activities. The Colombian government do not support such initiative owing to a huge amount

of money lost owing to illegal mining activities (Echavarria, 2014:84). It is worth noting that Colombia lost an enormous amount of money owing to illegal mining activities to such an extent that other mining sectors shut down due to illegal mining activities.

4.5 PAPUA NEW GUINEA

Guinea a country located in the north of Australia encounter challenges of illegal mining activities. The research by Gold Barrick Corporation (GBC) (2013:1) postulates that Guinea is classified as a country with low standards of living. Illegal mining activities started in 1988 when gold was discovered in Sudest Island in the east of Papua New Guinea. Furthermore, in other parts of the country such as Wau-Bulolo goldfield mining sectors are populated by unemployed citizens who form part of illegal mining activities (Jaiva & Siop, 2010:4). The Guinea situation as described by Jaiva and Siop (2010:4) who postulate that illegal miners have a poor safety record as some of the illegal miners dies during operations. Additionally, the lack of knowledge, education and skills constantly lead to major injuries in the Wau-Bulolo goldfield mining sector (Jaiva & Siop, 2010:4). The last two mentioned colleagues further denote that majority of illegal miners reside in poor housing conditions close to the mining sectors to avoid long travelling. Likewise, mining sectors in Papua New Guinea are in dangerous zones such as near bridges and power towers.

The Porgera gold mining sector is regarded as the cornerstone of Guinea due to the precious resources produced by this sector (Gold Barrick Corporation, 2013:1). Porgera, one of the biggest mines in Guinea, has experienced challenges of illegal mining occurrences. Gold Barrick Corporation (2013:1) elaborates that the Porgera mining sector provides job opportunities to local and permanent citizens of Guinea, however, the impact of illegal mining affects the Gross Domestic Product (GDP) of this country owing to illegal mining activities. The Porgera mining sector started to operate in 1990, after which the population of Guinea increased owing to many resources manufactured by the Porgera mining sector. Informal settlements began to increase in villages such as Apalaka, Olonga and Timpore, and such settlements are used by illegal miners as homes during illegal operation activities (Gold Barrick Corporation, 2013:1). The concern raised by Gold Barrick Corporation (2013:1) indicates that illegal miners further open sealed pits to search for pieces of gold, and such activity raised concerns with police officials who often deal with cases of children killed by unattended open pits.

On the other hand, the Human Rights Watch (2010:9) highlights that woman also form part of illegal mining activities despite violence often occurring in Porgera mines. For example,

women are often raped by security personnel in this sector while extracting pieces of gold, such cases further postulate that women face lots of difficulties in mining sectors. Likewise, women are given an ultimatum by security personnel of the Porgera mining sector that if they do not want to go to *"jail"* then they should allow security personnel to rape them (Human Rights Watch, 2010:9). Human Rights Watch (2013:10) reported that a 15-year-old boy was beaten and assaulted by security personnel in the Porgera mining sector. The majority of children aged ten to eighteen contribute to illegal mining activities. As stated by Human Rights Watch (2013:10), children participate after school and at weekends, thus the situation contributes to high dropout rates. Likewise, boys from the age of 14 to 16 years are involved in the diamond sector, and boy's further approach mine owners for job employment. These boys carry heavy buckets although they do not receive an equal share of the money because of their age (Human Rights Watch, 2013:10). Additionally, boys encounter challenges of malaria and snakebites, such conditions force them to stay at home without being paid. The situation in Guinea will further lead to permanent diseases as boys are exposed to difficult working conditions that could lead to permanent disability.

4.5.1 Strategies to combat illegal mining in Papua New Guinea

Alluvial gold mining or illegal mining activities were approved in 1987 in Papua New Guinea. To support this statement, donor funds from AusAid and Asian Development Bank (ADB) provide illegal miners with funds to pay for educational training (Susapu & Crispin, 2001:8). Moreover, the objective of the government of Papua New Guinea is to support illegal miners through funds that may assist to build offices. Furthermore, illegal miners receive support from the Department of Mining (DOM) by coordinating and facilitating all the meetings when necessary (Susapu & Crispin, 2001:8). The two last-named scholars further posit that another agency is known as Metals Refining Operations (MRO) provide technical assistance to illegal miners by holding workshops once a month to educate them regarding technology that exists in other mining sectors. Illegal miners produce gold of approximately 50-60,000 throughout the country, therefore, illegal miners earn an average monthly income of K250-K500 (Susapu & Crispin, 2001:8).

Moreover, illegal mining in Papua New Guinea is considered the most important activity that not only assists the economy of this country but also helps citizens residing in rural areas. The research conducted by Susapu and Crispin (2001:8) declares that this money assists poor citizens residing in rural areas. The government of Papua New Guinea further promotes a safe and healthy environment in mining sectors, and this may limit accidents that may occur and avoid harm particularly while working underground (Susapu & Crispin, 2001:8). The last-

named mention scholars further denote that illegal miner should constantly protect themselves by wearing protective personal equipment (PPE) such as dust masks, eye protector glasses, gloves and helmets. Likewise, stakeholders interested in investing in mining sectors can protect the sustainability of illegal miners.

4.5.2 Legislations and regulatory framework of illegal mining in Papua New Guinea

The government of Papua New Guinea developed legislation governing mining sectors. The Mining Act of 1992, Mining Safety Act and Regulations 2007 state that all illegal miners are granted licenses (Mek, 2011:2). One of the rules instigated by the above-mentioned Act is that all illegal miners should perform illegal mining in areas granted to them (Mek, 2011:2). The Mining Act of 1992 further confirms that all illegal miners be registered with a license that they will consequently use when purchasing precious metals (Susapu & Collins, 2001:9). One of the good initiatives is that licenses are used to enter specific mines granted to them (Susapu & Crispin, 2001:9). Moreover, licenses do not only allow illegal miners to enter mines, but also permit illegal miners to sell and transport gold to other countries. Additionally, illegal miners are constantly expected to submit monthly production reports to the Department of Mining, this initiative further assists to have clear records of how much is extracted by illegal miners (Susapu & Collins, 2001:9). Likewise, illegal mining plays a pivotal role in Papua New Guinea since the money generated by illegal miners contribute to improving the economy of this country.

The Department of Mine (DOM) established a centre focusing on training illegal miners and provide technical services applicable to them. The study was conducted by Mek (2011:3) maintains that the Mining Act of 1992 further recommends to the suitable agencies to buy precious metals mined by illegal miners. International agencies support illegal miners and donate an amount of 6.8 million euros, this money was used to build a training centre for illegal miners and to fund other projects that may develop illegal miners in various ways (Mek, 2011:4). Moreover, the money was also used to produce brochures and videotapes aiming to educate illegal miners of the dangers involved in illegal mining. Additionally, another agency, the Japanese Social Development Fund (JSDF), also funded an amount of $ US 468300 to educate illegal miners on how to use the equipment effectively (Mek, 2011:4). Moreover, the Metal Refinery Operation (MRO) is considered as an additional agency that assists illegal miners by supplying necessary equipment to illegal miners to increase production (Mek, 2011:4). Susapu and Collins (2001:25) mention that the eight-point plan is another legislation

formulated in Guinea to support illegal mining activities. The main aim of the eight-point plan is to encourage illegal miners based in rural areas to partake in illegal mining and recognizes the money generated owing to illegal mining activities. Different legislation provided in Papua New Guinea will play a pivotal role to grow illegal miners partaking in illegal mining activities.

4.6 LATIN AMERICA

Latin America is one of the international areas that has experienced major crises as a result of illegal mining. The country is considered as the major gold producer and exporter of gold however, illegal mining poses major problems. The United Nations Environment Program (UNEP) (2012:4) states that natural resources were neglected in Latin America due to war, thus illegal miners were mainly dedicated to copper although gold is seen as the main function for illegal miners to date (UNEP, 2012:4). Furthermore, UNEP (2012:4) postulate that the amount generated through illegal mining occurrences is 3 billion rands annually. To support this statement, in 2013, 28 per cent of gold was mined illegally in Latin America. Of concern is the fact that illegal miners damaged the environment and water was constantly polluted with mercury used during the process of illegal activities. Likewise, most of illegal miners dominate in Latin America. In 2013, Latin America discovered that there are 21 illegal mining sectors activated and such mining sectors were discovered in places such as La Defensoria and Pueblo (Wang, 2016:2). Furthermore, Wang (2016:3) denotes that illegal mining brought with it other prohibited illegal activities such as violence, child labour, land grabbing and human trafficking. Of concern, children from Defensoria and Pueblo were trafficked to work as illegal miners. The research conducted by Wang (2016:2) contends that children are forced to access narrow holes in search of pieces of precious metals. Children in this regard use ropes to enter the 90-meter-deep mining sector each day to perform illegal activities, of significance, artificial ventilation is provided for children to acquire fresh air.

Wang (2016:3) confirms that illegal undertakings are found in the province of Madre de Dios. This province is also known as “Mother of God” and Puno. In Madre de Dios, it is estimated that 90 per cent of gold is mined illegally and that 90 per cent of community members depend on illegal mining occurrences for survival. Moreover, 20 per cent of women in Latin America are involved in illegal mining activities. Women in this repute are responsible for performing primary activities such as breaking large stones using hammers, grinding ore, and washing precious metals using mercury (Wang, 2016:3). Additionally, women have organized themselves to work in groups and in diverse shifts to avoid unpaid days (UNEP, 2012:4). To elaborate more, women were provided security personnel to supervise and to ensure that gold was constantly protected from all various levels of crimes. UNEP (2012:4) states that although

majority of women are involved in illegal activities, women face unbearable working conditions, for example, women are expected to work 20 meters deep to extract pieces of gold. The research conducted by Wang (2016:6) further illustrates that women see gold as the only product that allows them to generate money and to support family members; therefore, the situation permits them to continue digging precious metals despite the dangers that may arise during illegal operations. The research conducted by Wang (2016:7) declares that widows also partake in illegal activities working as 'Palliris', meaning women who pick up minerals from mining sectors. Wang (2016:8) elaborates that one of the roles of Palliris as explained above includes grinding big pieces of gold into smaller pieces.

Likewise, the precious metals extracted are loaded in small bags to avoid women carrying a heavier load. Sieber and Bain (2016:1) concede that women are affected by heat, dust from drilling stones and cramped conditions which are perceived as a major concern that makes work more difficult. Additionally, women do not have protective clothes such as earplugs, masks and gloves to use while performing such activity, thus different kinds of diseases emerge. Sieber and Brain (2016:1) illustrate that illegal miners focus more on extracting precious metals and gold; therefore, such activity leads to them not caring how illegal activities damages the environment. In addition, some illegal miners use machines that destroy forests and pollute rivers that transport water to communities. Families and community citizens of Latin America are exposed to unclean water (Sieber & Brain, 2016:3). Sieber and Brain agree that mercury levels in water are high, and that mercury damages the nervous system, lungs and kidneys in the human body.

4.6.1 Strategies to combat illegal mining in Latin America

In 1990, Latin America began to find better approaches and strategies to reduce illegal mining activities from all affected mining sectors. To deal with issues emanating from illegal mining endeavours, Latin America developed a strategy that will assist the majority of gold mining sectors facing challenges of illegal mining activities (Gonzalez, 2016:1). Responding to numerous challenges owing to illegal mining undertakings, the strategy developed assisted to confiscate heavy machines used by illegal miners as part of eliminating illegal miner's productivity (Gonzalez, 2016:1). It is, therefore, according to Gonzalez (2016:1) that military soldiers are positioned at all mining sectors to regulate and minimize illegal miners.

For that reason, the military base will consequently conduct regular operations against illegal manoeuvres in mining sectors. Moreover, in 2016, more than 86 mining camps that temporarily served as homes to illegal miners near mining sectors were confiscated as part of

reducing illegal activities (Gonzalez, 2016:1). A private partnership such as Andean police officials instigated numerous mining sectors affected by illegal mining businesses in Latin America. The research conducted by Gonzalez (2016:1) further asserts that Andean police officials confiscated all equipment used by illegal miners as part of the operation. Such conduct created major conflict and violence against illegal miners (Gonzalez, 2016:1). Additionally, the conflict and violence further affected citizens of Latin America who does not form part illegal mining activities. In June 2014, a national unit of intervention against criminal gangs was implemented to eradicate illegal miners.

4.6.2 Legislations and regulatory framework of illegal mining in Latin America

Latin America is one of the countries that struggle to decriminalize illegal mining owing to severe damages of illegal activities. The research conducted by Gonzalez (2016:14) highlights that to this date, there's an argument between Latin American authorities regarding illegal mining activities. To this effect, 40 unlawful operating mining sectors shuttered down, and 16 kingpins were arrested. According to Gonzalez (2016:14), no legislation or framework was established to decriminalize illegal mining owing to illegal businesses that were conducted in mining sectors.

4.7 PHILIPPINES

The Philippines is one of the countries located in the continent of Asia. Mining in the Philippines plays a major pivotal role to contribute to the economy of the country. The research conducted by Leung and Lu (2016:1) alludes that illegal mining has been practised for more than ten centuries in the Philippines. One of the major concerns pointed out by Leung and Lu (2016:2) is that there are different groups involved in illegal mining activities such as Ibaloy and Kankanaey found in Benguet Province of Philippines. Furthermore, among these ethnic groups, illegal mining activities are learned from an early age, thus allowing them to pass it from generation to generation (Leung & Lu, 2016:2). Leung and Lu (2016:2) further highlight that majority of illegal miners reside in Barangay and Gumatdang in the province of Itogon in the Philippines, being places located near to mining sector. Illegal miners use their resources to perform illegal mining activities, therefore the situation allows them not to lease any specialized equipment to achieve more incentives and to save money. To elaborate further, most of workers involved in illegal mining activities are married couples with an average age of 36 years upwards. This suggests that couples become involved from an early age to learn how illegal mining is conducted in mining sectors of the Philippines.

Illegal miners in the Philippines are known as “abanteros”, the name means people who are not educated and who have fewer skills (Verbrugge & Besmanos, 2016:136). Illegal miners are facilitated by the team leader who constantly conveys orders and rules and what’s expected of them during operation. The research conducted by Verbrugge and Besmanos (2016:136) asserts that the other role of the leader in this esteem is to foresee that the activity produces the required amount of gold expected from the illegal miners. The last-named mentioned scholars further maintain that an amount of 46 per cent is paid to a minority of illegal miners who are skilled to educate to show how the process underground should unfold. Verbrugge and Besmanos (2016:136) comment that groups also pay security personnel hired by the team leader to protect all illegal miners involved in mining sectors. It is, therefore, according to Verbrugge and Besmanos (2016:136), that the activity attracts people from neighbouring countries, and that the population often increased in the Philippines owing to illegal business exists in mining sectors.

