

GOLD IS WHERE YOU FIND IT

A multilevel study on the social sustainability
of the gold mine industry in Johannesburg



A thesis written by: L. S. de Bruijn

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A thesis submitted to the Nijmegen School of Management at the Radboud University Nijmegen in partial fulfilment of the requirements for the degree of Master of Science in Human Geography with specialisation in Globalisation, Migration and Development.

Cover photo: Vrudny, K. *"The people shall share in the country's wealth"*, Walter Sisulu Square, Johannesburg

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December 2017

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PREFACE

This journey began with a sincere interest in the physical world around us combined with a fascination for the rapid (technological) development of our time and a critical attitude towards facilitating these developments and the inherent impact on our planet. My mind has always been wondering about the consequences of an increasing world population, the exhaustion of resources and the connection with social conflict. This case study is the concrete outcome of my (re)search.

I would like to thank the ACMS for hosting and facilitating my research internship. I would like to thank Janet Munakamwe and Zaheera Jinnah for sharing their local expertise and guiding me through their network. I would like to thank Ethel Musonza for assisting me during the fieldwork stage. I would like to thank Lothar Smith for connecting me with the ACMS, for being my supervisor and for extracting the academic best out of me. Moreover, I would like to thank all the individuals who gave me access to their knowledge, experiences, perspectives and their lives, which has been the foundation of this research.

Finally, I wish to thank my family and boyfriend for their ongoing support and love and for reminding me that the time and distance are relative.

ABSTRACT

Historically, mining is one of the oldest documented kinds of human activity, and up until today, people have benefited from the natural riches of the earth (Dubinski, 2013). The extractives industry aims at acquiring a broad variety of natural resources, which are used to fulfil diverse needs around the globe. Mined resources provide the basis for our energy consumption, construction, chemical and medical implications, electronica and infrastructure. However, mining the volume of materials that is needed to satisfy our consumer society, leaves us all responsible for the social and environmental effects (Abraham, 2015).

Some of the resources are non-renewable and could, therefore, be depleted. Thus the neo-Malthusian theory emphasises the interrelationships between population growth, the scarcity of resources, environmental degradation and social conflict. Michael Renner (1996) even argues that population growth, the scarcity of resources and environmental stress comprise the greatest security threat since the end of the Cold War. One of the non-renewable resources is gold. South Africa has been the major global gold supplier until 2009. The gold mine industry in South Africa has played a vital role in attracting international investment and creating leading global companies (Antin, 2013). Therefore, the economic well-being of South Africa has been mainly based on mineral wealth (Mogotsi, 2005). Despite the welfare that the resource brought to some, "the gold mining activities in the past have left a legacy which has negatively affected the surrounding environment and nearby communities." (Viljoen, 2009, p. 135). Recent global and local developments are affecting the (economic) profitability of the gold industry in South Africa, with mine closure and abandonment as a result. These processes have an impact on the social, environmental and economic dynamics of the country.

This research evaluates the immediate and long term impacts on the sustainability of the gold mine industry in Johannesburg. The implementation of sustainability is often defined by the integration of activities concerning economic, environmental and social development. However, the focus of this

research is on the social aspects of sustainability that emphasise the fact that natural resource wealth should transform into sustainable citizen well-being. This includes the improvement of the socio-economic circumstances for the current- and future generations of South Africans. The Department of Mineral Resources developed progressive mining legislation in 2002. More specifically it's Mineral and Petroleum Resources Development Act (MPRDA) requires companies to develop and Social and Labour Plans (SLPs). The SLP contains plans on how to implement comprehensive human resources development programmes, a mine community development plan, a housing and living conditions plan, an employment equity plan, and processes to save jobs and manage downscaling and closure (DMR, 2010). "These programs aim to promote employment and advancement of the social and economic welfare of all South Africans whilst ensuring economic growth and socio-economic development." (DMR, 2010, p.4).

By connecting the national mining context to global developments, this study aims to surface the local social impacts of the gold mining industry in Johannesburg. A qualitative research method is selected to explore at length the complex context, linkages and structures within the gold mine industry in the West Rand- Witwatersrand. A case study research design offered suitable methods for answering the how and why questions of this study (Yin, 2003). The methods that are used in this study are a combination of desk research and field work. A selected group of experts and members of the West Rand mine community participated in the interviews, providing in-depth knowledge on the case. Key themes in this research are the perspectives of- and cooperation between different stakeholders, the relation between large-scale and artisanal and small-scale mining and social risks of mine communities. This research focused on exploring and explaining, by providing additional information about the themes chosen (Kowalczyk, 2015).

This study found that the design of the legal and regulatory framework sounds very promising in terms of promoting equity and social justice. However, the legal system is only efficient if South Africa can implement and enforce it effectively. Currently, critical voices are being raised amongst NGOs and mining affected communities. "Most of the policies have been

stated but not implemented.” (Cronje & Chenga, 2009, p.414). The legislation induces that the mining industry is responsible for (social) sustainable development. However, guidelines are ambiguous and practical rules are missing. The Department of Mineral Resources does not have a measuring tool, nor the capacity to monitor to what extent companies are implementing their corporate social responsibilities as agreed upon in their Social and Labour Plans (ibid.). Resulting in the fact that companies can interpret legislation themselves, often prioritising profit at the expense mining communities and the environment.

Furthermore, recent developments regarding mine closure contribute to the list of issues concerning the South African gold mine industry. The boom and bust of the gold mine industry in South Africa creates economic-, social- and health problems for companies as well as for communities (Morais & Veiga, n.d.). The shredding of jobs in the industrial mining industry, parallel with the inadequate rehabilitation of the landscape and a lack of alternative sustainable economic activities, forces people to generate alternative income production. This often leads to participation in the informal mining industry, or *zama zama* mining. Zama zama gold mining is part of the livelihood strategy for many of the households living in the West Rand. This informal mining, often in abandoned mine shafts, results in an increase in health-, safety- and social risks. This study elaborates on these risks and provides insights on how transparency, governance, a critical mass of citizen understanding and resilience could contribute to reduce these risks and promote social sustainability in the gold mine industry in Johannesburg.

Keywords:

Gold, Mining, Social, Development, Sustainability, South Africa, Johannesburg, Witwatersrand, West Rand

TABLE OF CONTENTS

PREFACE	II
ABSTRACT	III
TABLE OF CONTENTS.....	VI
LIST OF FIGURES	VIII
LIST OF ABBREVIATIONS	IX
1. INTRODUCTION.....	11
1.1 Problem statement	13
1.2 Objective and relevance of the research	15
1.3 Research questions	18
1.4 Research structure.....	20
2. THEORETICAL FRAMEWORK	22
2.1 Neo-Malthusian theory.....	22
2.2 Resource nationalism.....	23
2.3 Social sustainability	24
2.4 Conceptual framework	28
3. METHODOLOGY	29
3.1 Research strategy	29
3.2 Data inquiry	34
3.3 Data analysis	35
3.4 Research context.....	35
4. GLOBAL DEVELOPMENTS AFFECTING LOCAL SCALES	41
4.1 A global perspective	41
4.2 Mining for development.....	44
4.3 The mining spectrum.....	45
4.4 Mining legislation; a continental perspective.....	47
5. A NATIONAL PERSPECTIVE	50
5.1 Apartheid legacy	55
5.2 Mining legislation; a national perspective	55

5.3 Zama zamas	58
6. THE LOCAL LENS.....	63
6.1 The impact of legislation on a micro scale	63
6.2 Mapping stakeholders	67
6.3 Interaction stakeholders	69
6.4 Achieving social sustainability in the extractives industry	72
6.5 The West Rand communities	74
6.5.1 Household and gender differentiated impacts	76
6.6 Communities' risks	76
6.6.1 Health risks	77
6.6.2 Social risks	78
6.6.3 Economic risks	80
6.6.4 Institutional risks.....	81
7. CONCLUSION.....	83
7.1 Discussion	83
7.1.1 Transparency	83
7.1.2 Governance	84
7.1.3 Critical mass of citizen understanding	85
7.1.4 Resilience	86
7.1.5 Rehabilitation projects	87
7.2 Conclusions	88
7.3 Reflections and recommendations.....	95
7.4 Suggestions for future research.....	97
REFERENCES	98
APPENDIX - ETHICAL CLEARANCE	111
APPENDIX - INFORMATION SHEET.....	112
APPENDIX - INFORMED CONSENT FORM	113