Before illegal miners were found in mining sectors, the Philippines used to be considered the most highly recognized country to produce minerals. The Policy Brief (2013:2) maintains that in a week, more than 104, 000 illegal miners were transported to work illegally in mining sectors. The situation as described by Verbrugge and Besmanos (2016:136) contends that the Philippines experience major challenges, for example, illegally employed workers do not protect themselves when working underground. For example, no protective personal equipment (PPE) is used by illegal workers, as a result, workers are constantly exposed to toxic chemicals that burn their skin. Furthermore, Verbrugge and Besmanos (2016:136) contend that another challenge facing illegal miners is that during operations underground, no proper air circulates. This situation results in illegal miners losing their life, consequently, the situation in mining sectors is considered risky owing to numerous challenges.

The situation differs in various mining sectors situated in the Philippines, for example, in the T’boli mining sector, various titles exist. Verbrugge and Besmanos (2016:137) are of the view that in T’boli mining sectors various designations exist such as mineral mobility workers and spatial mobility. The illegal miners in this mining sector earn according to the work they perform and according to their designation. Likewise, illegal miners are expected to mine 165 bags containing precious metals. Of concern to the professionals in this sector is that others no longer receive the expected salary owing to the minimum number of bags required for payment (Verbrugge & Besmanos, 2016:137). Verbrugge and Besmanos mentioned scholars further illustrate that illegal miners fail to deliver the expected extracted minerals; this further results in illegal miners working day and night. Additionally, some of the mining sectors are situated

in mountains, attracting illegal immigrants to partaking in illegal mining activities (Verbrugge & Besmanos, 2016:138). It is worth mentioning that owing to weak legislation in the Philippines, illegal activity has spread to other sectors that do not deal with precious metals and gold. The researcher points out that poverty in this country and limited opportunities led to more unlawful businesses being established to alleviate poverty in the Philippines.

4.7.1 Strategies to combat illegal mining in the Philippines

The government of the Philippines recognized the significance of illegal mining activities. The government played a pivotal role by ensuring that different programs were formulated to promote a better working environment in the mining sector. Research conducted by Verbrugge and Besmanos (2016:139) demonstrates that programs such as the Provincial Environmental Management Office (PEMO) are implemented in all mining sectors of the Philippines. The main purpose of the PEMO is to guarantee that all illegal miners registered to obtain licenses that will permit them to work in mining sectors. The situation as described by Verbrugge and Besmanos (2016:139) denotes that the PEMO does not allow children younger than eighteen years in the mining sector, however, in some mining sectors, children still partake in illegal mining activities to assist their parents. Moreover, the PEMO further limit risks and technical problems that may arise during operation recognizes the rights of illegal miners, and the safety of workers and provide security constantly (Verbrugge & Besmanos, 2016:139). The last-named mentioned scholars further denote that illegal miner expected to pay US$ 220,000 to renew permits granted to them, and it is concerning that this money needs to be raised to afford such renewal. Another important role instigated by the PEMO is to provide training to all illegal miners, this initiative further supports illegal miners with education (Verbrugge & Besmanos, 2016:139). An additional program, being the Technical Education and Skills Development Agency (TESDA), was implemented to transfer skills to illegal miners, thus, to avoid unnecessary incidents during operation.

During 1993, more than 250 000 illegal miners were employed in over 80 areas in the Philippines to work in mining sectors. The study conducted by Verbrugge and Besmanos (2016:139) shows that illegal mining activity is one of the initiatives that support the economy and improve the Gross Domestic Product of this country. Likewise, more than 25 per cent of precious metals are produced by illegal miners, thus the initiative is considered as the solution to improving the economy. Verbrugge and Besmanos (2016:139) postulate that besides the extraction of gold in mining sectors of the Philippines, metallurgical chromite is considered as another valuable precious metal that assisted the economy of the Philippines. In this esteem, more than 221 000 tons are constantly produced by illegal miners to contribute where

applicable. The Mining Act of 1995 of the Philippines further mandated that a certain portion of land be granted to illegal miners owing to great production produced by illegal miners (Verbrugge & Besmanos, 2016:139)

4.7.2 Legislation and regulatory framework of illegal mining in the Philippines

Different Acts in the Philippines were developed to permit illegal miners to work in mining sectors. Verbrugge and Besmanos (2016:139) postulate that the 1899 Decree was developed to protect illegal miners. Moreover, the Ming Act of 1995 remains an act that regularizes all mining sectors situated in the Philippines. By virtue of a research study, more than 1000 illegal miners work legally in mining sectors situated in the Philippines. Furthermore, the Republic Act no 7076 stipulate that all miners should cooperate according to specific rules applied to them. One of the important rules is to ensure that all miners are registered to avoid mining conflicts (Verbrugge & Besmanos, 2016:139). Likewise, Senate Bill No. 43 is another act that governs all mining sectors affected by illegal mining activities, thus further addressing challenges facing all mining sectors in the Philippines. The main aim of the Act is to "*provide a framework for the utilization and management of the country".* The Act further states that all stakeholders involved in mining sectors including workers, farmers, and indigenous people should all abide by the rules (Verbrugge & Besmanos, 2016:139). A Presidential Decree in this regard was consequently formulated to certify that the selling of precious metals followed the acquired proper channels to improve the best success in all mining sectors located in the Philippines.

In 1997, the Philippines introduced small-scale regulation and mine safety roles. The main purpose of the regulations is to implement safety and health conditions in mining sectors (Verbrugge & Besmanos, 2016:139). Furthermore, the regulation further sorts conflict in mining sectors and bring a solution. Additionally, the mechanism implemented in the Philippines further postulate that illegal miners should always gain access to prospective areas to mine gold, but of major concern is that illegal miners are expected to pay a small amount of money as rent for the area granted to illegal miners (Verbrugge & Besmanos, 2016:139).

It can be deduced from the above discussion on both African and non-African countries across the world that poverty and unemployment are the main contributing factors for community members to engage in informal mining activities. Regardless of the negative impact, the illegal mining activities have on the economy, most of the African countries (including Burkina Faso,

Ghana, Namibia, Tanzania and Zimbabwe) recognizes informal mining (e.g., small-scale/artisanal/illegal mining) to alleviate poverty in the communities. This is opposed to many international countries such as Bolivia which appear not to give recognition to illegal mining to maintain the operations of the formal mining sectors and to gain tax revenues in return. What comes forth in terms of authorizing or not authorizing illegal mining activities, is that it is the prerogative of each country. Some countries appear to prioritize the immediate needs of the local community members, while other countries prioritize tax revenues that could be gained from the formal mines.

4.8 SUMMARY

This chapter presented various approaches used in international countries to curb illegal mining activities. It was clear in the above discussions that in countries where the community is involved in informal mining activities, there is a more organized crime syndicate involved. Communities surrounded by illegal miners live in fear and are vulnerable to fights and murders taking place in the mining areas. Again, the role of the police in countries where informal mining activities by communities are allowed is to ensure that the mining activities run smoothly, whereas in countries where informal participation in mining sectors by the communities is not legalized the police force is used as the agents to arrest and prevent the informal mining activities from taking place. Unused mines are constantly patrolled, and various attempts are made to seal the entrances as well as to destroy the equipment's used by illegal miners. Chapter 4 will be followed by chapter 5 which discusses presentation of research findings of the report.

CHAPTER 5: PRESENTATION OF THE RESEARCH FINDINGS

5.1 INTRODUCTION

This chapter presents research findings of the data collected from the South African Police Service (SAPS) and illegal miners from different squatter camps in Gauteng who formed part of this research study. This chapter further establishes whether all research questions for this study were sufficiently answered. The researcher conducted one-on-one interviews with police officials from various positions and focus group discussions (FGD's) with illegal miners to answer all research questions for the study envisaged. As such these research participants are the primary resources for this study. This research study aimed to explore how the South African Police Service (SAPS) deal with illegal mining in Gauteng.

5.2 FINDINGS

The findings of the research study are grounded on primary data collected by the researcher to answer research questions for the envisaged study. To ensure anonymity and confidentiality of research participants, the researcher used pseudonyms to identify research participants thus illegal miners were labelled as "illegal miners" hence names were not revealed, police participants 1 (PP1) and stations visited labelled as station A, B, C, D, and E. Squatter camps were labelled as site A and B to conceal the identity of research participants.

5.3 THE DEFINITION OF ILLEGAL MINING

The police at Station A were asked to give their understanding of the term illegal mining. The researcher wanted to be sure that her research participants have a common understanding of this concept. As such the understanding reached was that illegal mining is an activity conducted by illegal miners without mining permission to excavate mining minerals and other bearing ore minerals. All five police participants continue to declare that, for each mining company, the Department of Mineral Resources (DMR) issue a mining certificate which is a license that permits mining sectors to perform mining activities legally. Illegal mining activities are considered unlawfully in South Africa because it does not take place within the context of existing laws of South Africa. All the police participants at Station A added that illegal miners perform illegal mining without mining licenses in mining sectors that deal with precious gold and other bearing ore minerals. Moreover, illegal miners work independently, thus they are

constantly organised by crime syndicates to work underground and surface to excavate minerals including gold.

5.4 ROLES ADOPTED BY ILLEGAL MINERS DURING THE EXTRACTION OF MINERALS

The findings of this study discovered that Illegal miners in South Africa have different roles, and such roles can be classified into three groups, namely: the underground illegal miners, surface illegal miners and the hitmen.

5.4.1 Underground illegal miners

Underground illegal miners specialize in extracting pieces of precious metals. Underground illegal miners work like formal miners in the sense that, they work in shifts, they have time off, and lunch breaks, however, they are not sanctioned like a formal mining sector, meaning they do not pay tax revenues. Likewise, majority of illegal miners are former mineworkers who were retrenched due to corruption and theft of precious metals. Underground illegal miners work with corrupt security guards who possess a red dot certificate; therefore, the involvement of security guards makes illegal activity for underground workers possible. Red dot security is a well-trained security guard that enters any mining sector without fear because they have the skills to perform such activity should any emergencies arise underground. The study further revealed that majority of underground illegal miners are undocumented immigrants who have been working in the mining sector for many decades. Illegal mining activities are characterized by the following conditions:

- It is labour intensive;
- Operates without mining rights;
- Commenced with undeveloped tools and
- It involves minimal safe conditions for its labourers.

The study further discovered that illegal miners stay underground for a period of ten to eleven months which is facilitated by lack of employment, retrenchments and greediness. PP6 Station B postulate that illegal miners are greedy people because the more precious stones they excavate, the more money they want to make which makes it impossible for them to quit illegal mining activities. PP7, Station D mentioned that illegal miners drink alcohol and smoke dagga before entering a mine. This is because some of the holes are considered scary when sober, therefore substance abuse and alcohol give them strength not to fear anything when entering

the mine. Illegal miners proceed to a depth of 500 meters underground without protective gears, after four hours of walking underground, they sleep, thus the search for precious metals continues the next day.

PP12 Station D mentioned that it is a daily struggle for illegal miners because they encounter different challenges underground. Underground illegal miners face challenges such as rock falls, underground fires, methane poisoning and gang wars. All 12 police participants at Station D mentioned that illegal miners from Zimbabwe are educated, however, it is challenging for them to find employment in South Africa because they are undocumented illegal immigrants to this country and such reason prohibits them to find employment in South Africa. Therefore, they resort to illegal mining activities to support themselves and their families back home. The money made by illegal miners seems to be enough to maintain their families and therefore mines such as George Harrison located in Langlaagte are called First National Bank (FNB) by illegal miners because the mine contains lots of precious metals which can be exchanged for money. The Basotho nationals from Butha Buthe, Maseru, Leribe and Mafeteng also form part of underground miners, and they have security who protect them while working underground. The purpose of security guards for Basotho nationals is to ensure that other ethnic groups do not interfere in their territory, thus each person pays an amount of R50.00 to security guards for safety purposes. Security guards are groups of five to seven men guarding the place where illegal miners work, therefore, at the end of their shifts, illegal miners come out with maize meal bags containing raw precious stones of gold.

Illegal miners build their own structures where they enter the mines and crawl for an hour underground on their knees and hands in 60-degree Celsius temperature. To enter the mines, illegal miners use motor tires wrapped with ropes which serves as a step ladder, they have homemade torches, armed with illegal firearms and they stay for extended periods as their peers (surface illegal miners) supply them with food. When illegal miners come out from underground, their complexion is different because they were not exposed to sunlight for an extended period. This has a negative impact on their eyes especially when they return to the surface and get exposed to sunlight.

Moreover, underground illegal miners use mercury when blasting rocks underground. Concurrent with the above statement, illegal miners are well equipped with equipment such as hammers, chisel, spade, and gas bottles from Afrox company known as Phenduka as shown in **(Figure 1)** according to illegal miners' language. Underground Illegal miners use small generators to provide power to the drilling machine while in some unused mines, electricity is still available. Furthermore, police participants explained that the fumes from the

generator caused them to be dizzy while others faint because there is no proper ventilation of fresh air underground. During that period, illegal miners assist each other by pouring water on those who have fainted to keep them awake, if they pass out. This shows that they are constantly at risk of death because of poor air ventilation. Should any of them die because of poor ventilation, their peers would pull the body to the surface for the police to conduct investigations.

Figure 1: Phenduka (Afrox gas bottle)

Two illegal miners from Site A squatter camp revealed that it is possible to enter a mining shaft from Langlaagte and walk several days underground and emerge in the Southern shaft, but that this requires underground illegal miners who are brave enough to do so. Sometimes, an underground miner walks for a week in hot temperatures seeking solid rock that contains more precious stones. One major concern is that underground illegal miners use self-made explosives such as dynamite knowns as *"hoora"* according to illegal mining language to blast rocks underground. Such explosive contains various chemicals that are extremely dangerous to humans. Moreover, two illegal miners at Site B continued to state that, to test whether the rocks have precious stones or not, illegal miners chisel a small portion of solid rock to see if more precious stones of gold are visible. They then continue to drill the rocks to find more

precious stones. One of the major risks faced by underground illegal miners as previously stated in this paragraph is that there is no proper ventilation of fresh air, thus illegal miners use hosepipes to breathe. During the focus group discussion, one of the Illegal miners from Site A squatter camp uttered the below words to the researcher:

"We are not going to quit or leave what we are doing because gold belongs to God. They have tried to arrest us several times but that does not stop us. We are supporting our families with the money we are getting here hence we are also struggling to be employed in this country. Majority of us here struggle to find gold underground and we are also aware of the dangerous circumstances that we find ourselves in, so to tell you the truth, the majority of us here will never leave this job because we are going to starve with our family". [1]

During the interview process, two illegal miners from the Site A squatter camp highlighted that they wish that the government can intervene and grant them mining licenses to mine so that they can mine peacefully without being harassed and arrested by police. Illegal miners denote that being involved in illegal mining activities is the only way for them to survive, therefore the legalization of illegal mining is needed. Owing to that, one illegal miner at Site B squatter camp explained that being an illegal miner is better than being a criminal such as hijackers, gangsters or armed robbers. Moreover, illegal miners' postulate that even though illegal mining activities are associated with danger like shooting one another underground, there is nothing they can do as life must go on.

5.4.2 Surface illegal miners

PP4 Station C points out that surface illegal miners concentrate more on supplying underground illegal miners with food, water, cigarettes and illicit substances such as drugs and dagga when performing illegal activities underground. Apart from supplying underground workers with food, the role played by surface illegal miners also includes providing underground workers with mining equipment's and ensuring that gold is kept in a safe place. Surface illegal miners work according to shifts that starts from 6 am to 2 pm. PP4 Station C further mentioned that surface illegal miners position themselves as people who work for a certain organization, thus they don't consider themselves violating the laws of South Africa. During the interview process, PP5 Station C mentioned that:

[1] All quotes are presented verbatim in the interest of authenticity.

"Truly speaking, I am a policeman and for me, it becomes difficult not to take bribes sometimes because they give you enormous money that you cannot refuse, so at times all policemen are corrupt, it's just that they won't be brave just like me to tell you this, so we are fighting a losing battle because illegal miners know that they need to bribe us so that we don't arrest them".

Interestingly, PP5 Station C explained that surface illegal miners do not work on weekends as those who don't have girlfriends have to do household chores, while others attend church on Sundays. It was also noted in the study that the kingpins constantly recruit more youth who are desperate for jobs as illegal miners. The lives of youth are put at risk during rivalry shooting from police and other groups that exist in illegal mining activities. PP7 Station D emphasized that illegal miners are a group of people who takes care of one another, thus in situations where illegal miner fight with another group, they assist one another. Similarly, surface illegal miners who are in South Africa for lengthier periods provide accommodation to illegal miners who are new to the area. A second point mentioned by PP6 Station C is that surface illegal miners enter relationships with South African women to secure accommodation in reconstructions and development programme houses (RDP), in return for groceries and electricity for the household. However, if the surface miner cannot deliver responsibility granted to him, the relationship ends immediately.

5.4.3 Hitmen

Hitmen are dissimilar from underground and surface illegal miners. Hitmen do not work underground and do not work for kingpins as opposed to underground and surface illegal miners. PP8 Station C contends that the mission of hitmen is to kill the underground miners and take their bag that contains extracted minerals. The wars between different ethnic groups in mining sectors create high rates of assaults, fights, murders and attempted murders. Of major concern is that the fights and killings of illegal miners are uncontrollable and difficult for police to handle such crime.

Some of the police participants at Station C further declared that hitmen hide when they see police approaching the area where they murder illegal miners for gold and other minerals. Owing to that, during the shooting between hitmen and illegal miners, illegal miners run and hide underground since they are familiar with majority of the holes and entrances in mining sectors. Moreover, PP9 Station C hypothesized that hitmen were considered a threat not only to underground and surface illegal miners but to the surrounding community citizens. PP10 Station A explained that hitmen threatened the community physically by mugging them for their belongings such as cell phones, wallets and costume jewellery. PP11 Station D

mentioned that even though such crime is reported to various police stations, it is difficult to handle it. Again, PP12 Station E believed that hitmen undermine all illegal miners by taking their uncleaned soil to make money without working hard for it.

PP13 Station E added that when an illegal miner is arrested, they don't stay for too long in police custody, thus their bosses bail them out immediately. Moreover, PP13 Station E added that those who are not bailed out, go to court, and if the court finds that the proof is not concrete enough, illegal miners are released by the court on the same day. During illegal miners' trials, the court needs two documents from the SAPS within 48 hours. Firstly, a document from the owner of the unused mine, secondly, the document from a geologist stating that the soil has been tested and contains pieces of gold. If such documents are not revealed during court prosecution, illegal miners are immediately released due to insufficient evidence brought forward by the police. One of the most important concerns encountered by police is that it is difficult to find the property owner of the mine where illegal mining is conducted, and geologists who are experts in geology to test the soil. The other challenge is that the SAPS cannot prove with the naked eye that the bag contains gold because they don't have access to geologists within the SAPS.

5.5 PROFILE OF ILLEGAL MINERS

This study discovered that illegal miners operating in Gauteng include both men and women of different age groups and ethnic groups. The profile of the illegal miners is further discussed below:

5.5.1 Males

Men participate in illegal mining activities more than women do, and they often occupy risky tasks such as being underground for lengthier periods as opposed to women. Males participating in illegal mining activities are considered heartless and dangerous. PP15 Station B added that males encounter numerous challenges such as shootings which occur on daily basis with other opposition groups where majority of cases are not often reported for investigations. PP15 Station B further mentioned that at Grootvlei Mine located in Springs, males participating in illegal mining activities associate themselves with a group of gangsterism, and it becomes difficult for police to distinguish between illegal miners and gangsters. Moreover, police participants alluded that the main aim of illegal miners to associate themselves with gangsters is to complicate matters and confuse police officials to

not figure out which groups should be arrested. In addition, illegal miners have confidence that only men should participate in illegal mining activities as this industry was mainly for men before democracy, however, poverty drove both men and women to illegal mining activities.

PP16 Station C denotes illegal miners involved in different mining sectors believe in old myths that women should stay at home and raise kids, while others believe that when both partners are working, home finances become better. PP16 Station C continue to explain that underground activities are mainly for men as other men often get trapped in unsafe conditions which can be too dangerous for women, with desperate men becoming aggressive in illegal mining activities. PP17 Station D stated that hunting for gold is the daily activity of men who are currently unemployed, and the situation further leads to more groups of men getting involved in such activities. Likewise, in active mines, men are supported by corrupt formal employees who want to benefit from both sides, which has a huge impact on gold produced annually by active mines. Furthermore, former mineworkers assist men involved in illegal mining activities by providing them with access cards to assist them in entering the mine. During strikes, informal mining sectors, men involved in illegal mining activity seize such opportunities by stealing more gold to their benefit.

5.5.2 Females

“Women of stones” as they are commonly known, are women participating in illegal mining activities. The roles of women of stones include grinding and crushing the stones into fine silts and the burning of rocks to gold colour. Women grind rocks of gold according to different stages as shown in **(Figure 2 and Figure 3)**. PP18 Station E mentioned that the process of grinding stones involves hard labour and since there are no suitable machines provided to them, such activity is considered dangerous because bruises often form on their hands as a result of grinding rocks. Several of these women aged between 20-35 years are illegal immigrants who came to South Africa searching for greener pastures. Due to circumstances and not finding employment, they end up working as “women of stones”. The picture below depicts crushed rocks of gold:

Figure 2: Crushed rocks of gold **Figure 3: Processed rocks of gold**

Police participants Station A -E asserts that three groups of “women of stones” exist in illegal mining activities, namely:

- The rock crushers /grinders
- The rock burners
- The refinery of rocks of gold

i. The rock crushers/grinders

PP19 Station D denotes that when underground illegal miners exit mining shafts, the bags of soil containing pieces of gold are given to women for crushing and grinding. PP 19 Station D added that women are often exposed to high risks such as inhaling dust and the toxicity of chemicals used during the process of grinding. Women used concrete slabs, and mortar and pestles as shown in **(Figure 4)** when crushing and grinding rocks of gold, and a corduroy cloth shown in **(Figure 5)** is commonly used as a filter material to separate gold from mud. Furthermore, participants alluded that in Springs, women crush and grind rocks of gold in an informal settlement hidden by large trees to hide while working. One of the major concerns is that women crush and grind gold while carrying children on their backs as majority of them cannot afford to pay crèches and childcare centres.

The main purpose of crushing rocks of gold is to reduce large pieces of rocks into smaller parts, this process increases the chances of exposing more gold hidden inside the rocks. Furthermore, due to the high demand for gold that needs to be sold over the weekend by kingpins, these women are constantly expected to work overtime to increase sales for their bosses. Considering the above statement, it can be deduced that women do not use merchandised machines for crushing and grinding. Furthermore, a mortar and pestle are used by women who have more experience in crushing rocks, despite it being heavy to lift and to carry from one place to the other. Of interest, women of stones are paid according to the kilograms of gold crushed per week.

Figure 4: Mortar and pestle

Figure 5: Filter material

According to three police participants, women involved in illegal mining activities strive to earn more money to improve their family situation and to assist their spouses financially. All three police participants Station E explained that women encounter different challenges in mining sectors, for example, one of the major challenges is rape. Police participants explained that at times women partaking in illegal mining sectors are raped by other rival groups of illegal miners who constantly visit *"Durban deep mine"* with the perception that police do not visit the area regularly. Women do not report such crimes to police as they fear that they might be arrested for being in the country illegally.

Additionally, PP20 Station E explained that illegal mining activities involve high risks which further lead to health anxieties. Police participants indicated that women face challenges when going to public clinics to seek medication. Women further emphasized to police that challenges include language barrier, xenophobic attitude and inconsistency of treatment from one health care centre to another. Due to such circumstances, women of stones formed a support group, whereby they contribute money so that if one of their members become ill while working, money is available to buy medication because they are not treated fairly in public clinics. The idea to contribute funds to their support group was implemented five years ago due to the experiences that women encounter when attending public clinics. Police participants at Station E clarified that when patrolling, police find containers of pills with prices, which further confirms

that women involved in illegal mining buy medication from pharmacies and do not visit South African public health care centres.

ii The rock cleaners

This is the second group of women that are involved in illegal mining activities; their duties differ from the first group of women that are responsible for crushing gold. Illegal miners follow a detailed technique of cleaning precious metals. One police participant at Station C denotes that, illegal miners formulated a plan that does not cost them huge amounts of money when cleaning gold. Police participants explained that Phenduka (Afrox gas bottles), as shown previously in **(Figure 1),** are one of the techniques used by illegal miners to clean gold. The Phenduka is filled with crushed rocks of gold, steel balls as shown in **(Figure 6)**, mercury, water, vinegar, and washing powder which spun around for an hour to identify particles of gold. Moreover, illegal miners use gas bottles from Afrox companies which are known as Phenduka's in their language, where they empty all the gas inside the bottle and use it to clean gold. Moreover, the police participants added that the Phenduka rotates for more than an hour, and when the rotation is over, illegal miners pour out the crushed gold into plastic basin dishes as shown in **(Figure 7)**. Following that, illegal miners use clean water to wash the gold and to separate it from mud, thus the gold gets trapped in filter material shown in **(Figure 5).**

Figure 6: Steel ball

PP21 Station C mentioned that illegal miners use corduroy material as a filter when cleaning gold. The main reason for using corduroy material is that it lasts longer compared to other material, thus gold is visible after all processes of washing gold with different chemicals is completed. These processes take place in riverbanks where there is enough water, and plastic basin dishes are used in the process of cleaning gold. Police participants report that after all cleaning processes are conducted, women sort particles of gold according to different sizes and shapes. Women then proceed to pack gold in different packages which reduces the time required to sort gold before it can be sold.

Figure 7: Plastic basins

Police participants added that the cleaning process requires patient women to ensure that each particle of gold is visible and get trapped into the filter material. Above all, PP21 added that the cleaning process is conducted during the day, thus kingpins are constantly available to ensure that women do not steal gold after the cleaning process is completed. Again, during the cleaning process, mercury is also used which provides a quick technique to capture gold. The amount of mercury used depends on the particles of gold available for the cleaning procedure. Besides plastic basin dishes as shown in **(Figure 7)**, women further use a slice table built in a zigzag shape which allows a constant flow of water; therefore, gold can be spotted easily. The tray table was repeatedly shaken by women to separate gold from other

particles, this process requires women who have more experience and skills to conduct such a process. Police added that the process of cleaning is often repeated several times which require more mercury until a high grade of concentrated gold is found.

iii. The rock refinery process

The third group of women is responsible to refine gold and ensure that all chemicals are available to conduct such a process. Police participants Station E claims that illegal miners use their bare hands to rub off mercury which is one of the dangerous chemicals used when refining gold. The purpose of using mercury is to absorb fine gold. Most of the participants at Police Station A - E highlighted that illegal miner's do not use any protective clothing such as hand gloves and masks when rubbing gold with mercury. Consequently, more mercury exposure leads to various diseases, for example, kidney dysfunction, memory loss, headaches and neurological disorders. Illegal miners use clean Phenduka(s) to burn the gold until it turns into gold. Subsequently, illegal miners scale the gold first before it can be sold to the black market to determine how much money will be received. Selling the gold immediately eliminates the chances of being robbed by syndicates from the black market.

The burning of gold takes place in squatter camps to ensure privacy and to avoid other ethnic groups(s) that may disturb them. Furthermore, steps followed by illegal miners to refine gold include a few procedures. In the first procedure, illegal miners use gas stoves to warm Phenduka's machines before gold can be burned. The process of warming Phenduka's takes can take longer so at times, illegal miners use two plates when there are more particles of gold. The second procedure is that once the Phenduka is warm, illegal miners pour particles of precious metals inside Phenduka and use torches to burn precious materials until the colour turns to gold. Police mentioned that illegal miners who refine gold are often paid a lot of money owing to the inhalation of chemicals used to conduct such a process. The kingpins then collect refined gold and pack it into small packages before it is transported to the black market situated in Lenasia South for selling. Kingpins normally conduct this process at night to avoid police officials during the day.

5.5.3 Children participating in illegal mining activities

Theoretically, illegal mining activities in South Africa is not new, and children also participate in illegal mining activities. PP22 Station B mentioned that some women conduct illegal activities while carrying babies as young as two years old, while children from the age of 11 also assist parents involved in illegal mining activities. This impacts the children's development

because they miss a lot of children's activities as they grow up. Moreover, police participants continued to explain that children from the age of 11 work with their mothers when crushing and grinding rocks of gold. Of major concern is that the dust inhaled during the process leave the younger ones suffering from various diseases such as Tuberculosis (TB). Participants alluded that in the majority of squatter camps situated in Johannesburg, illegal mining is considered as a family-based activity where all members of the family become involved in illegal mining work.

A second point alluded by police participants is that children pack ground rocks into sacks, this process assists their mothers to finish the process of crushing and grinding rapidly. Moreover, once the process is completed, mothers load sacks in a wheelbarrow to the nearest squatter camps for further processing such as burning rocks of gold. PP23 Station B again elaborated those children work the same hours as their mothers. Children have lunch breaks, and they consider illegal mining as a normal business. Furthermore, the police added that children sift through the soil to ensure that no particles of gold are missed. During the sifting process, children are at times constantly raped by illegal miners and such cases are often not reported by parents as they might also be arrested since the parents are undocumented immigrants. Police postulate that rape occurs behind the *"Durban deep mine"* where children and women grind and crush pieces of gold. One of the major concerns raised by police participants is that these children aged between 11 to 15 years old act out of economic desperations to be involved in illegal mining activities. Police participants highlighted some of the issues that children encounter during illegal mining activities:

- No protection of exposure to harmful chemicals
- Unsafe living conditions
- Unavailability of protective clothing

Despite all the dangerous settings that children come across in illegal activities, it is not easy for these children to quit such unlawful activities owing to poverty. Likewise, illegal mining activities appear to attract younger children who are regularly trained to work as professionals, learning from their mothers. Police participants particularly mentioned that as they grow, children learn to be independent and work without supervision from parents. In furtherance of this, police participants mentioned that younger children involved in illegal mining activities are considered as rude and aggressive children with no respect when they see police vans patrolling *"Durban deep mine".* Police participants denote that at times, children swear at them using Shona and sign language. Another important factor mentioned by police is that children are taught at a young age to carry illegal weapons to protect themselves.