LIST OF FIGURES

Figure 1: streetart at Constitution Hill, photo: authour	21
Figure 2: conceptual framework	28
Figure 3: interviewees.....	32
Figure 4: occupation	33
Figure 5: nationality	33
Figure 6: research area	36
Figure 7: "Durban Deep", photo: authour	38
Figure 8: police raids in Matholesville, photo: the Times	40
Figure 9: the top 5 gold producers	42
Figure 10: e-Goli, place of gold, photo: authour	49
Figure 11: the position of the 7 major gold fields	50
Figure 12: gold production and industry employment (2007-2016)	52
Figure 13: artisanal mining at Mathole, photo: authour.....	59
Figure 14: stakeholders.....	68
Figure 15: stakeholders' expectations	68
Figure 16: artisanal mining equipment "Pendukaa", photo: authour.....	82

LIST OF ABBREVIATIONS

AASA	ActionAid South Africa
ACMS	African Centre for Migration and Society
AMV	Africa Mining Vision
AU	African Union
ASM	Artisanal and Small-scale Mining
BBEEE	Broad Based Economic Empowerments
COM	Chamber of Mines
DMR	Department of Mineral Resources
CALS	Centre for Applied Legal Studies
CSR	Corporate Social Responsibility
EC	European Commission
GDARD	Gauteng Department of Agriculture and Rural Development
ICLG	International Comparative Legal Guides
IIED	International Institute for Environment and Development
LAMOSA	Land Access Movement of South Africa
LARC	Land and Accountability Research Centre
LRC	Legal Resources Centre
LSM	Large-scale Mining
MACUA	Mining-Affected Communities United in Action
MEJCON-SA	Mining and Environmental Justice Community Network of South Africa
MPRDA	Mineral and Petroleum Resources Development Act
NGO	Non Governmental Organisation
NUM	National Union of Mineworkers
NRGI	Natural Resource Governance Institute
OECD	Organisation for Economic Cooperation and Development
PMA	Precious Metals Act
SAHRC	South African Human Rights Commission
SAPS	South African Police Service
SLP	Social and Labour Plan
UNDP	United Nations Development Programme
USGS	United States Geological Survey
WAMUA	Women Affected by Mining United in Action
WCED	World Commission on Environment and Development
WGC	World Gold Council

THE PEOPLE SHALL SHARE IN THE COUNTRY'S WEALTH

"The national wealth of our country, the heritage of all South Africans, shall be restored to the people; The mineral wealth beneath the soil, the banks and monopoly industry shall be transferred to the ownership of the people as a whole; All other industry and trade shall be controlled to assist the well-being of the people; All people shall have equal rights to trade where they choose, to manufacture and to enter all trades, crafts and professions."

-The Freedom Charter, 1955

1. INTRODUCTION

Technologies are continuously transforming our daily lives. Technological developments have reached to the far corners of the world and have stimulated global interconnectedness and mobility. However, people have come to the demand that technologies become cheaper, better accessible and more advanced every year, meaning that our gadgets need to outperform their precedent constantly (Abraham, 2015). Not only our gadgets and medical equipment but also infrastructure, whether digital or physical, is subjected to accelerating developments. These dynamics are coexisting with a rise of the middle class (UNDP, 2013, Birdsall, 2015). This striking transformation of a vast number of developing countries into major dynamic economies has a significant global impact (UNDP, 2013). To facilitate the horizontal and vertical development and access to these technologies, we are heavily reliant on the access to non-renewable materials; therefore, the global demand for these resources will increase (IIED, 2002). Predictions concerning the lifetime and the accessibility of non-renewable resources are contrasting. However, there are three certainties; one: these minerals are finite, two: experts do not know how much more is needed to match the future global demand and three: social issues will evolve relating to the mining industry (Abraham, 2015). Therefore, it is not an understatement to say that our usage of these minerals will determine earth's fate (Abraham, 2015).

The realisation of the importance of- and the insecurity that comes with- the supply of these minerals is occupying the global discourse (Abraham, 2015). Countries and companies understand that a continuous access to these non-renewables is a source of power and influence. However, the world's reliance on non-renewable resources is not only an abstract geopolitical concern, it is a potential source of conflict and already leading towards a "war over the periodic table" (Abraham, 2015). This war has its effect between, as well as within, countries as a part of the so-called resource curse. Paul Collier (2007) and Michael Ross (2003) describe the resource curse as 'the availability of resources that contribute to the conflict

trap'. If a country's territory stores many resources in the ground, it is likely to shape their economy, but paradoxically, if not governed well, it can lead to major issues (Collier, 2015B).

Research has shown that many countries in Africa are at risk when it comes to resource-related conflict. This conflict occurs due to the marginalisation of people, the exploitation of workers and land, relating to the processes of mining. Research by Oxfam indicated the following adverse impacts of mining; (threats of) eviction, forcing people from their homes and land, excluding people from accessing clean land, water and other resources, impacting people's health and livelihoods, changing the social dynamics of communities and exposure to harassment by mine companies or the government (Oxfam, no date). "Mining for resources can therefore induce environmental, political, and social issues, which could be prevented through the cooperation of stakeholders and by commitment to sustainable development." (Esteves & Vanclay 2009, p.138). One of the principles of the South African Freedom Charter (p.12), was already focusing on turning natural resource wealth into sustainable citizen well-being in 1955.

Even though many countries in Africa have to cope with mining related issues (Harsch, 2007), from a historical and economic perspective South Africa is particularly interesting. The mining sector in South Africa has been the main driving force behind the history and development of the continent's most advanced economy (Brand South Africa, 2012). The discovery of gold in the Witwatersrand basin in Johannesburg was a turning point in the history of South Africa and led to the modern industrial state (Antin, 2013). However, current global processes are pushing South Africa into a less comfortable position, resulting in a high potential for social, environmental and economic risks. These developments include the global financial crisis, the international influence and increasing power of China in the mineral world, the global scarcity and quest over non-renewable resources and the transformation towards a greener energy model. However, these global trends develop parallel with local issues, such as the inadequacy of technological developments to access minerals, labour unrest, environmental- and social challenges.

Because an analysis of more than one resource is beyond the scope of this thesis, the focus is on the social sustainability of the non-renewable resource gold. The World Gold Council sketched the value of gold for multiple prevailing purposes; gold wires the internet and is a key component in engineering and electronics. Gold is the material to guarantee reliability in a broad range of high-performance and safety-critical applications. The unique qualities of gold makes it crucial in the medical sector, (space)industries and construction. Furthermore, the research of the application of gold as a non-material is beginning to offer solutions to global health problems and environmental challenges (World Gold Council, 2016). As the importance of gold in multiple sectors can not be overemphasised, and the access to the resource is increasingly insecure, the question revolves around the impacts of gold mining on local societies.

1.1 Problem statement

"The production of rare metals can be ruinous to the surrounding communities." (Abraham, 2015, p.16). South Africa has a long history of mining, which has accounted for many economic assets. However, in response to the uncertain access to gold, the volatility in gold prices and stagnation in the development of deep-level gold mining, many companies are forced to (temporarily) close their mines. On an environmental level, this leads to degradation, and with insufficient capital to rehabilitate the soil, it leads to contamination of water and land. On a social level, the current mine closures lead to affected livelihoods, unemployment, social unrest and communal conflict.

Research carried out by the South African Compliance Advisor Ombudsman revealed that the most problematic issue affecting the communities involved with the gold mining industry is the lack of consultation (Gilbert-Jones 2014). Communities often emphasise that the existence of the gold mining operation is not the problem, but rather the unknowing of the effects and benefits (Gilbert-Jones, 2014). Gilbert-Jones (2014) continues by arguing that South Africa provides a recent example of the consequences of failing to engage with local communities at an early stage of operation.

He emphasises the importance of consultation and strives for the development of engagement mechanisms to overcome this issue. However, consultation is only one of the aspects of community involvement that is necessary for the industry to be socially sustainable.

The most crucial challenge of the mining industry is creating a balance between the needs of the community, the environment and the extraction of resources (NRGI, 2014). Not only it is difficult to predict the impacts on the livelihoods of the people living in the surrounding areas, but it is also challenging to rightfully compensate for the extraction of the resources and to share the industry's benefits. Therefore, the social exclusion that may derive from the mining industry, combined with governance challenges, environmental risks, resource depletion and the resource curse, implies that the sector is at the heart of the sustainable development challenge (Sachs, 2015A). Sustainable development regarding the mining industry involves that the industry operates in recognition of responsible management (ibid.). This way the industry ensures a fair way on how they operate, the patterns of their production and the use of their products. Sustainability in these operations is inherent to a world in which economic development is accompanied by social justice, fair treatment, and environmental justice (ibid.). Sustainable development implies a holistic approach to society, which takes multiple stakeholders into account and encompasses not solely economic profits. This perspective is crucial for the focus of the societal impact of the gold mining industry in South Africa. The assumption of this research is in line with an approach formulated by Paul Collier (2007) that stresses that natural resource wealth should transform into sustainable citizen well-being. "Countries with non-renewable resource wealth face both an opportunity and a challenge. When used well, these resources can create greater prosperity for current and future generations; used poorly, or squandered, they can cause economic instability, social conflict, and lasting environmental damage." (NRGI, 2015, p.1).