The earnings obtained by children assist their parents to buy household necessities such as food, clothes and medication. Children give their mothers all their earnings and they are not allowed to buy anything to remunerate themselves, and mothers take care of all finances for the family. In brief, mothers cannot open a bank account because they are in this country illegally, and this put them at risk of being robbed by criminals.

5.5.4 Different ethnic groups participating in illegal mining activities

Illegal mining in South Africa involves different ethnic groups such as Zimbabweans, Basotho nationals and Mozambicans. *"Durban deep mine"* in Roodepoort is a source of living for majority of illegal immigrants searching for precious metals for them to survive. PP24 Station D explained that numerous of illegal miners are illegal immigrants who live in a country without a citizenship permit. The police participant denotes that there are major fights between the above-mentioned ethnic groups and of major concern, they murder one another underground fighting for territory. When an illegal miner is dead, the group pull out the body to the surface, wrap it with a 50-kilogram maize meal bag, write the name, surname and address of the deceased on an A4 paper then they immediately call the police.

Police officials proceed with the investigations by taking photos and fingerprints of the deceased for further investigations. The police photographer takes fingerprints to the criminal record centre (CRC) in Pretoria to identify whether the deceased is a South African and to identify whether the person has a passport or not. As the police investigate the deceased, the body is taken to a government mortuary where a post-mortem is conducted. After every single procedure has been conducted by police, the family of the deceased are contacted to come and claim the body. In the event of the death of illegal miners who are not claimed by family members, photos are normally placed in a local newspaper or a local magazine. The second option is for the government to organize a pauper funeral for unidentified illegal miners. A pauper funeral is arranged by the government, Department of Health and Pathology if the family of the deceased cannot be traced. The state also keeps a record of pauper funerals conducted yearly should the family come and claim the body of the deceased.

5.6 THEFT OF EQUIPMENT IN FORMAL/LEGAL MINES

The study also disclosed that formal mining sectors that produce gold are challenged by theft of equipment owing to illegal activities. Illegal miners often steal equipment which they use when searching for pieces of gold. Police alluded that the equipment they steal includes

detonators, digging tools, lamps and drilling machines. Moreover, the mining sectors fight a losing battle with illegal miners because they bribe securities with an enormous amount of money to enter the mining sector. Furthermore, police postulate that it is difficult to trace company equipment because illegal miners remove the serial number of the machine immediately and it is impossible to prove ownership. Police claim that from the 6000 mines that were closed by the Department of Mineral Resources (DMR), illegal miners steal mining equipment from such mines for their benefit.

Additionally, PP25 mentioned that other thefts in mining sectors include diesel, tyres, torches, boots, copper, cable wires and explosives encountered a major concern to legal mines. Police added that as such, mining companies lose production, and a huge financial impact emerges through direct loss owing to equipment stolen by illegal miners. Moreover, police participants state that when copper is stolen in mining sectors, it poses a major risk to legal miners as it results in poor ventilation of machines underground, this may further result in the death of legal miners underground. The participants posit that various preventative measures undertaken by the heads of security safety ensure that power cables, lights, copper, ventilation machines functions appropriately to ensure that legal miners always become safe.

The participants further alluded that there are measures that need to be implemented to ensure that perpetrators of mining theft do not enter any legal mining sectors, however, before all measures can be implemented, an enormous amount of money is needed to ensure that such measures are into place. Furthermore, police participants highlighted those perpetrators of mining equipment theft are organised by crime syndicates and corrupt mining securities who accept bribes. This further means that, when culprits enter any legal mines, they have information such as how many security guards are working on that day, and if the surveillance cameras are switched off on that day. The inside information provided to criminals further assist them to steal as much as they can, since no disturbances will emerge.

5.7 THE ACCESS TO FORMAL MINING SECTORS BY ILLEGAL MINERS

Illegal miners articulate different strategies that assist them to enter the mining sector. *“Durban deep mine”,* a former mine in Roodepoort Johannesburg, closed 12 years ago owing to the lack of precious metals produced annually, and water and electricity were cut off immediately. Moreover, entrances used by illegal miners are not visible to the public view, therefore only illegal miners recognize them, and they are completely aware of which ones are dangerous. PP26 pointed out that several of unused mines located in informal settlements are associated with crimes such as rape, murder, attempted murder and robberies. In addition, police

participants added that illegal mining activities are allied with rival gangs and that the death of miners surges each day. The police participants cited that it is difficult to quantify the amount of gold collected as a result of illegal mining activities. The research respondent mentioned that at Sibanye Gold situated in Carletonville West Rand, illegal miners work with security guards to enter mines underground. Illegal miners constantly damage the holes, and reported challenges are as follows:

- Legal employees are often exposed to toxic chemicals, booby traps and explosives bombs;
- Exposing legal employees to major risk where support pillars of mines are constantly damaged by illegal miners;
- Stolen mine explosives decrease the production of the mine.

The death of security guards often increases owing to illegal mining challenges in mining sectors. PP26 mentioned that illegal miners use tunnels to enter the mines because of the entrances being securely closed by former owners. Illegal miners strip down to their trousers and use headlamps to see darker areas of the mine. In some instances, three police participants mentioned that illegal miners work closely with security guards and bribe them to enter mines. Likewise, security guards at times switch off closed-circuit television cameras (CCTV) to allow illegal miners to enter the mining sector. Police participants hypothesize that at the Sibanye Stillwater Gold mine, illegal miners work with authorities such as public police officials who are corrupt and private security from mining sectors. Because of this, illegal miners are often aware of strategies that police, and relevant stakeholders implement to curb illegal mining because information is revealed by police who take bribes from illegal miners.

5.8 ACCESS TO THE BLACK MARKET

The kingpins supervise all the processes conducted by underground and surface illegal miners before gold can be sold. PP27 Station C mentioned that gold is constantly sold to buyers situated at Lenasia South of Johannesburg and that the price is determined by the prices of the black market. The kingpin/bosses of illegal miners have access to black markets where precious stones and gold are frequently sold. PP28 Station C revealed that only kingpins and bosses can access the black market where the selling of gold routinely happen. A second point mentioned by PP28 Station C is that money received from illegal mining activity is frequently spent immediately.

The buying and selling of gold take place over the weekend, and during the week, it depends on the availability of customers. Gold is transported in 30-kilogram bags by kingpins who are regularly armed with illegal weapons. Police participants stated that the kingpins sell about 20 kilograms of gold annually and transactions made by kingpins are difficult for police officials to trace. During the process of selling, illegal miners become visible to the area and security guards ensure that all transactions conducted between kingpins and buyers go according to plan. In addition, police highlighted that gold sold by kingpins enters the formal market indirectly to traders that re-sell gold at a later stage. Interestingly, due to the secretive nature of buying and selling gold, a minority of buyers operate at midnight when they hide in different designated areas to ensure that police officials do not suspect anything. One police participant uttered the following statement:

"I witnessed that in Lenasia, buyers wait under the tree while the car engine is running, and they call their buyers to bring them gold. I had to hide myself because those people shoot to kill should you try and stand in their way. Another important factor that I witnessed is that buyers take precautions to ensure that the operation becomes a success."

Likewise, PP29 Station E posits that most buyers of gold do not live near mining sectors owing to the money they accumulate when gold is sold. The buyers and sellers afford luxurious houses in an expensive suburban area where no one would suspect any illegal business conducted by them; therefore, the house in Lenasia South is mainly used for trading and selling gold. Moreover, the buyers of gold trade without licenses are considered as another risk. PP29 Station E added that buyers become cautious with police officials not to confiscate their money or gold. When police confiscate gold from buyers, it is a huge setback owing to money lost. However, often corrupt police officials do not take confiscated gold to the police station and record it on SAP13 documents but sell confiscated gold for themselves. In this case, the buyers cannot report such cases because they are conducting an illegal business and they fear going to prison for a lengthy time. Others are undocumented which is why they allow police to impound their gold without a fight.

5.9 LIVED EXPERIENCE OF ILLEGAL MINERS UNDERGROUND

Illegal miners have a captive life underground, which is associated with challenges such as group fights and rockfalls. Interestingly, two illegal miners at Amatholesville and Zami Mpilo squatter camps explained that under the belly of the earth in the mines, there is a space used by illegal miners as a kitchen where they cook and boil water for tea. Illegal miners have two-plate stoves, primus stoves, two pots, and a mini grocery stash that sustain them for a certain

period while searching for pieces of gold underground. During the night, illegal miners catch up on regular stories and life experiences, before they sleep. Each illegal miner sleep holding his food as the area contains lots of rats. The police participants observed that in the morning before illegal miners start their shift, they buy vetkoek from the lady who sells them near "*Durban deep mine"*. During the research interview, the vendor revealed that she is only selling vetkoek to illegal miners because they buy vetkoek at a higher price and she then makes more profit from them. The vendor further elaborated that one vetkoek cost R5 and when selling to the community, it only cost R1, 50. An illegal miner from Site B squatter camp added that:

"We were born to suffer, nothing we can do but to fight for our families. We are pleading with the government of South Africa to understand that we are supporting our families with the little money that we get. We face different circumstances but there is nothing that we can do as long as we don't increase the number of robbers that exist in this country".

Furthermore, during the observation study, the researcher noticed that during the day, a few ladies buy cool drinks, bread and cigarettes at the local market and take them to *"Durban deep mine"* for their boyfriends/loved ones to provide them with what they need while working. During the observation study, the researcher took pictures of illegal miners when going and coming from underground. The researcher noticed that illegal miners use their own clothes and self-made equipment such as a shovel and light torches. Likewise, in the afternoon, around 18:00, illegal miners are more visible at Main Reef Road with their maize meal bags containing soil that need to be cleaned. The researcher further noticed that illegal miners walk around Main Reef Road and within the community carrying the soil from their illegal mining activities with no fear of police.

The table below depicts the prices of food in illegal mining activities.

Figure 1: Cost of food for illegal miner's underground:

ITEM	UNDERGROUND PRICES
Bottle of Amarula	R5000.00
Black label six-pack	R15000.00
2-litre coke	R100.00
Tea/coffee	R60.00
1 kg sugar	R120.00
White bread	R100.00
Brown bread	R50.00
Cartoon of cigarette	R100.00

ITEM	UNDERGROUND PRICES
Canned of chakalaka / bull brand / baked beans	R100.00
2-litre tap water	R20.00
Fat cakes	R5.00
2,5 kg maize meal	R170.00

***Source**: Researcher's illustrated concept*

5.10 THE ROOT CAUSES OF ILLEGAL MINING

The findings of this study discovered that the root causes of illegal mining in Gauteng include the following:

5.10.1 Lack of job opportunities

Limited job opportunities in the country and the neighbouring countries seem to be one of the issues attracting people to illegal mining activities. This issue applies to most foreigners without passports who stay in South Africa illegally when it then becomes difficult for them to find employment in the formal sector. The kingpins in the illegal mining then take advantage of desperate people and recruit them to work as illegal miners. Of concern, is that these people working in mining sectors for the first time do not know the dangers encountered underground, and many do not have any background in the mining sector. Kingpins often recruit illegal immigrants and set rules which should always be followed by illegal miners. A lack of job skills and experience result in more incidents occurring in mining sectors where illegal miners extract pieces of gold. A lack of job opportunities tends to be a major concern which is one of the main motives why the number of illegal miners often become involved in the mining sector.

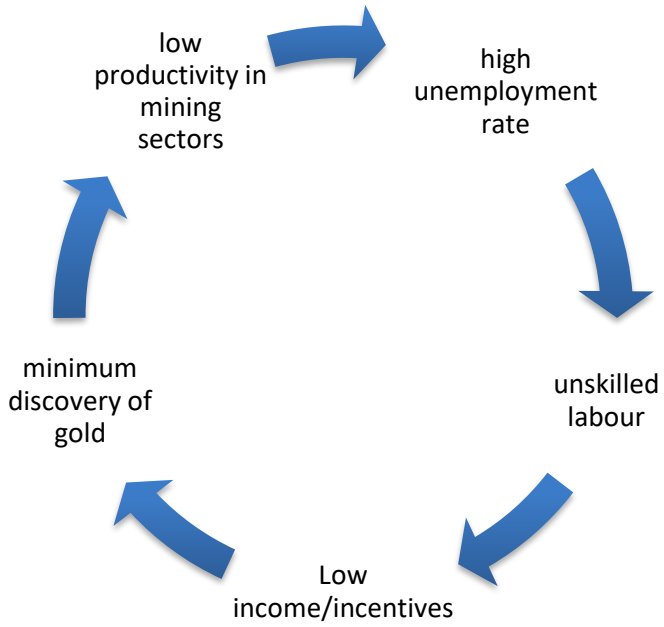
5.10.2 Poverty

Poverty in South Africa is considered the primary reason which contributes to illegal mining activities. It was clear in the study that illegal miners work in unsafe conditions underground, to maintain their loved ones which include amongst other wives, children's, parents and relatives. Illegal mining activities are constantly driven by poverty with the number of illegal miners increasing. Moreover, dangerous conditions do not discourage illegal miners to partake in such activities as members of their families will suffer due to hunger. During the interview, illegal miners alluded to the researcher that coming to South Africa was considered as the only option to find employment, however, due to poverty, illegal mining activity is the only job

that puts bread on the table. During the FGD, Site A session, an Illegal miner uttered the below words to the researcher:

"South African companies do not hire us, again we are foreigners. So, I will not let my family suffer while I can work as an illegal miner and the hungry stomach my sister knows no boundaries".

Moreover, the statement postulated by one of the illegal miners at Site A squatter camp clearly explained that young men participate in illegal mining activities, and this was also witnessed by the researcher during the interview process where the researcher witnessed illegal miners coming from *"Durban deep mine"*. Furthermore, illegal miners acknowledged to the researcher that more than 6000 people at Site A squatter camps benefit from illegal mining activities, this means that poverty played a negative role in these squatter camps. Likewise, poverty propels illegal mining activities in all mining sectors specializing in gold and other precious metals, as gold is high in demand. The diagram below depicts factors that exacerbate poverty levels amongst illegal miners.



Source: *Researcher's illustrated concept.*

The diagram above further illustrates that sometimes illegal miners operate in low productivity mining sectors where gold is minimal. This leads to illegal miners securing a certain piece of land underground to mine, and further leads to war with other ethnic groups involved in illegal mining activities. Moreover, the manipulative conditions that illegal miners face each day are

considered as tough, but the majority of them believe that it is better compared to sitting at home and doing nothing. An average amount of incentive paid to illegal miners depends on the grams/kilograms of gold excavated by illegal miners, this further means that illegal miners do not have stable income or incentives paid to them by their kingpins. As a result, they put in more hard work that contends with risky conditions to gain more incentives.

5.10.3 Retrenchments from mining sectors

Some research respondents explained that illegal mining is also increased by retrenchment and greediness from former workers of formal mines and kingpins. Furthermore, financial pressure is one of the reasons that they don't have the means to support their family members after being retrenched from the mining, thus there is no income generated within the family. Socio-economic situations that people are living in and that of former miners who were retrenched further lead to work as illegal miners despite the risks and dangers involved. The former miners who were retrenched from mining sectors further participate in illegal mining activities owing to experience gained while working permanently in mining sectors as well as the fact that they have personal protective equipment's (PPE) from former employers which allow them to work as illegal miners. Illegal miners are constantly aware that mining sectors are often associated with danger such as criminal gangs, murders, attempted murders and rockfalls.

The former mineworkers have gained considerable experience and knowledge which to date serves as the benefit while partaking in illegal mining activities. According to PP30, former mineworkers know how to drill rocks and to spot which rocks might have pieces of gold. Moreover, illegal miners know which mining sectors have more stones of gold, this further assist them in deciding which mining sector should be targeted. This information further assists them not to waste time in one mining sector but to target others that contains more pieces of gold.

Former workers also have connections that are considered as one of their advantages when entering mining sectors as well as better knowledge on the use of equipment, especially what steal and use to produce more minerals quickly. Likewise, challenges facing police officials when patrolling the area where active mines are situated is that, at times, it is difficult for police officials to differentiate illegal miners and legal miners because they wear the same personal protective clothing. Therefore, such situations become more challenging for police officials to handle.

5.11 THE IMPACT OF ILLEGAL MINING

PP30 Station E added a lot of imperative information on the impact of illegal mining activities. The impact of illegal mining is outlined below:

5.11.1 Loss in government income tax

The findings of the study revealed that the majority of people participating in illegal mining activities in South Africa are undocumented foreign nationals. PP30 Station E states that during apartheid years, mining sectors were the only sectors that were leading in gold productions and accommodated unskilled labour, including migrant workers from countries such as, Zimbabwe, Lesotho and Mozambique.

Undocumented foreign nationals are often transport gold illegally to their country of origin, as a result, the income tax that should be paid is lost. PP30 Station E alluded that during a stop-and-search operation in 2017, nine kilograms of gold was confiscated and a cash amount of R800.0000 was found in a car travelling from Lenasia, South of Johannesburg to an undisclosed destination. Participants mentioned that during stop-and-search operations, all state law enforcers should be heavily armed because the black market is constantly associated with illegal activities and the possession of illegal firearms. Likewise, stop-and-search operations conducted by different stakeholders such as the Hawks, police officials and the DMR in 2017 in Kempton Park were considered extremely dangerous since the kingpins were constantly armed with AK-47 firearms. The police participant mentioned that three state police officials were shot dead by kingpins during stop-and-search operations, while other police officials managed to kill the kingpins. In addition, R435 millions of golds and 21 trucks were confiscated at the border gate that was not disclosed during the interview process and couldn't cross the border. Police respondents mentioned that much of the extracted gold leaves South Africa to generate money in other countries by undocumented nationals, resulting in South African mining sectors losing profit and sales decreasing.

5.11.2 Murders in mining sectors

The study revealed that in different mining sectors dealing with precious metals such as gold, fights between different ethnic groups constantly occur and these fights lead to attempted murder and murder. Police participants stated that the first impact that police officials encounter is that crime statistics often increases where fights lead to members of illegal mining

groups being gunned down by other illegal miners. Police participants also alluded that almost every day, a murder occurs between illegal miners, and of major concern, there are no reliable statistics to support the above-mentioned statement. Moreover, in 2018, 90 illegal miners were buried by the government as family members do not claim back the bodies of their loved one. According to information postulated by police, participants is that illegal miners are often held hostage underground by other illegal miners, which make it difficult for police officials to handle such situations.

When illegal miners fight with one another, the main motive is to ensure that one or more illegal miners die at the end of the fight, the objective is to shoot to kill. Police participants added that in the event of cases that are reported at SAPS stations, suspects and victims are not known, thus situations result in many investigations by the SAPS as more exploration needs to be conducted. In the Grootvlei mining sector, illegal miners set fire at the entrance where tunnels surrounded with explosives chemicals spread throughout the mine underground. The findings of the study further state that if such incidents occur, it is difficult to attain accurate statistics as some of the bodies are not recovered from underground. Moreover, informal mining is known to be dangerous as more people are often murdered and no official records are publicly available. Each year, the number of murders owing to illegal mining activities often increases, which do not scare other illegal miners who are involved in such activities.

The deadly trend of illegal miners further increases more investigation and workload for police officials, especially when searching for the owners of the unused mines. In all investigations that were conducted by police officials, no owner of the unused mine reported a case of illegal mining activities. PP31 Station E added that this may be due to fear as illegal miners are known as heartless human beings who kill without hesitation. Moreover, when an illegal miner is found dead, police conduct investigations near squatter camps closer to the *"Durban deep mine"* which may lead to possible solutions to find the family of the deceased. Another amicable solution to find the family of the deceased is that illegal miners have girlfriends within squatter camps, thus police conduct investigations which lead to conceivable information that may lead to finding the family of the deceased.

The table below depicts illegal firearms confiscated from illegal miners at various police stations around Gauteng:

Figure 2: statistics of illegal firearms from various police stations

Illegal possession of firearms				
Police station	2014/2015	2016/2017	2018	Total
Westonaria	12	07	15	34
Roodepoort	09	14	18	41
Carletonville	10	13	17	40
Randfontein	06	16	17	39
Fochville	05	09	12	26
Total	42	59	79	180

Source: *Researcher's illustrated concept*

5.11.3 Health risks to illegal miners

Health risks proved to be one of the major impacts facing illegal miners when performing illegal mining activities. Illegal miners encounter major health risks because no proper procedures are followed when performing mining activities. Another health impact occurs when illegal miners enter areas in the mines that are dangerous for example, where gas pipes are situated. The situations pose a major health risk to miners as the gas might explode due to erroneous chemicals. Due to a lack of knowledge and the desperation to excavate gold, illegal miners blast explosives underground in an unacceptable manner. In the Bhongweni mining sector situated in Randfontein, the houses situated next to mines constantly crack because of explosives that are blasted in that area. Dust inhaled during such a process also weakens the lungs and cause breathing problems, because no proper precautions are taken by illegal miners.

The Department of Mineral Resources tried to prevent illegal miners from entering unused mines, however, the above-mentioned stakeholder fights a losing battle. In Gauteng only, more than 221 holes were closed in the *"Durban deep mine"*, by thick concrete slabs and rocks, however, illegal miners dig between 300-400 meters underneath the hole that was closed by the Department of Mineral Resources. PP32 Station C highlighted that at Westonaria, illegal miners use explosives to open old shafts. Illegal miners often do not care about their health, as their main purpose is to excavate belts that consist of gold. To support this statement, during 2017, three men aged between 21, 24 and 29 were retrieved in an unused mine when the hole collapsed on them. In such incidences, the police are involved at the scene to open an inquest and to investigate further on the matter at hand. PP32 Station C continue to mention that more suitable methods are needed to close holes because illegal miners have solutions to open sealed holes. Participants noted that in March 2018, the

Department of Mineral Resources closed more than 130 holes that were blasted by illegal miners, so at times police and relevant stakeholders are fighting a losing battle since illegal miners have new solutions to open sealed holes.

5.12 THE STRATEGY USED BY THE POLICE TO PREVENT ILLEGAL MINING ACTIVITIES

The strategy used by the police to curb illegal mining activities is called a Disruptive Operational Plan.

5.12.1 Disruptive Operational Plan

Most of the participants from Station A-E stated that disruptive operations are continually conducted by police and relevant stakeholders in unused and active mining sectors to curb illegal mining activities. The Disruptive Operational Plan involves more than 100 members from different stakeholders such as the Department of Mineral Resources (DMR), Department of Energy, Rand Water, Johannesburg Disaster Management, Johannesburg Road Agency (JRA), security from Fidelity and police officials attending the area where illegal mining is conducted. The challenge they face is illegal miners often change modus operandi as soon as they become aware of the planned operations and that makes it difficult for the police to make arrests. The modus operandi of illegal miners changes constantly to prevent police officials to come to the area. Police participants added that they warn illegal miners by writing notifications in four different languages namely, Southern Sotho, Zulu, English and Xhosa informing them that in 14 days, the holes will be closed. Police drop notifications in the holes where illegal miners enter mines when searching for gold. Other notifications are placed around the mines with stones on top to notify illegal miners when changing to their different shifts. Police participants indicated that such notices to closed mines are often ignored, hence police constantly see illegal miners going on with their activities on daily basis. As a result, the police attempt to curb illegal mining is ineffective as the problem continues.

According to the police, the signs that illegal mining activities are continuing in active and unused mines includes:

- The removal of drilling equipment’s in the productive mining sector;
- Empty containers of explosives chemicals outside mining entrances;
- Empty food cans and bottles of cool drinks;
- Hidden sleeping areas underground;

- Small carpet rugs used for extraction of gold;
- The smell of tobacco, cigarettes and dagga underground and
- The smell and presence of human excretion underground.

Moreover, during disruptive operations, illegal squatter camps near the mining sector were continually destroyed by police, illegal businesses conducted near mining sites and sex workers are also dispersed while mining equipment such as gas bottles and firearms are confiscated. Illegal miners arrested during Disruptive Operational Plans were frequently profiled as illegal immigrants and charged for the lack of documents and participation in illegal mining. The disruptive operations last for three weeks during which consent is given to police officials to confiscate and destroy each piece of equipment used by illegal miners. Likewise, dangerous chemicals found during disruptive operations, for example, bottles of mercury for which a license is required before purchasing the product, is also confiscated. All equipment confiscated during disruptive operations is recorded on a SAP13 form. SAP13 is a form used by police officials when equipment has been confiscated during an operational plan.

Figure 8: Equipment's impounded during the disruptive operational plan

PP33 Station D articulated that confiscation of equipment from illegal miners is considered a huge setback to them, this means that illegal miners must start every single process from the beginning again. This further means for a month; illegal miners do not work owing to the unavailability of equipment. Furthermore, a Disruptive Operational Plan assists police to confiscate all illegal equipment found in squatter camps, including personal belongings for example money, cell phones and explosives, which are also confiscated to stop illegal miners from partaking in illegal mining activities. Amongst other things that were confiscated by police officials were food, cigarettes and sorghum beer, which illegal miners believe can prevent tuberculosis (TB) because it is possible to catch the disease while working underground. Police participants expressed the below message:

"These are the equipment's that we normally confiscate during disruptive operational plan. We also found firearms, mercury, different shapes of knives which are locked in a safety cupboard. These people steal gas cylinders from Afrox company which they call them Phenduka's according to Zama-Zama's language. Another thing mam …. We find generators, four-pound hammers, picks, chisel, and dangerous weapons that they use when fighting with another group".

Moreover, police officials hold meetings to draw new plans and strategies to assist in preventing illegal mining or theft of equipment in legal mines in Gauteng. One of the plans is to ensure that all miners working in formal or legal mines should be authorized electronically before entering the mines using fingerprints scanners and facial recognition by cameras. SAPS further alluded that all mines dealing with gold, need to introduce biometric scanners. The function of a biometric scan is to authenticate and verify whether the person is employed at that specific mine or not. The features of the scan include voice recognition, facial images and fingerprints. This would assist the formal mines to identify criminals stealing equipment's and expose corrupt security guards.

5.13 THE ROLES OF RELEVANT STAKEHOLDERS TO PREVENT ILLEGAL MINING

Different stakeholders assist the local SAPS members to prevent illegal mining activities, for example, the SAPS such as the National Intervention Unit (NIU), private security companies from Fidelity, and Community Policing Forums (CPF). The main function of the collaborative arrangement with different stakeholders is to combat illegal mining activities. The roles of stakeholders are discussed as follows:

5.13.1 The role of the SAPS

The role of the local police according to Section 205 of the Constitution of South Africa, is to prevent, combat, and investigate crime. Broadly, the SAPS maintain public order within the community and as such, the stakeholder also services the community to ensure that flexible policing is rendered appropriately. The role of the SAPS further ensures that all citizens are safe within the settings they live in which is why the role of police officials is imperative within the society. The functioning of police officials is considered dangerous for example, where there are crime incidents that occurred, violent including shootings requires police to intervene. The following are the objectives of the SAPS:

- Uphold and enforce the law;
- Prevent, combat and investigate crime;
- Protect and secure the inhabitant of South Africa and
- Maintain public order.

The above-mentioned objective emphasizes that the main fundamental duties of the SAPS are to create a safe environment for all citizens in South Africa. The researcher believes that the role of the SAPS cannot be performed without the cooperation of the community, thus the community provide relevant information to the SAPS. Another interesting aspect noted by the researcher is that a willingness to work with police constantly yield good results.

5.13.2 Specialized SAPS National Intervention Unit (NIU)

The National Intervention Unit (NIU) is a specialized police tactic team trained to combat crime in high and medium risk situations. Police participants at Station A-E assert that NIU provides operational support to local police officials to combat crime in areas where illegal mining is a major problem. PP34 Station E explained that when working with NIU, the situations in squatter camps dealing with illegal mining activities becomes tense, as NIU deals with kingpins/bosses while local police officials handle illegal miners. Furthermore, police participants explained that the situation becomes edgy when kingpins refuse to hand over illegal firearms to NIU members, as a result, a fight emerges between the kingpin and NIU members.

5.13.3 Community Policing Forum (CPF)

Community policing forum (CPF) is another stakeholder working with the South African Police Service (SAPS) to combat illegal mining activities. PP35-38 Station C and E pointed out that in areas such as Langlaagte, Roodeport, Westonaria, Fochville and Carletonville, police officials work closely with CPFs to assist in reporting unlawful activities conducted in mining sectors and around the area. Owing to that, the concern raised by police participants is that CPFs are not equipped with resources such as firearms and patrolling vans which at times makes it difficult for them to combat crime. The disadvantage noted by police participants is that CPFs do not carry any weapons when patrolling the area, thus it becomes difficult for them to apprehend illegal miners although they want to prevent crime within the area. The participant explained that Johannesburg Road Agency also formed a committee that addresses illegal mining activities; however, the outcome has not reached SAPS stations.

Members of the CPFs have created a WhatsApp group, which is one of the biggest platforms of social media used to report on crime. The main purpose of the WhatsApp group is to minimize phone calls to all members that form part of the CPFs, therefore, all notifications regarding combating illegal mining activities are communicated on the WhatsApp group as well as all communication regarding meetings and feedbacks from police. In addition, the CPFs serves as the voice of the community to fight crime and improve the quality of life within the area. The police participants hypothesized that working with CPFs in combating illegal mining activities required more members of the community aimed at fighting crime and combat illegal mining activities occurring within the area.