1.2 Objective and relevance of the research

By analysing the case at three different levels, this study aims to contribute to the understanding of the social and environmental effects relating to the gold mine industry on the West Rand communities in Johannesburg. These levels are the macro level, in which global processes, including gold supply and demand and the value of the non-renewable resource, result in local interaction. The meso level, i.e. the national lens, in which the objective is to interpret the social sustainability of this industry by implementing an assessment on the South African mining legislation and mapping relevant stakeholders. The last stage, the micro level, examines the gold mine industry from a community perspective. This level indicates how mining activities impact the social- and physical environment.

The location for this study is chosen carefully. South Africa is a country with 10,7% of the global gold reserves (USGS, 2017). The South African production rate of gold was 140 metric tons in 2015, which is 4,7% of the total global production (ibid.). This marks the country as a dominant actor in the global gold industry. From a historical perspective, the social dynamics related to (the legacy of) colonialism and apartheid, provide an interesting and unique context to this study. The evolution of mining legislation after historical events and the direct and indirect influences of the gold industry on the country contribute to the incentive of implementing a case study in South Africa.

This study seeks to describe the gold mine industry on multiple levels. On the macro level, gold scarcity, technological developments, global governance and geopolitical structures are major drivers in the industry. Henceforth, these macro global developments connect to the local context in Johannesburg on a meso level. The meso level covers the local governance and regulations, the local network and -on a more abstract level- the discourse regarding the gold mine industry in Johannesburg. Illustrating the influences of the macro- on the meso level; South African legislation is not developed in a vacuum. The country's legislative framework is subjected to global and regional developments. On a continental level for example, the African Union provides guidelines for African governments to manage their

natural resources. Moreover, global developments regarding the gold industry influences a country which soil is rich of gold. Technological developments, the global gold demand and therefore the gold price, affect the global gold market and therefore big players, like South Africa. The macro and the meso level in their turn affect the micro level. In this research, the micro level reflects upon (local) policies, NGOs, local projects and initiatives and the mine communities in Johannesburg. The micro level is subjected to shifts on a meso and macro level, for instance if technology does not allow for mining equipment to support the deep level mining in Johannesburg, companies are forced to close their mine shafts, leaving many people unemployed. Next to economic risks this involves social risks for the households affected.

This vertical analysis of the processes occurring in and around the gold mining industry will provide a better understanding of the influences of the stakeholders, their interaction with legislation and inherently the impacts on communities and the informal economy. The focus is on the social impacts and the social sustainability of the gold mining in Johannesburg, while acknowledging that all dimensions of sustainable development, including environmental-, economic-, political- and cultural sustainability are inherently social and interdependent (James, 2015). This study aims to provide a source to inform the public discourse. The results of this research might stimulate initiatives focussing on improving the (social) sustainability of the industry and mitigate adverse impacts on communities. This is the societal relevance that this research aims to achieve.

As aforementioned, the quest for non-renewable natural resources, such as gold, is mainly driven by a growing demand for the material and the scarcity. These global issues induce local challenges such as the marginalisation of people, conflicts regarding the rights to access the resource, the exploitation of workers and land. These societal and environmental impacts are widely attracting attention, therefore, need to be addressed. Although, the South African government and the gold mining industry is believed to take action to improve the economic-, social-, and environmental well-being of mine communities, the questions remains to what extent this effort is contributing to an overall enhancement of the

(social) sustainability of the gold mining industry in South Africa. Particularly, due to concerning alerts from mining affected communities and NGOs.

It is against this background that this study examines the impacts of gold mining in the West-Rand, Witwatersrand. A case study in South Africa, a country which has a major part of the global total gold reserves, is therefore not only of societal but also of scientific importance.

Globalisation in our current society provides us with opportunities and challenges. A growing world population which is inherent to an increasing demand for food and resources, infrastructure and digital technologies, induces benefits and risks. Furthermore, globalisation has changed the relationships between governments, corporations and communities (Cronje, Chenga & Theron, 2006). These developments intensify global connections and stimulate interdependency, global aid and trade. Moreover, the impact of globalisation has provided (inter)national corporations with more power than most of developing countries' governments (Ibid.). These intangible macro dynamics have their influence on meso and micro contexts. The gold mining industry in Johannesburg is therefore highly related to these global dynamics, and suggested is that (mine) communities are pushed into a vulnerable position, due to the fact that their government may not be able to support it's people against the (economic) power and leverage of (multi)national corporations. Therefore, research is essential to transcendence the local social processes and effects of the gold mine industry on the West Rand communities. For this study it is important to focus on the context specific details, such as legislation, stakeholders, history and current developments.

Furthermore, this research will complement existing literature and studies focusing on the sustainability of mining projects (Mudd, 2007, Hilson & Murck, 2000, Solomon et al., 2008). The South African Chamber of Mines acknowledges this knowledge gap and argues that research in the South African mining industry is required in a broad range of topics, including community-related issues (COM, 2017). Researchers from the African Centre for Migration and Society (ACMS) implemented various studies concerning artisanal and small-scale gold mining. In 2016 Zaheera Jinnah studied ASM

gold mining and its connections to migration, informality and social exclusion. Jinnah, Munakamwe and others collaborated on an extensive study to map the work structures and labour conditions of artisanal and small-scale mining, the effects on health and the linkages to migration. This will form the foundation of this research. However, this study will complement previous studies by analysing the South African legislative framework and better understand the effects of the gold mine industry on social aspects.

Information regarding the mining industry has been collected on a global scale, although mainly focusing on technical aspects (the extraction processes and the processing of natural resources), the environmental aspect (influence of waste on the landscape and tailings), the economic aspects (the value of gold and the cost-benefit analyses of mining reserves). Therefore, a focus on social impacts of the mining sector will be of scientific importance. "The general underinvestment in social research could also be attributed to an environment that does not prioritise social issues until they directly impact the business in some negative way". (Solomon et al., p. 147). The scientific relevance of this research is to evaluate the social impacts of the gold mining industry in Johannesburg and to indicate a trajectory in which sustainable development of the industry could be enhanced.

1.3 Research questions

Defining the research questions is an essential element of the research strategy. "The key is to understand that research questions have both substance and form." (Yin, 2003, p.7). The decision chain as formulated by the Natural Resource Governance Institute provides the outline for the research questions. The decision chain "illustrates the process of converting natural resources into long-term sustainable development" (NRGI, 2015). As aforementioned, this research focuses on the local effects of the gold mining industry, while mapping relevant global developments and aims to evaluate the social sustainability of the mining industry in Johannesburg. To achieve the research objective, the following main question is formulated;

What are the social impacts of the gold mine industry in Johannesburg and how does the mining sector contribute to local social sustainability?

Multiple sub-questions are posed to answer the research question systematically;

On the macro level:

- ✦ What are relevant global trends in the gold industry that relate to the developments in the industry in Johannesburg?

On the meso level:

- ✦ What are the effects of the gold mine industry regulations on the communities' access to resources?
- ✦ How is the local community involved in decision making processes regarding the gold mining industry?
- ✦ How do the stakeholders cooperate to identify the social and environmental risks of the gold mining industry in Johannesburg?
- ✦ How is the community protected from harmful effects associated with the gold mining industry?
- ✦ How are the artisanal and small-scale mining related to the big gold mining industry in Johannesburg, and how is this managed by the government?

On the micro level:

- ✦ How does the gold mining industry affect the livelihoods of the communities involved?

These sub-questions aim to answer the main question and contribute to achieving the research objective. These requirements are formulated by Verschuren and Doorewaard (2015) to measure the efficiency of the research.

The first sub-question focuses on global dynamics within the gold sector and relates these developments to the context of Johannesburg, South Africa. Connecting these geographical scales is important to understand the local impacts. After analysing the meso and macro scale, the second sub-question zooms in on the South African mining legislation. It is necessary to analyse the legal framework in order to reflect on the context

specific impacts of the gold mine industry. This is the main input for the research, from which it can develop further. To link the regulations to sustainable social development, the question also probes for detailed information regarding the access to resources.

The third sub-question zooms in on the level of involvement of the local communities and their role in decision-making processes. The communities around the West-Rand are selected, due to the levels of mining activity in these areas. This question builds onto the second sub-question by adding a critical lens to verify how legislation is enacted by the government.

The fourth sub-question zooms in on the social- and environmental risks associated with the mining of gold. The objective of this question is to map the relevant stakeholders and to examine their role in identifying risks.

The fifth sub-question zooms in on the harmful effects of the industry and examines how people are protected from these effects. Together with sub-question 2 and 3, this question is crucial in order to evaluate the social sustainability of the gold mine industry in Johannesburg.