5.13.4 Private Security Companies

Fidelity, a private security company, is amongst one of the stakeholders working with the police in combating illegal mining. Fidelity security company strives to be an excellent service provider to communities challenged with different crimes. Police participants state that majority of station commanders in various police stations adopted the strategy to include private security companies when combating illegal mining activities. The main purpose of collaboration with private security companies is that they are familiar with the areas and know which areas or zones are dangerous specifically at night hence they render service 24/7.

Furthermore, police participants posit that when they visit the area, a tip-off comes from a private security company hence they don’t have the power to arrest illegal miners. Because of

police officials in Westonaria working with security companies, they have minimized illegal mining activities. Moreover, the cooperation between security companies and police officials yielded positive results in arresting illegal miners. It is significant to note that the successful police disruptive operations conducted with the assistance of Fidelity security company yielded positive results where 20.3 kilograms of gold were confiscated in Randfontein in 2016.

5.13.5 The Department of Mineral Resources (DMR)

The Department of Mineral Resources (DMR) also play a major role in supporting the police in dealing with illegal mining activities. PP39 Station B postulate that DMR constantly creates new plans on how to curb illegal mining activities, however, illegal miners often change their tactics making it difficult for DMR to apprehend them. Moreover, the SAPS holds meeting with DMR on monthly basis to exchange information regarding statistics of illegal miners and to discuss future strategies that can be implemented in curbing illegal mining activities.

To curb illegal mining activities, the DMR further promotes safety conditions to all mining sectors such as promoting legitimate practices, collaborating with the Council for Geoscience (CGS) to seal open holes and for close collaboration with the SAPS when conducting operational plans in squatter camps. Furthermore, the DMR supports all relevant stakeholders that disrupt illegal mining at any syndicate level. The DMR further investigates all mineral refineries and jewellery shops across South Africa to ensure that the business associated with gold is legitimate. PP39 Station B further alluded that the black market situated in Lenasia, South of Johannesburg, becomes difficult to suspend because illegal operatives can purchase another house to conduct their business from.

Illegal mining activities disrupts gas pipelines running past First National Bank Stadium (FNB), and if such pipelines burst, everything within 300 meters would be destroyed. Illegal miners disturb gas pipelines with the lack of knowledge of to what extent damage can occur in such areas. Gas pipes from South Africa Synthetic Oil Liquid (SASOL) transport oil in various areas around Johannesburg. Moreover, PP40 Station D, denotes that other explosive run past Johannesburg landmarks such as the M1 double-decker and M2 freeways, thus if gas pipes explode owing to illegal mining activities, thousands of people will die instantly as these highways are constantly busy during the day and night. The Council of Geoscience assessed that the mining infrastructure underground is damaged owing to illegal mining activities. Police participants continue to explain that pipelines contain highly flammable gas that is rich in methane, which is constantly transported to Sasol for other production, therefore if a solution is not found regarding illegal mining activities, more damage will occur, and the economy will

lose an enormous amount of money in rebuilding and renovating some of the infrastructures damaged by illegal miners.

5.14 CHALLENGES EXPERIENCED BY POLICE WHEN DEALING WITH ILLEGAL MINING

The findings of the study discovered that there are challenges experienced by police officials when dealing with illegal mining activities. The challenges are outlined below:

5.14.1 Rescue operations of illegal miners

The study discovered that police officials are not trained to enter mines to rescue illegal miners underground. PP41 Station A denotes that it is difficult to enter mines where holes are darker, and the temperature is extremely high. Furthermore, PP41 Station A denotes that when the situation is dangerous during rescue operations, it becomes evident that no illegal miners will be rescued alive. Another challenge experienced by the SAPS in dealing with illegal miners is that the police do not have easy access to mines and are unable to rescue illegal miners trapped underground. It was also discovered that police officials are the first stakeholders to arrive at the scene and that the DMR rescue team often arrive late at the scene to handle mine emergencies.

Mine rescue teams assist to rescue illegal miners trapped underground. Mine rescue teams are well trained with resources such as a first aid kit and breathing apparatus to assist illegal miners trapped underground, however, police officials are not equipped with such resources. For this reason, police participants state that mining sectors need another stakeholder besides the mine rescue team to assist in mining emergencies. A major concern raised by police participants is that in an unused mine, the mine rescue team takes much longer to arrive which results in the deaths of illegal miners. Police participants denote that training for the mine rescue team is often carried out every two weeks which does not apply to police officials.

Police participants added that underground mining incidents are often associated with astonishing risks, this is due to booby traps and explosives underground. During rescue operations, police officials and mine rescue team a frequently exposed to bodies exhumed from underground, for example, charcoaled bodies, unrecognized faces, bodies with no

hands, and no heads as a result of bombs that exploded underground. The study discovered that police officials were continuously traumatized by such bodies of illegal miners during rescue operations. Police further denote that within SAPS, a program is known as Employee Health and Wellness (EHW) assist police officials psychologically and mentally if one feels that the scene was extremely traumatizing.

5.14.2 Community support for illegal mining activities

Another challenge experienced by police officials when dealing with illegal mining is that the community members of Zami Mpilo and Amatholesville informal settlements support illegal mining activities. PP42 Station E explained that the community states clearly that illegal miners should not be arrested because crime has decreased within the area. Participants postulate that before illegal miners existed in the above-mentioned squatter camps, crime was too high, and that crime was focused on house robberies, rape and hijacking. Police participants denote that the community mentioned that they are at peace because illegal miners focus on illegal mining activities, which is why the community feel that crime has decreased within the area. The community mentioned that illegal miners cannot be employed elsewhere, so it is much better when conducting illegal mining activities to support their families. Community citizens mentioned to police officers that they are willing to do anything for illegal miners. To support this statement, the community provides illegal miners with shacks that serve as a storage room for their equipment. They store equipment such as four-pound hammers, Phenduka's, plastic basins dishes, spades, illegal weapons, steel balls, twenty-litre buckets, torches and shovels, and for this facility illegal miners pay an amount of R200 per week to the owners of the shack.

Furthermore, PP43-47 Station D and E explained that it is difficult to approach these squatter camps because community members carry weapons, and when they see police officials approaching the area, they shoot immediately. Police participants explained that some members of the community are heartless people who are not afraid to kill, therefore more stakeholders are called to assist police officials when visiting different squatter camps. The community members of the above-mentioned squatter camps are constantly resistant to the SAPS and Johannesburg Metropolitan Police Department (JMPD) when doing operations. Police mentioned that doing operations at Zami Mpilo squatter camp is not safe because they are continuously attacked by illegal miners who are shooting, throwing stones, and throwing petrol bombs at police officials and other stakeholders.

5.15 ANALYSIS OF RESEARCH FINDINGS

To analyse data for the research study, Thematic Analysis (TA) was used in this research report. The writings of Miles and Hubberman (1994:1) explain thematic analyses as a method that identifies themes, categories and patterns that relate to data. Moreover (TA) assisted the researcher to describe, organize, identify themes and interpret data collected for the research study. The researcher then followed six steps of thematic analyses to analyse the data and to write a concrete report for the research study. The six steps followed were:

- **Step 1:** Familiarize yourself with research data - the researcher began by listening to tape recordings and reading the field notes repeatedly to familiarize herself with the content of the data collected from the research participants (i.e., the police and the illegal miners). The purpose of reading numerous times is to assist the researcher to gain more understanding of the data collected.
- **Step 2:** Generate initial codes - here the researcher engaged in the process of identifying important information from the tape recordings and field notes made during interview sessions. The reason to generate code is to reduce large data into smaller chunks.
- **Step 3:** Search for themes - after identifying important information from the data, the researcher created themes and sub-themes from such data. This includes themes such as “Different roles adopted during the extraction of minerals; Lived experiences of illegal miners underground; Challenges facing the policing of illegal mining activities, and so on and so on”.
- **Step 4:** Reviewing themes - here the research double-checked the themes identified in step 3 to confirm if they have articulated the message of the research participants correctly or not.
- **Step 5:** Definition of themes - here the researcher checked if the identified themes are aligned to her research objectives and if indeed, they have answered her research questions.
- **Step 6**: Write the report - in this final step the researcher presented her findings by writing down her research findings and supporting her discussions with direct quotations from the research participants as well as her observations during field research.

5.16 INTERPRETATION AND DISCUSSION OF RESEARCH FINDINGS

The discussion below presents the meaning of the research data from the researcher’s point of view and its relation to the work of other scholars. The study found that the challenges of dealing with illegal mining are a major concern, not only to South Africa but to other countries

nationally and internationally. Then in terms of policing illegal mining activities, the following was clear:

Firstly, SAPS are the first responders to the crises related to illegal mining activities, such as arriving at the scene when illegal miners are trapped underground or when found dead after a conflict. In such incidents, the police will conduct a thorough investigation in the mining sector to determine what the cause that led to some of the illegal miners being found injured and other dead. Police officials face different challenges because no training is provided to them when dealing with illegal mining activities. Police officials handle cases of illegal miners just like all other cases presented to them. In most cases, police officials find themselves in dangerous positions because illegal miners fight them. This raises a concern to police officials on how to protect themselves when dealing with illegal miners.

Secondly, police officials encounter numerous challenges such as no valid address being provided to them when conducting investigations. Lack of valid addresses prohibits police officials from finding the deceased's family members, thus the government conduct pauper funerals for the deceased and keep a record of those who were buried. SAPS members do not feel safe as illegal miners shoot at them when doing investigations and when a Disruptive Operational Plan is conducted at mines specialising in gold. The study divulges that the SAPS is not trained to handle illegal miners, yet they are the first stakeholders to arrive at the scene.

Thirdly, during a rescue operation, police officials encounter the challenge of viewing the bodies of illegal miners which affect them to such an extent that police officials become traumatised at the scene. The state of the bodies of deceased illegal miners differs as some died due to chemical explosives, others were stoned to death, while others died as a result of unlicensed firearms. Internally, the SAPS have a programme called Employee Health and Wellness (EHW) which assist them to overcome trauma experienced during the rescue operation.

The study argues that police officials need to be trained to handle all cases of illegal miners and to provide justice amongst mining sectors affected by illegal mining. The primary data of the research study concurs with the study conducted by Coetzee and Horn (2007:1) that those involved in the mining sectors believed that police officials should provide a justice system to ensure that illegal miners are convicted. Of major concern is that, even though crime is extremely high in mining sectors, it is difficult for the SAPS alone to provide adequate services to all mining sectors affected by illegal mining activities. Likewise, other crimes reported to the SAPS need to be attended to, therefore as a stakeholder, it encounters challenges when

justice must be provided to the mining sector and the community. Coetzee and Horn (2007:1) further hypothesized that the SAPS and the mining sector need to formulate a strategy that will assist both stakeholders to curb illegal mining activities.

Secondly, the study discovered that women and children similarly participate in illegal mining activities. The prevalence of women and children participating in illegal mining activities are on the rise. This statement is further supported by the writings of Mills (2016:1) that women and children also form part of illegal mining activities. Women and children work irrational hours each day and earn R100.00 per day for grinding 20 litres of rocks. Women partaking in illegal mining activities in Burkina Faso are more prevalent as compared to other mining sectors.

Amongst other arguments that support this statement is the research conducted by Cowen (2014:1) who agrees that illegal miners constantly jeopardise their lives for example in August 2014, when three illegal miners were found dead in Orkney, Klerksdorp owing to illegal mining activities, as well as three illegal miners trapped underground in Mpumalanga. The primary findings correspond with the study conducted by Steyn (2012:1) in that illegal miner risk their lives by entering disused mining shafts without protective gear to search for pieces of gold. Moreover, the primary data of the study signifies that illegal miner do not fear risking their lives in searching for pieces of precious metals. This statement agrees with the research study conducted by Hinton, Viega and Beinhoff (2003:2) is that women and children are involved in illegal mining activities. The roles of women and children in Burkina Faso include washing, transporting, and processing raw gold as opposed to underground illegal mining. The primary data further agrees with the research postulated by Viega and Beinhoff (2003:2) that incentives received by children often assist parents to buy food and other necessities needed in the house, assisting parents with taking care of the household finances.

It appears that the role of women and children in countries such as Latin America, Burkina Faso and South Africa, are similar. The findings concur with the study conducted by Holtman and Swart (2007:108) is that women and children participating in illegal mining activities are considered desperate people who do anything for the sake of survival. This is also evident in the study conducted by Mafiri (2002:1) stating that women and children find themselves in unpleasant situations due to poverty. The concerns raised by De Jongh (2013:5) are that women and children do not earn the same amount of money as compared to men, this is because their roles differ. The findings of the study revealed that children abandon school intending to assist parents in searching for pieces of gold. It is interesting to note that illegal mining includes all genders residing in areas surrounded by the mining sector. This reflects

countries such as Latin America, Burkina Faso and South Africa where illegal mining involves all genders.

Thirdly, the study discovered that bribes or incentives are considered major problems amongst police officials in Gauteng. The study revealed that certain police officials accept bribes from illegal miners and do not arrest them owing to money paid by illegal miners to the SAPS members. This is further considered as fighting a battle without a victory. According to 15 illegal miner research participants from Site A and B informal settlement who elaborated to the researcher that when caught with bags of soil, police officials do not arrest them because they give them money that they cannot refuse. This is the reason why they walk without fear when they see police vans.

The study concurs with the writing of Whittles (2017:2) that law enforcers and security guards working in the mining sector often increase crime by taking bribes from illegal miners. The writing of Whittles concurs with the primary data collected for the research study that law enforces break the law in many ways, which is why to date the SAPS is no longer viewed as the stakeholder that enforces crime and brings justice to South African citizens but a stakeholder that is corrupt. Illegal miners further stipulated to the researcher that police take *"Tjotjo"* or *"cold drinks*", which is a South African slang language used for bribery. Moreover, the primary data revealed that human trafficking is on the rise owing to law enforcers who take bribes, which has moulded a bad name amongst law enforcers.

Fourthly, the study exposed that geologist are known as one of the contributors in the mining sector. The SAPS struggle to find mine geologist who can assist to test the soil. The primary data of the study conducted discovered that the SAPS does not have a geologist within the sector, this causes a negative impact in court. Additionally, primary data agrees that when a report from a geologist is not brought forward, the case of an illegal miner is dismissed immediately. Geologists play a significant role in examining whether the soil carried by illegal miners does contain precious metals. The primary data of the study further confirms that police become discouraged at times as it becomes difficult to find a geologist who is willing to assist, this situation demoralises the police.