The sixth sub-question examines the relationship between large-scale mining (LSM) and artisanal and small-scale mining (ASM), in order to understand the relevance of both forms of mining regarding social sustainability.

The seventh sub-question zooms in on the effects of the gold mining industry on the livelihoods of local communities of the West-Rand. It builds on the previous questions by surfacing underlying impacts of the industry on the community.

1.4 Research structure

This research is divided in seven chapters. After this first chapter, the research continues with the theoretical framework. In this chapter relevant concepts and theories will be explained. Chapter three elaborates on the methodological implementation of the research. The research continues with a global overview of the gold mining sector and an explanation of the mining spectrum in chapter four. Chapter five zooms further in on the South African mining context, including history and legislation. The research continues with

the local lens, i.e. the impact of legislation, the key stakeholders and the concept of social sustainability in the South African gold mine industry in chapter six. Chapter six concludes with an analysis of the effects of the gold industry a micro level in the West Rand. Finally, this research will be completed with a holistic conclusion, followed by recommendations, a reflection on the research process and suggestions for further research in chapter seven.

FIGURE 1: STREETART AT CONSTITUTION HILL, PHOTO: AUTHOUR



2. THEORETICAL FRAMEWORK

"Social sustainability occurs when the formal and informal processes; systems; structures; and relationships actively support the capacity of current and future generations to create healthy and liveable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life." (McKenzie, 2004, p. 18)

This chapter will introduce the theoretical lenses through which this case will be studied. The Neo-Malthusian theory is the first theory included in the theoretical framework, to consider the finiteness of resources and therefore, in a more abstract relation, the indirect effects on employment and livelihoods. The second theory that will be discussed is resource nationalism; this is particularly relevant in the South African context and the aftermath of history. The third and most influential theory for this research is social sustainability, the origins of the theory and the practical implementation in regards to the extractives industry will be discussed.

2.1 Neo-Malthusian theory

The first objective of this research is to link global developments regarding non-renewable resources to the local effects of the gold mining industry in Johannesburg. Jared Diamond (2008) claimed that each person living in a developed country consumed 32 times more material than a person living in a developing country. However, currently, this equation is shifting. A global trend shows the rise of the middle class and the acceleration of the high consuming lifestyle of the upper middle class (UNDP, 2013, Birdsall, 2015). This increase in consumption is fuelled by globalisation and the access to products and markets. The interconnection of world economies and cultures facilitates the foot-looseness of companies, that move (production) processes to financially attractive localities. Resulting in the fact that international companies mine resources in a particular country, process the resources in another country and mainly sell the product in another part of

the world. Therefore, globalisation processes often undercut traditional economies and challenge the sustainability of survival practices (Kofman & Youngs, 2003). Furthermore, the social risks related to the mining sector are not carefully considered (Abraham, 2015), as the relationship between government, (international) mine companies and the population of a country is often far from ideal. "Wars in the South are now frequently about who will control the revenue from the extraction of resources for sale on the global market." (Kaldor, 1999 in Kofman & Youngs, 2003).

The neo-Malthusian theory emphasises the interrelationship between population growth, the scarcity of resources, environmental degradation and conflict. Michael Renner (1996) even argued that population growth, the scarcity of resources combined with environmental stress comprise the greatest security threat since the end of the Cold War. Supporters of the neo-Malthusian theory state that a finite amount of resources places a limit on consumption and therefore on population growth. If we move beyond these limits, the result will be global poverty and eventually social breakdown (Homer-Dixon, 1999). The crucial point of critique of the neo-Malthusian theory is that local endogenous factors are not the solemn drivers of the processes that are causing many contemporary insecurities (Williams, 1995 in Kofman & Youngs, 2003). The processes of accelerating global interconnection explain more than the formulations of Malthusianism, which assumes that global challenges are driven by local autonomous processes of overpopulation (Peluso & Watts, 2001). Regardless of how processes of overpopulation exactly relate to the scarcity of resources, mining the amount of materials that is needed to satisfy our consumer society, leaves us all responsible for the social and environmental consequences (Abraham, 2015). This research aims to provide a better insight on how these global processes and their inherent discourses affect a local scale.

2.2 Resource nationalism

One major development in South Africa is resource nationalism. Resource nationalism refers to the tendency of governments to control resources within their territory and legally ban foreign companies from the mining industry.

“Resource nationalism is a sign of the long-standing divide between African ruling parties and Western and South African mining companies which have been seen as colonialist and capitalist exploiters”. (Burgess, 2010b, p. 4). In 2002, South Africa enforced a Mining Law which enabled the government to determine mining rights. This law created ownership of the minerals and moreover, a regulatory uncertainty (ibid.). In specific, the 2002 law mandated “Broad-Based Black Economic Empowerment” (BBBEE), requiring a minimum of 26% ownership by black owned companies (ibid.). Burgess continues to argue that resource nationalism in South Africa “is set against the backdrop of a government that has not been able to deliver on many of its promises of employment and greater prosperity for the impoverished masses.” (Burgess, 2010b, p.4). This nationalistic approach transformed the mining sector; it turned into a disincentive for investors and a source of continued decline in the macroeconomic performance of South Africa (ibid.). The vision of the South African National Planning Commission, published in 2011, pointed out that South Africa’s mining industry needs investment above all (ibid.). Research indicated that the problems of physical infrastructure, especially electricity, railways and water have a negative effect on mineral production in South Africa (Burgess, 2010a). These issues developed mainly because of mismanagement of state-run infrastructure companies (ibid.). Investments from international mining companies could potentially improve South African infrastructure. However, resource nationalism concerns foreign investors and moreover, local investment is stagnating due to a low level of confidence in the extractives industry (Burgess, 2010b). It is rather unsure what the long term effects of this strategy, which involves mine nationalisation, state-owned mining companies, and indigenisation, will be. The expectation is that resource related international conflict in Africa is likely to occur due to efforts of China to monopolise materials and the counter actions of African countries to nationalise mining industries (ibid.).

2.3 Social sustainability

This research will focus on the local community, and the results of the study will lay the foundation for the recommendations of sustainable social

development regarding the gold mining industry. To understand the effects of the gold mining industry in Johannesburg in relation to social development, it is crucial to discuss the most influential concept; social sustainability.

Currently, the concept of sustainable development is widely used. However, it originated from discourses in the second half of the twentieth century. Sustainable development was a response to the excessively intensive and uncontrolled use of natural resources that caused the rapid economic growth of many countries during that time (Dubinski, 2013). In 1987 the World Commission on Environment and Development of the United Nations published a report: *Our Common Future*, to reduce this undesirable trend. The message of this "Brundtland" report entails that in order to ensure the future life on this planet, sustainable development is crucial to all areas of life and human activity, and defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (WCED, 1987). This definition contains the following two key concepts: "the concept of 'needs', in particular, the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs." (ibid.). Regardless of the ambiguity of this definition in the context of mining (Mudd, 2007), in general this includes the availability of- and access to resources, a productive environment and a healthy community at current and former mining sites (Mudd, 2007; Azapagic, 2004; Cowell et al., 1999; Gordon et al., 2006).

The focus on sustainability increased in the years following the influential Brundtland report. During the Earth Summit in 1992, the concept of sustainability was extended but also became more concrete. The Rio Declaration on Environment and Development emphasised the need for cooperation in the development of a sustainable global economy, in acquiring mineral resources and in the creation of new technologies for their use (Dubinski, 2013). Furthermore, it proposed a practical implementation of the concept; sustainable development entails the integration of technical and economic activities ensuring economic growth, ecological activities

protecting natural resources and the environment and social activities caring for people and community development in the area of mining activity (ibid). In 2001 the Organisation for Economic Cooperation and Development (OECD) expanded on the essence of sustainability by arguing that "it also requires securing those public goods that are essential for economic development to last, such as those provided by well-functioning ecosystems, a healthy environment and a cohesive society. Sustainable development also stresses the importance of retaining the flexibility to respond to future shocks, even when their probability, and the size and location of their effects, cannot be assessed with certainty." (OECD, 2001, p. 2). Hereby, the OECD addressed the social aspects of sustainability and emphasised the importance of context.

Mining companies are directly affected by the sustainable development agenda. Initially, the focus has been on economic sustainability. However, external pressure broadened the definition into environmental-, political- and social dimensions (Chenga et al., 2006). This includes taking account of social and economic progress, ensuring human development and providing for the basic needs of the present (ibid.). While acknowledging the importance of a balance between all aspects of sustainability, social sustainability forms the lens for this case study. Unlike economic and environmental sustainability, social sustainability is a somewhat underexposed dimension in the public dialogue. Multiple approaches to social sustainability exist, however while defining the concept the most crucial aspects are; social equity, liveability, health equity, community development, social capital, social support, human rights, labour rights, place making, social responsibility, social justice, cultural competence, community resilience, and human adaptation (Magee et al., 2013). These aspects will be used to describe and determine the social sustainability of the gold mine industry in Johannesburg.