The study revealed that crime syndicates created five different tiers where each tier have a role to play. The tiers were fully explained in Chapter 1 of the research study; however, the researcher must highlight them again in this chapter. The tiers assist criminal syndicates to function professionally, thus each tier has a role to play. The first tier is underground illegal miners who work underground searching for pieces of gold. The Fact Sheet Report (2016:2)

illustrate that crime syndicates support the first tier with food while working underground to ensure that they don't go out to buy food themselves. The second tier provides illegal miners with homemade equipment as they cannot afford to buy expensive equipment, thus the third tier is regional bulk buyers. The fourth tier distributes gold nationally and internationally while the fifth tier focuses on top international buyers. The findings of the research report agree with the study conducted by Driver (2017:1) that crime syndicates are well-organised groups of people who plan illegal activities according to different tiers. This is evident in Chapter 1 where the five tiers of crime syndicates were explained in detail The primary findings concur with the research conducted by Driver (2017;1) that all illegal miners work according to tiers. Crime syndicates formulated five tiers to avoid misunderstanding amongst illegal miners, thus each tier is consequently expected to deliver.

Knowing the impact of crime syndicates in the mining sector is significant as this type of information gives readers an idea and nature of illegal mining activities, and also provides the researcher with an idea of the extent and nature of illegal mining activities. From the primary data gathered at different police stations A - E, it is vital to note that all participants alluded that crime syndicates planned their work according to different tiers to minimise misunderstanding and confusion and place each tier in a suitable position. The South African mining sector has lost numerous amounts of money owing to illegal mining activities. The findings correspond with the study conducted by Kantor (2014:1) in that in South African the mining sector lose 10 per cent of gold each year owing to illegal mining occurrences in the mining sector. The primary data further states that illegal miners do not stay incarcerated for lengthy periods because of a lack of evidence brought forward in court. If no concrete evidence is available, the criminal syndicates bail illegal miners out immediately. This further shows that criminal syndicates ensure that their illegal business should not suffer because of their illegal miners being in jail.

Lastly, the study exposed those illegal miners benefit a lot from participating in illegal mining activities. The findings of the research study further agree that easy access to mines is constantly considered as another major impact facing majority of industries. This statement is supported by the writings of Coetzee and Horn (2006:7) who states that easy access to mines and the selling of gold illegally by illegal miners created a substantial threat to the economy. The study further discovered that the youth are constantly involved in illegal activities for financial gain. This statement is further supported by the study conducted by Weatherburn (2001:6) who found that in majority of mining sectors, the youth perform illegal mining activities for financial purposes and survival. The findings of the research study concur with the research conducted by Cilliers and Aucoin (2016:4) who found that illegal mining activities are mainly

conducted for financial benefits. Likewise, Weatherburn (2001:6) agrees with Cilliers and Aucoin (2016:4) in that majority of people involved in illegal mining activities do so to obtain incentives and to overcome unfavourable situations.

The primary data of the research study and literature stipulate those illegal miners spend more day's underground with the hope of searching for more pieces of gold. The primary data further agrees that illegal miners benefit a lot in partaking in illegal mining activities to such an extent that they can afford to buy themselves cars once gold is sold on the black market. It is significant to note that illegal miners consequently buy houses back home and can afford to pay school fees for their children. Moloi (2015:10) adds that 200g of gold is worth R700.00, therefore the amount received after gold is sold encourages them to find more pieces of gold to earn more incentives. During interviews, majority of illegal miners alluded to the researcher that gold belongs to God which is another reason that they will never quit extracting pieces of gold.

5.17 SUMMARY

South Africa's mining sector remains one of the leading producers of gold and other precious metals, however, due to illegal mining activities, the reserves are declining. What is clear from the discoveries of the research study is that illegal mining activities require a paradigm shift to deal with. Based on the research feedback obtained from selected participants, it can be deduced that it is difficult to police illegal mining in Gauteng. This chapter will be followed by the last chapter of the research report that discusses the recommendation and conclusion of the research study.

CHAPTER 6: RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

For any research study conducted, the main purpose is to arrive at the findings and conclusion for the study at hand. The findings and conclusion were derived from primary data collected to answer the research question of the study. This chapter highlights the summary of each chapter to reveal the journey of the study. A summary of each chapter will be presented with the determination of highlighting the journey of the study envisaged. The study was further informed by the challenges of illegal mining ever since media reports such as radio, television and newspapers broadcasted all challenges encountered in the mining sector dealing with gold. In addition, little is known about illegal mining activities in Gauteng. The literature review further pointed out that policing illegal mining activities is a global challenge including the South African mining sector.

6.2. METHODOLOGICAL REFLECTION

To understand how the SAPS deal with illegal mining activities, a qualitative research approach was employed in the study as the method of investigation. Through qualitative research methods, the challenges encountered as a result of illegal mining activities were revealed. Firstly, the use of qualitative research methods was adopted to understand the deeper roots of illegal mining in Gauteng. Various methods such as focus group discussions (FDG's) and one-on-one interviews further supported the researcher to probe research participants from different angles to gain a reflective understanding of and challenges facing the mining sector. Another reason for using FDG's and one-on-one interviews was to obtain multiple understandings of illegal mining in the mining sector. Illegal miners involved in illegal activities shared their opinions on how illegal mining activities started in the mining sector specializing in gold. The information revealed by research participants assisted the researcher to gain a broader knowledge and understanding of the impact of illegal mining in Gauteng and answering the research questions of the study. The use of qualitative research methods enabled the researcher to discover the impact on the mining sector as a result of illegal mining activities. As such, the study further added tremendous value to the findings which serve as the motivation as to why the study on the policing of illegal mining was conducted. A more significant aspect of illegal mining was revealed which were further narrated in Chapter 5.

Secondly, the use of thematic analysis focused on creating themes of the data collected by the researcher to answer research questions and achieving the objectives of the research study. The process of thematic analysis further assisted the researcher to organize, describe and report themes found within the data. Moreover, the thematic analysis correspondingly consists of six steps which enabled the researcher to analyse data according to different themes. This process further permitted the researcher to interpret and make sense of the data collected. The researcher then followed the six steps of thematic analysis which serves to interpret the data and to reveal the findings of the study. The unique role of thematic analysis was useful to interpret the data collected for the study. The thematic sequence was valuable in this study as the roles of illegal miners during the extraction of minerals, their lived experiences, challenges and impact thereof were grouped according to themes and sub-themes.

Thirdly, the uniqueness of the study was brought about in considering the different ethnic groups that exist within illegal mining activities. The researcher's ability to understand different languages spoken in squatter camps enabled the scholar to jot down information postulated by illegal miners. Likewise, the researcher was able to understand languages such as Fanakalo, which combines different languages such as Zulu, South Sotho and Xhosa languages in writing down correspondence from illegal miners. Other illegal miners communicated in South Sotho (native language) which permitted the researcher to pose any question without having to translate it into English. During data collection in squatter camps, the researcher was humbled by illegal miners as they have all the answers and more experience regarding illegal mining, and the information provided by them assisted in answering the research questions.

Fourthly, the principles of ethical consideration which consists of values and principles were followed by the researcher throughout the study. The researcher followed all the procedures of ethical consideration which offers rules and expectations regarding the study conducted. An informed consent form was distributed among research participants who participated in the study to ensure that they read and understand what is expected of them during participation. This process further enabled the researcher to clarify to research participants why the study is conducted, even though an informed consent letter specifically mentioned those reasons. The process made all participants understand that the researcher is not a journalist, or a news reporter but a scholar who explore the policing of illegal mining in Gauteng to qualify. In addition, voluntary participation was also confirmed in the informed consent letter that so no one was forced to partake in the study, therefore all participants could partake voluntarily. Voluntarily aspects were highlighted before all interviews were conducted.

Lastly, the researcher's reflexivity was espoused by the researcher reflecting on the challenges encountered in different police stations during the data collection process. As in any organization, the researcher was expected to explain to the members of the SAPS the reason why the study was conducted in the chosen police stations. This process further made every interview conducted within police stations chosen by the researcher to be informative, successful and productive owing to reasons that were declared during the assembly. As such, the study provided the researcher with an in-depth understanding of the problem at hand. Through reflexivity, the researcher was able to reflect on her conduct when collecting data.

6.3 REFLECTION ON LITERATURE REVIEW OF THE STUDY

The researcher first began by watching all broadcasted documentaries on illegal mining activities to obtain a broader sense of the topic to be conducted. The findings revealed that no similar study on the policing of illegal mining in Gauteng had been conducted. After such a thorough process of reading and listening to broadcasted news on radio and watching news aired on Television, the scientific research began looking at damages occurring in the mining sector owing to illegal mining activities, and the increase in statistics owing to illegal mining. The purpose of conducting a literature review was to discover how other countries have dealt with the matter of illegal mining activities. An analysis of the literature review further identified different mechanisms implemented in countries affected by illegal mining activities; such activities were revealed in Chapter 4 of the research study.

The literature study confirms that African and international countries are repeatedly challenged with illegal mining activities. To this consequence, some of the productive mining sectors were closed owing to the non-existence of profit, less production and constant loss of precious metals. It was shown in the literature review that countries such as Burkina Faso, Ghana and Tanzania approved illegal mining activities where many illegal miners work to support their families. These countries have also devised strategies on how to regulate illegal mining activities. Again, the literature also shows that in countries such as Bolivia and Colombia, illegal mining activities were supported since no policy or legislation support illegal mining activities.

6.4 SUMMARY OF CHAPTERS

A summary of all chapters outlined for this research study and their fundamental ideas are reflected below:

Chapter 1: General orientation, provide readers with an introduction, problem statement, research aims and objectives for the research study at hand. The orientation of this chapter laid a foundation for the reader to understand the concept of illegal mining activities conducted in the mining sector by illegal miners. This chapter further unpacked challenges encountered in the mining sector owing to illegal mining activities. In addition, the chapter further presented a five-tier system that is constantly used by crime syndicates to highlight to the reader how crime syndicates operate in unlawful businesses such as illegal mining. Key concepts of the chapter were defined in this chapter which created a better understanding of problems associated with illegal mining activities, thus key concepts further provide clarity to the reader and direction to the study at hand.

Chapter 2: Research methodology**,** presents the research methods used throughout the study. The chapter began by offering an in-depth understanding of research design, research approach, research population, methods of data collection, methods of data analysis, ethical consideration, researchers' reflexivity and limitation of the research study. The whole purpose of incorporating such methods was to provide a rich description of illegal mining challenges encountered in the mining sector. The researcher further incorporated the researcher's reflexivity to brief readers of the researcher's experience during the data collection process.

Chapter 3: An overview of illegal mining was presented in this chapter which also provided the reader with factors contributing to illegal mining activities. The chapter then discussed the nature and impact of illegal mining activities. Moreover, the impact of illegal mining activities brought a phenomenal understanding of illegal mining such as poverty, unemployment rates, and easy access to the mining sector were further discussed. The discussion of this chapter further discussed the risks facing illegal miners on daily basis such as exposure to harmful substances like gas and health risks and encounters with rival groups.

Chapter 4: This chapter presented an overview of illegal mining in other countries which also provided the reader with legislation and regulatory framework implemented in countries affected by illegal mining activities that were further discussed in this chapter.

Chapter 5: Present data collected by the researcher to answer the objectives of the research study. Data was collected through conducting interviews with knowledgeable members of the South African Police Service (SAPS) from selected police stations and interviewing two station commanders from stations C and E. Two groups of illegal miners were interviewed at Zami Mpilo and Amatholesville squatter camps using focus group discussion (FDGs) to gain an in-depth understanding of illegal miners. In total data was collected from research participants

that is via two focus groups consisting of twenty-three (23) illegal miners and face-to-face interviews with forty-seven (47) police members from various police stations. The researcher stopped collecting data after reaching a saturation point, whereby no new information was coming forth from the research participants.

Chapter 6: The final chapter of the research study focused on outlining the recommendations and conclusions of the study.

6.5 SUMMARY OF FINDINGS

The findings of this study are summarized as follows:

6.5.1 Objective 1: Nature and extent of illegal mining in Gauteng

This study found out that illegal mining is a major obstruction that includes trespassing and theft of gold specifically where illegal miners enter the formal mining sector and disrupt majority of operations underground. The nature of illegal mining is continuously associated with dangers such as safety pillars underground being removed by illegal miners which compromises the safety of legal miners. Owing to everyday movements in the mining sector, access control in the mining sector is another area of concern. The study denotes that regardless of the inaccessible entrance to mines, corrupt legal miners lease access cards to illegal miners to enter the mining sector and further assist illegal miners with information regarding the productivity of precious gold. The study revealed that illegal miners steal mine equipment such as machines, chemicals, precious metals, copper cables and diesel equipment further associated with serious repercussions leading to the mining sector having to replace such explosives and equipment. The study concluded that poor usage of equipment used by illegal miner's damage mining infrastructure in Gauteng, such challenges further require an enormous amount of money to be addressed.

The study further revealed that the nature and extent of illegal mining are constantly associated with illegal businesses such as unlicensed liquor taverns, money laundering, and prostitution. During weekends, the above-mentioned businesses become busy, thus fights between different ethnic groups emerge, and at times illegal miners often kill each other. The major apprehension facing the police is that, once an illegal miner is dead, an investigation is conducted by the SAPS. Another issue associated with the nature and extent of illegal mining is that mine security are often attacked by illegal miners which poses a major concern to the

mining sector. The study revealed that in the mining sector where access is restricted, securities are often killed by illegal miners. The study shows that legitimate mine employees and security guards are not safe owing to illegal miners. The findings of the study reveal that SAPS members cannot fight this battle alone, thus an intervention from the government is needed.

In terms of the extent of illegal mining activities in Gauteng, the study was unable to determine how many people are involved in these activities because there is no accurate data or statistics stored by the police or any government department regarding the statistics of illegal mining activities. However, the police and researcher's observation confirmed that several people are participating in illegal mining activities.

6.5.2 Objective 2: Strategies used by the SAPS to deal with illegal mining

The strategy used currently by the police to curb illegal mining activities includes a Disruptive Operation Plan and vehicle patrols. The study assessed that police official identify a hotspot in which operations constantly change owing to the modus operandi of illegal miners. Police officials working night shifts often visit the area around 4 am hiding near *"Durban deep mine"* to oversee the movements of illegal miners, this further assists police officials to arrest some of the illegal miners who work morning shifts. Police officials patrol *"Durban deep mine"* during the day together with security, but this strategy is not yielding much success because, during the day, illegal miners have their own security who alert them when they see police vans approaching the area.

In addition to the above initiatives, police members constantly write notices which notify illegal miners of the disruptive operations that will be conducted. This strategy considered to be frail as the modus operandi of illegal miner's changes continuously. Such notices are written in four different languages to accommodate all illegal miners who do not understand other languages. The study confirms that the strategies used by members of the SAPS to deal with illegal mining activities are more reactive than proactive and that the local police receive no training on how to handle issues to do with illegal mining. Thus, the SAPS and the South African government need to seek alternative strategies that will serve as a solution to illegal miners.