The first approach towards social sustainability suggests that all dimensions of sustainable development are inherently social, this includes environmental, economic, political and cultural sustainability (James, 2015). James continues by arguing that all these dimensions are dependent on one

another. Griebler and Littig (2005) affirm this interdependency and claim that "sustainability as a normative principle for the regulation of socio-ecological processes initially focuses on the social management of natural resources, which should in the long term ensure the equal distribution of resources and thus the long-term provision of the basic ecological requirements for social reproduction." (Griebler & Littig 2005, p.12). This approach combines the multiple layers of sustainability; social, environmental, political, cultural and economic. This makes the theory of social sustainability pre eminently relevant for this research. However, this perspective does not allow to separate the dimensions from one another by their crucial interdependency.

The second approach towards social sustainability is developed by the Young Foundation in 2011. The Young Foundation is a cooperative platform consisting of international thinkers and policymakers who are "fighting inequality through trailblazing research and by working with communities." (The Young Foundation, n.d.). The foundation states that social sustainability is "a process for creating sustainable, successful places that promote well-being, by understanding what people need from the places they live and work. Social sustainability combines design of the physical realm with design of the social world – infrastructure to support social and cultural life, social amenities, systems for citizen engagement and space for people and places to evolve." (Woodcraft et al., 2011 p. 16). Contrary to the first approach, the Young Foundation emphasises the dynamic character of the term. Furthermore, this approach indicates a linkage between the physical realm and the social world, which is highly relevant to this study. Furthermore, McKenzie (2004) provides a holistic definition of immediate relevance to this research. As he states that "social sustainability occurs when the formal and informal processes; systems; structures; and relationships actively support the capacity of current and future generations to create healthy and liveable communities." (McKenzie, 2004, p.18).

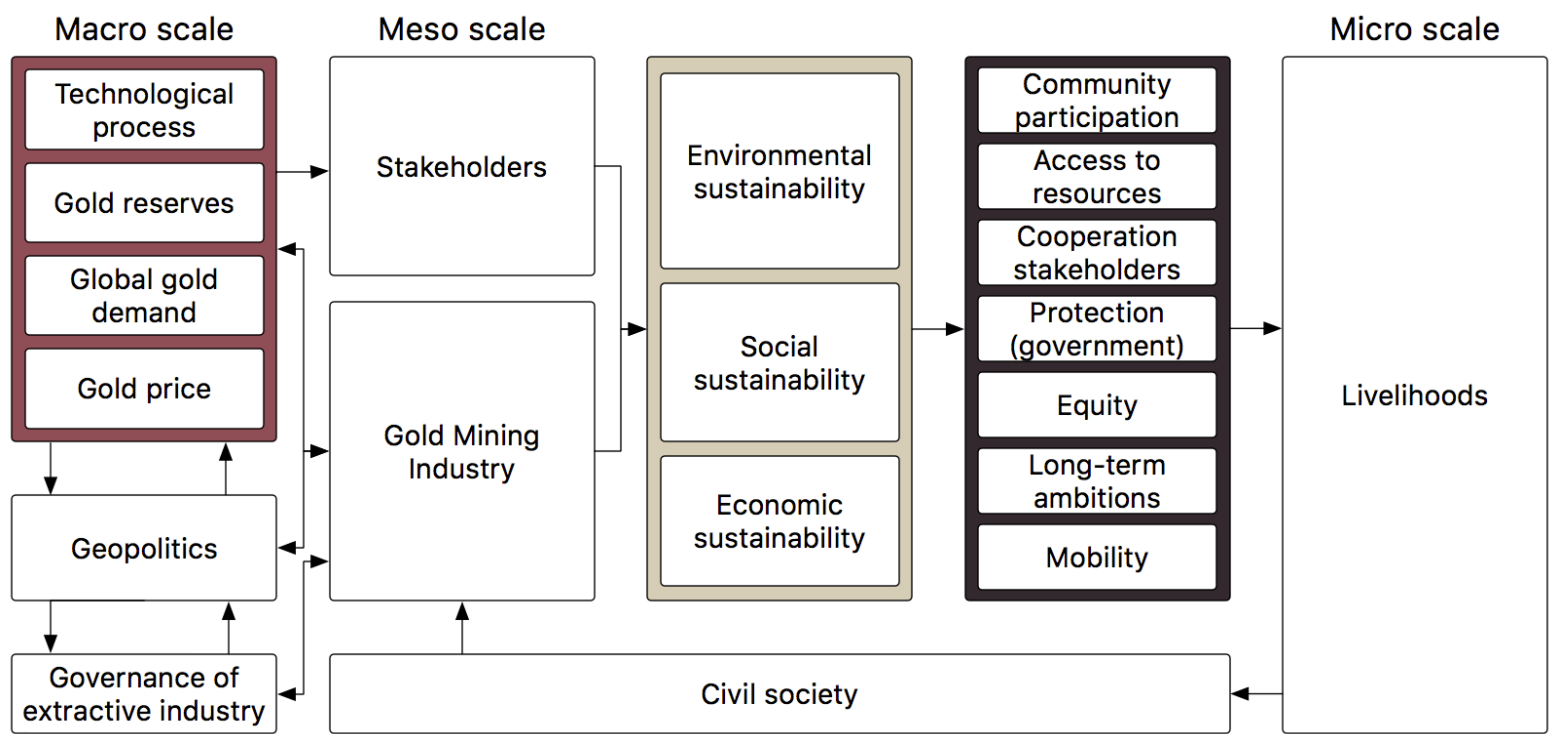
While defining social sustainability, multiple key factors should be considered to create a holistic and workable concept. However, the selection of indicators is not founded in theory, but rather in a practical understanding of the term (Griebler & Littig 2005). Therefore, in this research the concept

of social sustainability will mainly be applied to the interaction of stakeholders in the gold mine industry, the effects of this industry (large-scale and artisanal and small-scale mining) on the livelihoods of local communities in the West Rand and the identification of social risks by government, companies, NGOs and communities. This approach forms the foundation for the formulation of the sub-questions rather than resolute variables.

2.4 Conceptual framework

The conceptual framework illustrates how processes on a macro level, such as the global gold demand and geopolitics, influencing the meso level such as the gold mining industry and the stakeholders. The meso scale in it's turn influences the livelihoods of households on the micro scale and the effect of the gold mine industry on social sustainability.

FIGURE 2: CONCEPTUAL FRAMEWORK



3. METHODOLOGY

“One of the things they said was that the gold grew from the roots of the trees. And we know that is not true, but it is all about perception. It is all about how they see it, and it is not necessarily based on facts. It is based on the perception of the people who are actually doing this activity. So for example, if a zama zama genuinely believes that they will always access the gold, chances of you changing that perception are very slim. Because that is a belief system that is psychology, and that is something people often tend forget when it comes to illegal mining, that we are dealing with people, we are dealing with psychology” (Expert 5; professor/researcher, 2017)

3.1 Research strategy

This study provides a fundamental insight into the developments of the gold mine industry in Johannesburg by intensive data analysis. A case study design is chosen to implement the study. Case study research is designed to analyse time- and space bordered objects and processes (Verschuren & Doorewaard, 2015), it offers suitable methods for answering the how and why questions of this study by examining contemporary events (Yin, 2003). Case study research is an empirical inquiry that analyses a contemporary phenomenon while the specific context and conditions are highly pertinent to the phenomenon of study (ibid). In this research, the case study is the gold mine industry in Johannesburg. “As a general guide, the definition of the unit of analysis (and therefore of the case) is related to the way the initial research questions have been defined.” (Yin, 2003, p. 22). While analysing processes on a global scale, zooming in on the national context, the focus is on the impacts of this industry on a micro scale; the West Rand of the Witwatersrand. Within case studies, one can distinguish between exploratory, descriptive and explanatory research. Because this study aims to provide an understanding of this particular case, while analysing developments on different scales, the most suitable research approach is an exploratory case study with multiple research units.

The methods that are used in this case study research are a combination of field work; through direct observations and systematic interviews and desk research; by examining documents, policies and artefacts (ibid.). A qualitative research method is selected to explore at length the complex context, linkages and structures within the gold mine industry in Johannesburg. Qualitative research produces comprehensive results that cannot be surfaced by quantitative research. This research focused on exploring and explaining, by providing additional information about the topic (Kowalczyk, 2015). This study aims to contribute to the understanding of the mining industry in Johannesburg by analysing previous studies, implementing fieldwork and zooming in on the specific details relevant to answer the subquestions as mentioned in paragraph 1.3. In order to realise that, specific contextual factors regarding the extraction of gold, the impacts on the local society and the social sustainability of the industry were examined.

The research questions vary from exploratory to explanatory. Different research methods and ways of data collection appeared to be more suitable to answer certain sub-questions than others. Method triangulation, i.e. combining field research with desk research, reinforced the research results. The first step towards realising the research objective was desk research. The foundation of this research consisted of a substantive literature overview and a discussion of relevant theories. Desk research consisted of examining books, journals, newspaper articles, and grey literature such as reports, working papers and policies from institutions like the World Bank and the Chamber of Mines (CoM), the government and companies in the industry. Furthermore, relevant documents were agenda's and manifests from (local) NGOs, evaluations of scholars and papers written by experts. These documents were found on the internet. This information is complemented with material from the media. This data were needed to differentiate certain aspects and perspectives on the social elements related to the gold mining industry in Johannesburg. The main sources that were used to collect information (key publications) are; PiCarta, WorldCat, Web of Science and Google scholar. Key words that have determined the field of study are; social

sustainability, non-renewable resources, resource management, social license to operate, access to resources, gold mine industry Johannesburg, gold production, artisanal and small-scale gold mining. For this research, it has been important that current developments are being discussed and analysed, as they shed light on the public discourse. Media articles have a higher risk of being biased than independent articles and research; therefore it was necessary to critically analyse the source. All data mentioned above were freely accessible online and could be used and shared without permission. However, to combat plagiarism, these data will be correctly referred to using the APA referencing system.

A better understanding of the industry was necessary, in order to answer the research question. Desk research provided data on the exact location of the industry, statistics, legislation and provided other relevant information. Subsequently followed the theoretical framework and the input for field research. The theoretical framework of a research derives from the process and the product of knowledge building within the field of the subject (Verschuren & Doorewaard, 2015). Therefore, the research strategy was dynamic and related to the experience and knowledge gained throughout the research.

Besides desk research, the data for the results derived from fieldwork. Field research consisted of interviews with experts, stakeholders and a selected group of key informants combined with direct research observations. The local experts at the African Centre for Migration and Society (ACMS) were contacted to provide contact details of relevant interviewees and organisations. Furthermore, academics and researchers that published relevant articles and papers were invited for an interview. These authors have surfaced in the orientation phase. The six experts provided in-depth knowledge and useful empirical insights linked to the research questions. These experts were working in the field of research and development, NGOs, community-based organisations and academics. Moreover, this research was dependent on snowball sampling. Networking improved chances of increasing the number of potential information sources.

The sixteen individuals from the West Rand were sampled as key informants (e.g. community representatives). In order to illustrate the heterogeneity of positions, the interviewees come from four different communities located around the Durban Deep in the West Rand. Patton defines key informants as 'people who are particularly knowledgeable about the inquiry setting and articulate about their knowledge, people whose insights can prove particularly useful in helping an observer understand what is happening and why' (Patton, 2002, p.321). The interviewees were selected according to purposive sampling in consultation with the fieldwork assistant. The fieldwork assistant recommended maximum variation sampling, to understand the views of individuals with different backgrounds and roles in the West Rand communities. Therefore, the heterogeneity of the group of interviewees does not reflect the composition of the community but rather illustrates the different roles and perspectives. Due to the standards of the ethical clearance required to implement the research, this study does not contain data from people under the age of 18.

FIGURE 3: INTERVIEWEES

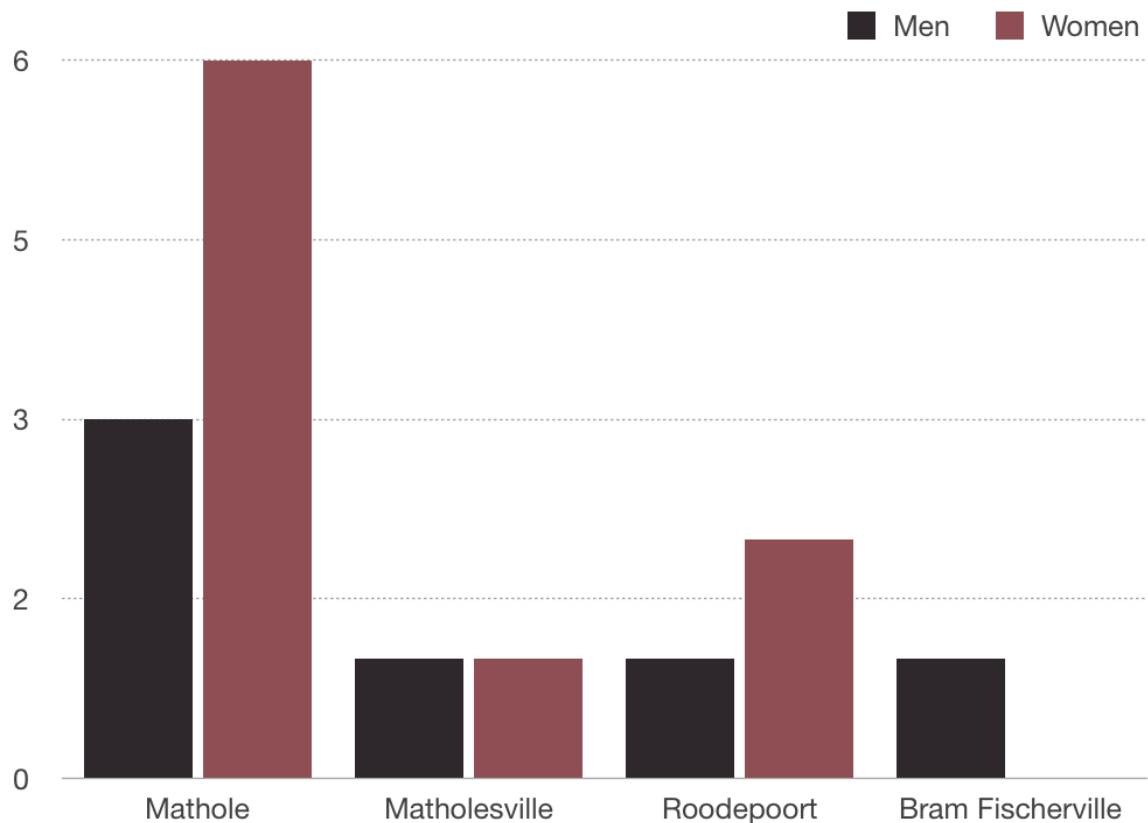


FIGURE 4: OCCUPATION

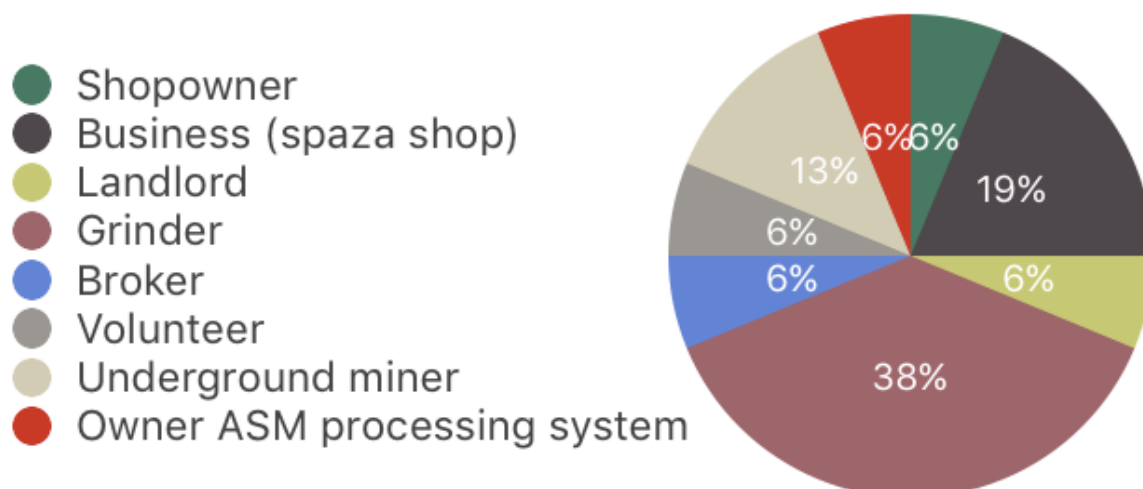
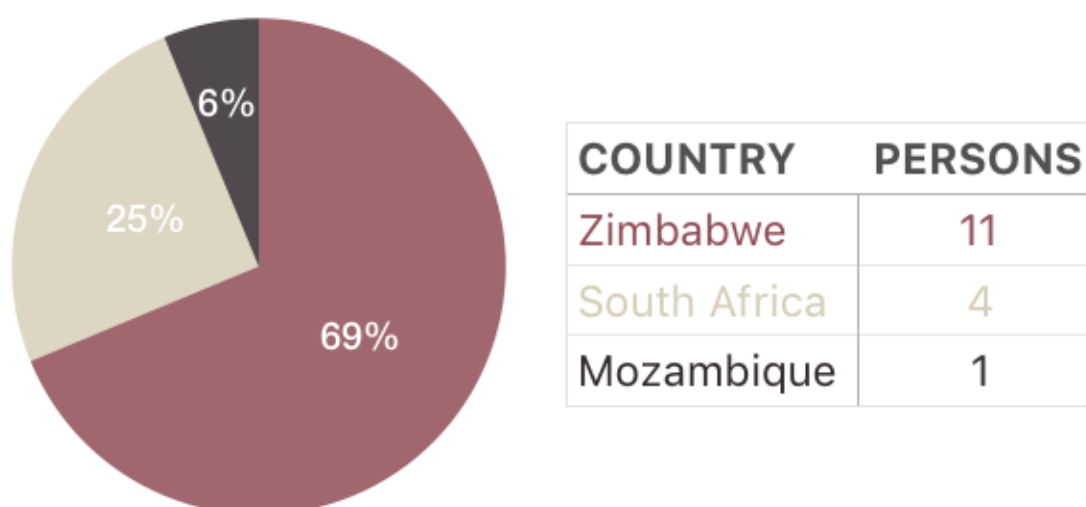