6.5.3 Objective 3: Challenges facing the police when dealing with illegal mining

The study found that the challenges encountered by police officials when dealing with illegal mining activities include a lack of training of police officials whereby police do not receive any training on how to handle illegal mining activities. The lack of training further prohibits SAPS members from performing their profession effectively when emergencies arise in the mining sector, however, they do arrest illegal miners. Police further encounter possession of illegal firearms from illegal miners which gives illegal miners the ability to shoot police and to kill other ethnic groups when fighting for territory in the mining sector. The increasing occurrence of violence amongst illegal miners in the mining sector cannot be combated by one stakeholder, an intervention from different stakeholders is needed. The study revealed that the majority of fights occur underground which grows into a major concern as local police are not trained to enter underground mines. Moreover, the study further revealed that such a situation becomes difficult for police to deal with as in many cases police officials do not police illegal miners underground, thus fights lead to one or more deaths of members of groups of illegal miners. When an illegal miner is found dead, other groups of illegal miners throw the body out immediately. The study found that an inquest is opened by the police to determine the cause of the person's death, and such procedure is constantly conducted by police officials.

The study further revealed that the SAPS encounter frequent challenges of illegal miners not having known residential addresses or identity documents, thus prohibiting police officials from conducting investigations efficiently. Police officials handle cases of illegal miners in the same manner as when normal cases are handled. The mining sector is under siege owing to crime syndicates who recruit illegal miners working illegally in the mining sector. Likewise, the study further found that there are no laws that support the court of law to sentence illegal miners which at times situations discourage the police from arresting illegal miners. The study continues to highlight that police official cannot prove that the soil stolen by illegal miners contains pieces of precious stones, therefore illegal miners know that they don't have a case where a report from geologists cannot be provided in court. The study further revealed that trafficking of precious stones to other countries is of major concern, therefore the amount of gold trafficked cannot be traced or counted.

6.5.4 Objective 4: Roles of different stakeholders in the prevention of illegal mining in Gauteng

Currently, the stakeholders involved in the prevention of illegal mining include the Department of Mineral Resources (DMR), Johannesburg Metropolitan Police Department (JMPD), specialized police unit known as the National Intervention Unit (NIU), private security companies such as Fidelity and Community Policing Forums (CPFs). These stakeholders support local police officials in combating illegal mining activities by participating in meetings and collaborative activities involving the prevention of illegal mining. This process further requires a lot of intervention as illegal miners are capable of shooting without fear. The study further assessed that only one stakeholder such as police officials cannot curb illegal mining alone, an intervention from numerous stakeholders is significant.

6.5.5 Objective 5: The relationship between the police and stakeholders involved in the prevention of illegal mining in Gauteng

The SAPS have a good relationship with all relevant stakeholders in combating illegal mining activities. The stakeholders as previously mentioned in Section 6.5.4 show impressive commitment of stakeholders working together to curb illegal mining activities. During disruptive operations, all stakeholders are constantly available to assist the SAPS in dealing with the scourge owing to illegal mining activities. To elaborate more on stakeholder relationships, the meetings are frequently held to brief each other regarding the arrest of illegal miners and how many died due to shootings and rockfalls underground.

6.6 RECOMMENDATIONS

To deal with the issues emanating from illegal mining activities, the study recommends the humanistic approach which involves:

6.6.1 Decriminalization of illegal mining activities in South Africa

The study recommends that legislation or policy regarding informal mining activities such as illegal mining should be established by the Department of Mineral Resources (DMR). The policy or legislation will further support the initiative by the Minister of Mineral Resources, Gwede Mantashe, on granting access to informal miners. The Minister permitted that illegal miners situated in Northern Province, Kimberley to partake in illegal mining activities, and the

news was announced in April 2019. The research conducted by Oosthuizen (2009:2) denotes that illegal miners were granted 1000 hectares of land in Kimberley, however, no Act/policy framework supports such initiatives. Moreover, the study further recommends that for illegal miners to perform mining activities, legislation is required to support the statement provided by the Minister of Minerals. This regulation will decriminalize illegal mining activities and serves as proof that permission is granted legitimately to these miners. In turn, they will no longer be targets for police arrests and corrupt police practices. The study assessed that the availability of informal mining policy or legislation will further enable illegal miners to follow appropriate networks when selling gold to the relevant market.

In addition to the above discussion, South Africa should learn from countries such as Burkina Faso, Ghana and Tanzania on how to put measures in place that can grant access to the public members to do informal mining but within the government regulatory frameworks. For example:

Burkina Faso

Legislation in Burkina Faso was formulated to regulate illegal mining, such legislation provides provision to illegal miners. Comptoir Burkinabe Des Metaux is legislation that focuses on improving situations in the mining sector to ensure that illegal miners are always safe when extracting minerals. Furthermore, Comptoir Burkinabe Des Metaux permits that only Burkinabe citizens are granted licenses and can extract minerals, thus further prohibiting other neighbouring countries such as Mali, Benin, Niger and Togo to participate in illegal mining activities. Moreover, legislation regulates that license should be renewed every two years to ensure that all illegal miners follow all protocols arranged for them. Authorization for Artisanal Mining (AAM) ensures that all illegal miners do not enter the mining sector without having licenses, such initiatives serve as a constant reminder that licenses should always be carried when extracting minerals. Other regulations followed by illegal miners are that they are permitted to sell and export gold to areas assigned to them by the government of Burkina Faso which formulated better practices for illegal miners.

Ghana

One of the countries that decriminalized illegal mining activities, Ghana controls illegal mining by ensuring that all illegal miners follow guidelines and regulations applicable to them. The Provisional National Defense Council Act of 218 and Mineral Mining Amendment Act (MMAA) were established to support illegal mining activities. These Acts regulate all activities of illegal

miners. To support this statement, all registered illegal miners are continuously supervised to ensure that operations are continuously conducted in a good manner. The regulation of illegal miners in Ghana further prohibits other citizens who are not Ghanaian to acquire licenses to extract minerals, thus the approach creates employment in Ghana.

Tanzania

Tanzania similarly decriminalizes illegal mining activities in Burkina Faso and Ghana. All members involved in illegal mining activities should acquire mining licenses for them to perform illegal mining activities. Moreover, Tanzanian mining developed the Mining Act 28 of 1979 which supports the decriminalization of illegal mining activities. The Mining Act 28 of 1979 encourages Tanzanian citizens to participate in the mining sector with legitimate licenses. The licenses of illegal miners are applicable for one year which is renewed each year. Likewise, Tanzania regulates illegal mining activities by ensuring that illegal miners are granted sites to mine which prevents illegal miners from interfering with other mining sectors.

6.6.2 Enhancement of partnership with stakeholders

The study recommends that all private security companies operating within areas dominated by illegal mining activities should be encouraged to work together with other stakeholders involved in the decriminalization of illegal mining. This partnership will encourage all stakeholders involved to collaborate, coordinate and cooperate with the private security companies. The Community Policing Forum (CPF) will continue to work together to fight crimes emanating from illegal miners who do not follow rules and regulations applicable to them. The study revealed that to produce good outcomes, the CPF should firstly be supported by the community that they serve and provide the SAPS with the latest information that may assist the CPF to achieve its goals. Currently, the use of social media such as Facebook and WhatsApp groups are mainly used to report a crime, which is one of the social networks used to alert communities of any illegal activity conducted within the area. The study assessed that the mandate of the CPF is to send relevant information to the group so that available members can act immediately.

The study advocate that only the SAPS and Metropolitan police officials are eligible to carry guns. Of major concern is that the CPF is not permitted to use guns when dealing with perpetrators, thus police officials are called to attend to the crime scenes. Illegal miners further use such opportunities to disrespect members of the CPF with the knowledge that they do not use guns. The CPF members should be advised to:

- Report any suspicious vehicle rooming around the area;
- At all times, be the ears and eyes to the police;
- Alert police officials on certain dates for patrolling and
- Report any unlawful business conducted within the area.

The study highlights that the whole purpose of CPF is to fight crime, thus the process further requires the availability of the SAPS specifically when patrolling at night. The study further highlights that the partnership with police play a pivotal role and CPF is regarded as the best practice implanted to fight crime.

6.6.3 Access to public, health and police service

The decriminalization of illegal mining further allows all those involved such as women, men and children to have access to health facilities. It was also evident during data collection that women are not treated fairly in public clinics. Because illegal mining has been decriminalized by the Minister of Mineral resources in April 2019, this further permits that illegal miner should not be deprived of medication sought when feeling sick or suffering from any kind of disease. The decriminalization of illegal mining is considered a historic achievement to the community of Northern Cape Province owing to motives that they will no longer hide or run when they see law enforcers. Moreover, the decriminalization further authorizes that should illegal miners need any public service, assistance should be always provided.

6.7 CONTRIBUTION OF THE STUDY INTO THE BODY OF KNOWLEDGE

The contribution made by this study is a humanistic approach which the study advocates should be adopted to curb the problem of illegal mining in the country. In support of that, this study found that due to desperation amongst illegal miners it will be difficult for the police or the government to achieve a country free of illegal mining activities. This was evident in how determined the illegal miners are in terms of risking their lives daily to obtain minerals like gold from the mines, regardless of whether such mines are deemed sealed or not. It is out of this desperation and fearless attitude from the illegal miners that the researcher concludes that the South African government should approach this problem from a humanistic approach instead of striving for a province or country that is free from illegal mining. A humanistic approach to a problem is an approach that acknowledges that human beings need survival, and as such, they should be provided with support so that in the process of putting food on the table, they do so within the confines of the rule of law.

Considering the above, this study recommends the following humanistic approach to illegal mining:

- Establish regulations for small-scale mining activities in the form of an Act or policy - such an Act should allow the registration of illegal miners as small-scale miners to remove the stigmatization attached to the current name of 'illegal miners. Again, the act should grant a license for small-scale mining activities in the country, whereby certain sections of the land nationwide is allocated for small-scale mining activities. This act should also outline the requirements for participating in small-scale mining activities for example the age limit, tools to use and how to close holes left after minerals were extracted. These requirements will assist the police to deal with those that are violating the provisions of this act.
- Establish a database of owners of unused mines, for purposes of police investigations.
- Provide access to market to small-scale miners to make the selling and buying of minerals open to them and for the government to gain tax from such merchandise.
- Establish Association for small-scale miners, whereby their human rights are advocated for, and they are recognized for what they do in a transparent manner.
- Establish Intergovernmental relations on small-scale mining, whereby the Department of Minerals together with the SAPS Rescue team provide training on safety and other important information relevant to support the small-scale mining activities.

6.8 AREAS FOR FURTHER RESEARCH

To complement the findings of the policing of illegal mining in Gauteng, it is significant to note that further research is recommended. New research will discover information that was not disclosed during the interview process of the study. Information such as after selling of gold has been conducted to third tier as previously stated in Chapter 1, where does the fourth tier sell the precious metals to. During data collection, kingpins together with illegal miners declined to disclose such information to the researcher.

6.9 CONCLUSION

The main aim of the research study was to explore how the SAPS deal with illegal. Subsequently, through primary data collected for the envisaged study, it can be deduced that definitions associated with understanding what is illegal mining explained and explored. The motive why ethnic groups exist in illegal mining activities were also explained and explored. Likewise, the study further discovered the live experiences of illegal miners and how long they stay underground, thus how much money is made by selling certain kilograms of gold were

revealed in this study. The literature review further played a significant role by identifying which strategies were implemented in other countries affected by illegal mining activities. In conclusion, the study further denotes that illegal mining activities should be decriminalized not only in Northern Cape province but also in other provinces that encounter the issue of illegal mining activities such as Johannesburg, Free State and Mpumalanga to mention a few. This will therefore create employment legally as it did to Northern Cape Province.

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ADDENDUM A: INTERVIEW SCHEDULE FOR SOUTH AFRICAN POLICE OFFICIALS

How long have you been working in South African Police Service?

……

Concisely explain the term illegal mining

……

What are the challenges that you encounter when dealing with illegal mining?

……..

What type of training do you receive that enables you to deal with illegal mining activities?

……..

What are the root causes of illegal activities?

……

Briefly describe the impact of illegal mining activities?

……

Briefly explain the damages occurring in mining sectors as a result of illegal mining activities?

……..

What are the current strategies used by SAPS to deal with illegal mining activities in mining sectors?

……..

Besides SAPS, what are the roles of other relevant stakeholders in curbing illegal mining Activities.....

ADDENDUM B: INTERVIEW SCHEDULE FOR ILLEGAL MINERS

Where do you come from?

……

What are the reasons for you to be involved in illegal mining activities?

……

How were you introduced to illegal mining activities?

……

Do you wear protective clothing when searching for gold?

……

What are the challenges when searching for gold?

……

What challenges do you encounter underground?

……

Which type of sectors do you target and how do you enter those mines?

……

Which equipment (s) do you use when searching for gold?

……

How much do you make per month?

……

Briefly explain, how does gold reach your boss/kingpin?

……

How many grams, kilograms of gold are expected from you?

……

Are there any fights between different groups involved in illegal mining activities?

……

How do you survive underground?

……

ADDENDUM C: UNISA ETHICAL CLEARANCE

MABASO _ST141 OF 2016 _ APPROVED E-

ADDENDUM D: SAPS RESEARCH PERMISSION LETTER

SAPS PERMISSION LETTER.pdf

ADDENDUM E: TURN-IT-IN CERTIFICATE

Lebitso B TURNITIN CERTIFICATE.pdf

ADDENDUM F: LANGUAGE EDITOR'S CERTIFICATE

EDITING CERTIFICATE.pdf

ADDENDUM G: PARTICIPANTS CONSENT FORM USED DURING DATA COLLECTION

Principal researcher: Ms BT Lebitso

Cell phone no: 071 363 3379

Promoter: Professor S.A. Mabudusha

Good day

My name is Thabisile Lebitso, student no: **54799473** conducting the research study on **"THE POLICING OF ILLEGAL MINING IN GAUTENG"** to explore, describe and explains crimes associated with illegal mining activities.

AGREEMENT

I……. *(Full names)* hereby give full consent that I partake voluntarily in this research study which is conducted by Thabisile Lebitso who is a student at the University of South Africa (UNISA) enrolled for the DLitt et Phil under the Department of Police Practice.

I further understand that:

- The interview will last approximately 30-60 minutes, tape recorder will be used to capture all information rendered for the project,
- The researcher may ask for more follow up research questions should any clarity be needed,
- The information shared will only be used to answer research questions for the envisaged study,
- No compensation will be paid by the researcher for the information shared for the study,
- No personal information such as identity, names and surnames will be revealed by the researcher, the researcher will always maintain anonymity and confidentiality.
- The information will be kept in a locked cupboard in the researcher's office, no information will be shared with the colleagues.
- No harm will be caused to the research project.

Interviewee signature	Interviewer signature
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Date	Date
----------	----------

ADDENDUM H: RELEVANT PICTURES TAKEN AT SITE A AND SITE B


Stork