FIGURE 5: NATIONALITY



In addition to interviews, the field research consisted of direct observations to register unusual aspects and to explore topics that were uncomfortable for participants to discuss (Cresswell, 1994).

3.2 Data inquiry

It is important that research involving data from human participants meets ethical standards. This includes full disclosure, non-coercion and privacy issues. All interviewees were required to sign the informed consent form (see appendix) due to the sensitive data that was expected to be provided by the participants. Sensitive data was only collected if contributing to the research objectives. By structuring the interview questions in advance, no other privacy sensitive data would be revealed. Furthermore, all data are addressed anonymously in the research. A fieldwork assistant that is familiar with the area and the community, guided the participants during the research to ensure confidence. The interview started with a description of the research and a brief description of the research objectives. The participant was informed on how and why (s)he was selected. Furthermore, involvement in the study was explained, including procedures, duration and place. If ambiguity or misunderstanding arose during the interview, this would be clarified with the help of the fieldwork assistant. Participating in this study was voluntary. Refusing to participate anytime during the procedure, or not answering specific questions would involve no penalty or loss of benefits to which the participant is entitled. Crucial was the promise of anonymity and confidentiality. The participants were provided with contact details in case they had questions after participating in the study. In this research, personal and sensitive data were collected. Therefore it was crucial to process and store the acquired data safely and to prevent the data from unauthorised access. The data are processed anonymously in the thesis. The conducted interviews were restricted to a need-to-know basis. All respondents are ascribed a number while being referred to or being cited. Furthermore, in the appendices only the gender of the participants is visible, ensuring that the identity of the interviewees cannot be exposed from this information.

The qualitative research method enabled the participants to expand on their answers without being limited by the questions from a questionnaire. The chosen strategy rested on accumulating knowledge and expertise. Therefore, the collected data could at any given moment evoke a shift in the research questions or methodology. The expert interviews were recorded and

transcribed. Interviews with community members have not been recorded due to the fear of exposure to authorities. These interviews have been analysed and summarised by the researcher and fieldwork assistant.

3.3 Data analysis

A practical approach has been used for analysing and interpreting the fieldwork data. Insights gained through desk research lay the foundation for the re-contextualisation of the data obtained by field work. A selection of statements and frequently mentioned topics such as migration, unemployment, health issues, community engagement, social cohesion, corruption and fear, have been the outcome as central themes. Data obtained by field research is qualitatively interpreted by using the program Atlas.ti. This program allows researchers to systematically analyse complex phenomena hidden in data (Lewins & Silver, 2007). Atlas.ti provided tools to locate, code and annotate findings in processed data. The program assisted in weighing and evaluate the importance of the findings and visualises the relations between them (ibid.) After evaluating the fieldwork data, connections could be made between the case and the theoretical framework, which provided input for the conclusion. The study continues with discussing the strengths and weaknesses of the chosen research methods and potential research biases. Furthermore, the study finalises with recommendations for future research.

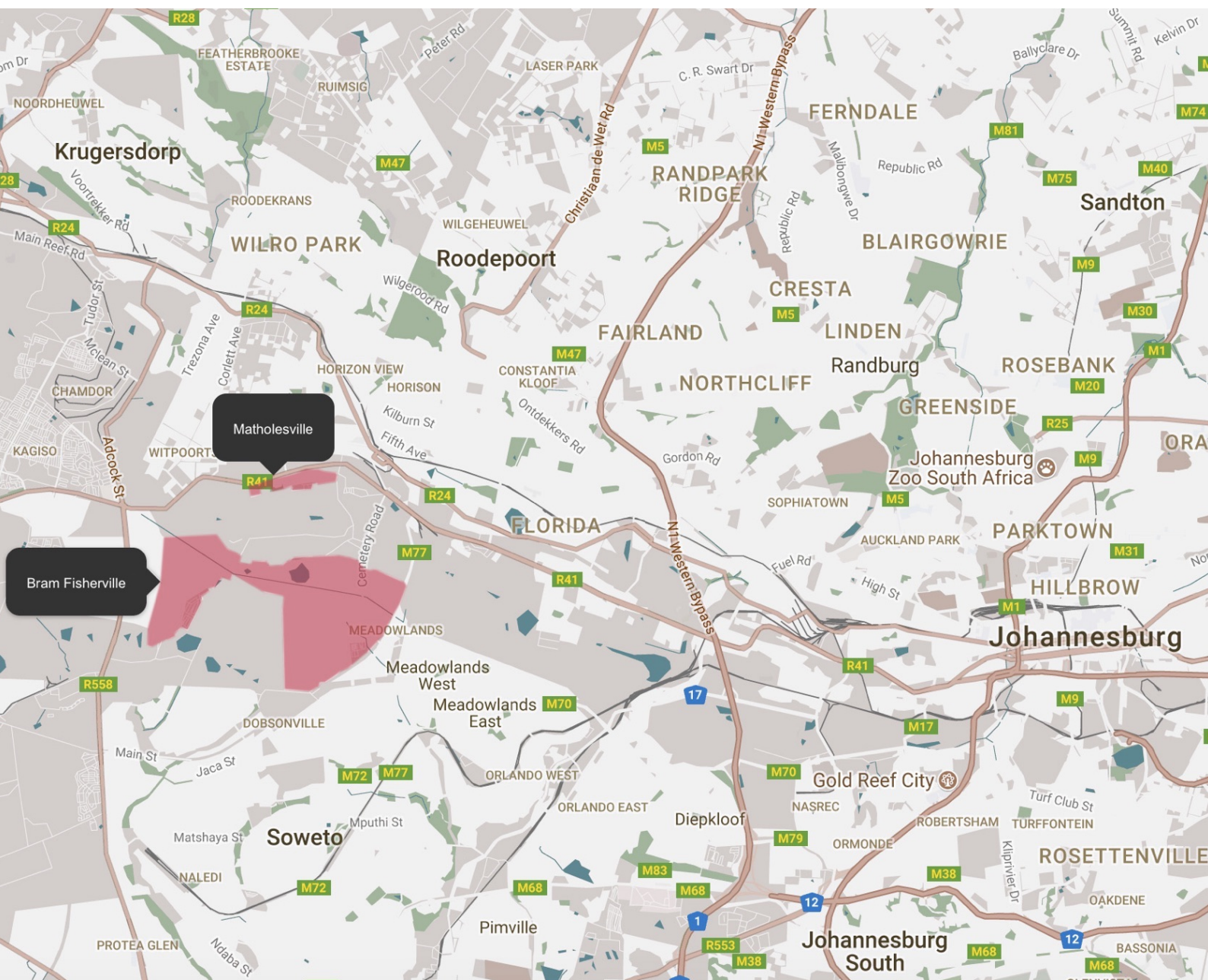
3.4 Research context

"People living in the West Rand communities do illegal work, but it is not harmful. They do not harm anyone with how they currently make a living. Another option to get money is by becoming a criminal." (Expert 4, community-based organisation, 2017).

To limit the scope of this study, it is important to define the mine community. The mine community is the population living in an area that is significantly affected by a nearby mining operation (Veiga et al., 2001). "The mine community could be associated with the mining venture through direct employment, or environmental, social, economic or other impacts". (Veiga et

al., 2001, p. 19). Mining communities vary in size from village to city. Furthermore, the profile and the perceptions about mining and needs can differ between and within mine communities (ibid.). This definition is chosen carefully to operationalise the concept of community. It emphasises the inclusion of people in an area being directly or indirectly affected by the nearby mining operations. However, a geographical limit must be addressed to this case study, therefore in this context the term mine community applies to the people living and/or working in the area of the West Rand of the Witwatersrand basin; Roodepoort, Mathole, Matholesville, and Bram Fischerville.

FIGURE 6: RESEARCH AREA

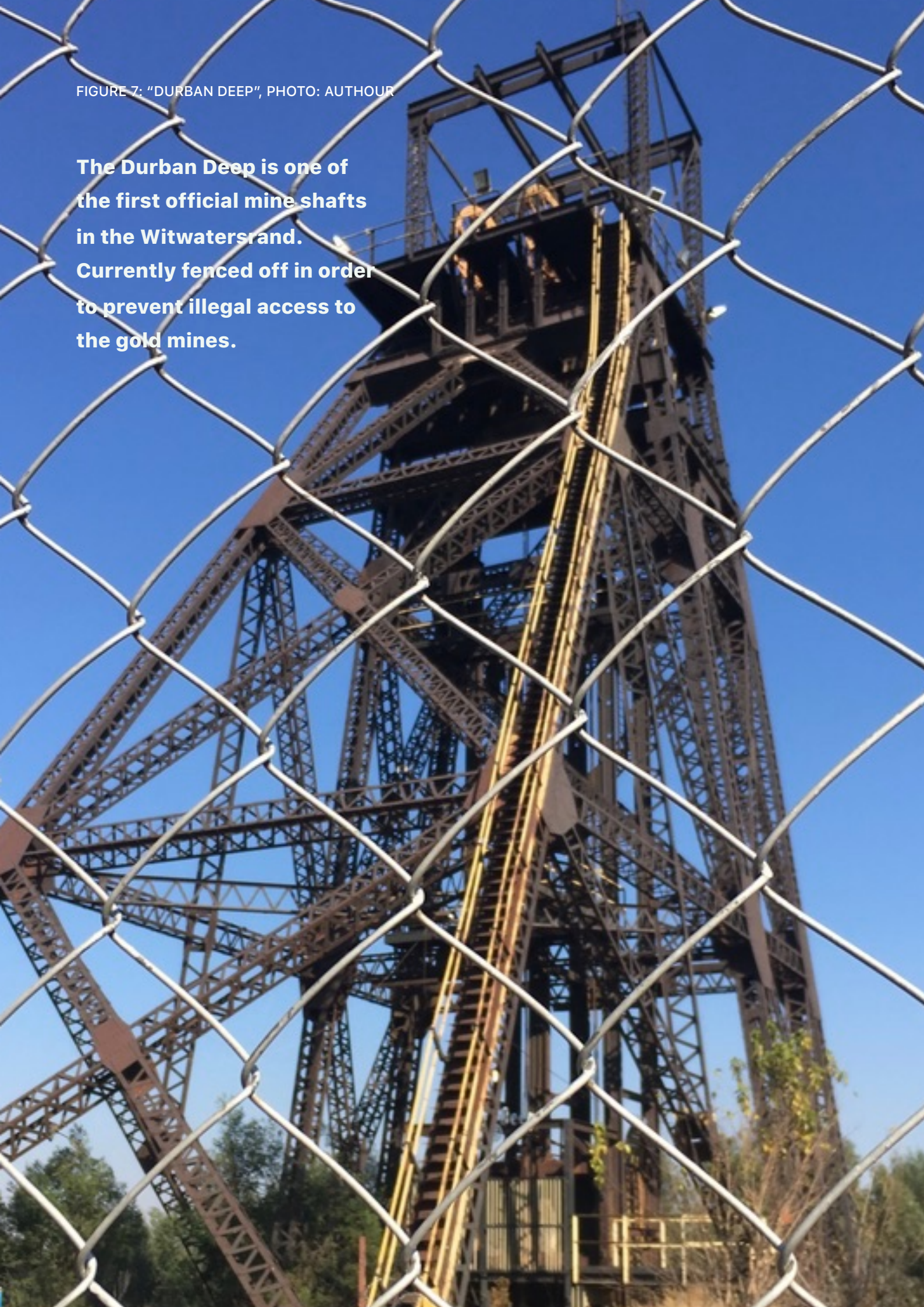


These communities are situated around the “Durban Deep” mine. This mine ended formal operations in 1993, leaving an estimated 12-million ounces of gold unmined (Mills, 2016). On an average in 2017, 12 million ounces is worth 15,4 billion American Dollars (1277\$ per oz.). In a time of unemployment and price volatility, this unmined gold in the Durban Deep is a source of conflict between government, mining corporations mine communities and informal miners. Like many of the country’s defunct gold mines, Durban Deep is a relic from South Africa’s apartheid past (Cumes, 2014). After the gold boom, a decreasing gold production retrenchment has currently resulted in unemployment. Many people living in Roodepoort, Matholeville and Bram Fischerville have been employed in the West Rand by former companies. These companies have been actively mining for about 100 years. The DRDGold Limited's Crown Operations is leasing the Durban Deep and recently decided to close the mine and plug the shafts. Despite the efforts to guard the shafts of the Durban Deep, it continues to be a source of informal employment to the communities living around the mine shaft. “Now a new Australian-led venture, West Wits Mining, is endeavouring to reopen the mine, working with a property developer to construct “affordable” housing for 75,000 people on the prospecting area’s 4,000 ha, making inroads into the 800,000 housing backlog in Gauteng.” (Mills, 2016, p.2). This indicates the development interests in the area.

Due to the decline in employment in formal mines, the West Rand community is entirely organised around ASM. This means that all community members depend on the artisanal and small-scale mining industry to support their livelihoods, whether direct or indirect (Respondent 7, 2017). The shop owner, the dynamite seller, the cooker, the landlord, the creche, all depend on the income that gold mining provides. If community members are evicted or if they do not make enough money, other sectors and the whole community will be affected, even the police and the formal gold market (ibid.). This “common fate” is a source of social cohesion as well as it is a source of conflict when times get rough.

FIGURE 7: "DURBAN DEEP", PHOTO: AUTHOUR

The Durban Deep is one of the first official mine shafts in the Witwatersrand. Currently fenced off in order to prevent illegal access to the gold mines.



Most families living in this area are international migrants from Zimbabwe, Mozambique, Swaziland and Lesotho. The community also hosts internal migrants, often coming from the Eastern Cape. The pull factor for this area is the chances for employment within the gold mine industry and an often mentioned push factor for the places of origin is poverty and a lack of chances to provide for a livelihood. The ethnic diversity in the community is inherent to social division. Combined with declining ore grades, ethnic diversity enhances competition and tribal conflict in the West Rand. Thereby, even within a nationality, like the Zimbabweans, ethnicities compete with each other for employment, like the Ndebele and the Shona, since there are less and less opportunities.

Because of the diversity of places of origin of the West Rand community members, household structures often involve diasporas. Many families chose to migrate without their children, that are left with their family (grandparents) to go to school. Remittances are send back to the home countries, mostly in a financial form, to ensure a better life for all persons involved. However, some families chose to raise their children in the West Rand. Some families can afford to bring their children to the creche, however other household that are financially more deprived, have no other option than to take their youngest children to work. Where they are exposed to the dangers of informal mining and health and safety risks. Another issue that challenges the social equilibrium in the communities is the fear of authorities. The South African Police Service (SAPS) often raids the area in order to clear the area of illegal miners and illegal migrants. Corruption gives the wealthier households a chance to bribe authorities, preventing them from demolishing mine equipment, property or effectuating deportation to a country of origin.

The above sketches the community's (social) structures. However, 'the community' is a difficult concept to define, for the reason that the community exists in the minds of its members, and can not be entirely related to geographic or socio-graphic assertions of fact (Jenkins & Obara, 2006). Therefore the concept used in this study might be an "imposing of order that does not necessarily fit the lived experience of the people in question." (Kapelus, 2002 in Jenkins & Obara, 2006, p.4). Furthermore, the

structures in the West Rand as described above are heterogenous and rarely singular in its collective perspectives. Therefore, this underlined generalisation of the community is at the expense of the objectives and perspectives of the household or the individual.

FIGURE 8: POLICE RAIDS IN MATHOLESVILLE, PHOTO: THE TIMES



4.GLOBAL DEVELOPMENTS AFFECTING LOCAL SCALES

"The formation and shape of the local cannot be understood by looking locally. Rather, there is a need to analyse the power geometries that intersect with one another in any given place—the lines of domination, subordination, influence, power, and resistance, that connect the place to others and are therefore constitutive of its very character. Localities are therefore best conceived as nets of social relations." (Massey, 1993 in Crush, 1994, p. 314).

The relations, stakeholders and interdependency are unique to the locality of the case. To understand how developments within the global gold mine industry affect processes on a local scale in Johannesburg, this chapter starts with a global introduction to the theme. The focus of this chapter is on analysing the the macro or global level, in order to gain insight in relevant trends in the gold industry relating to the developments in the industry in Johannesburg.

4.1 A global perspective

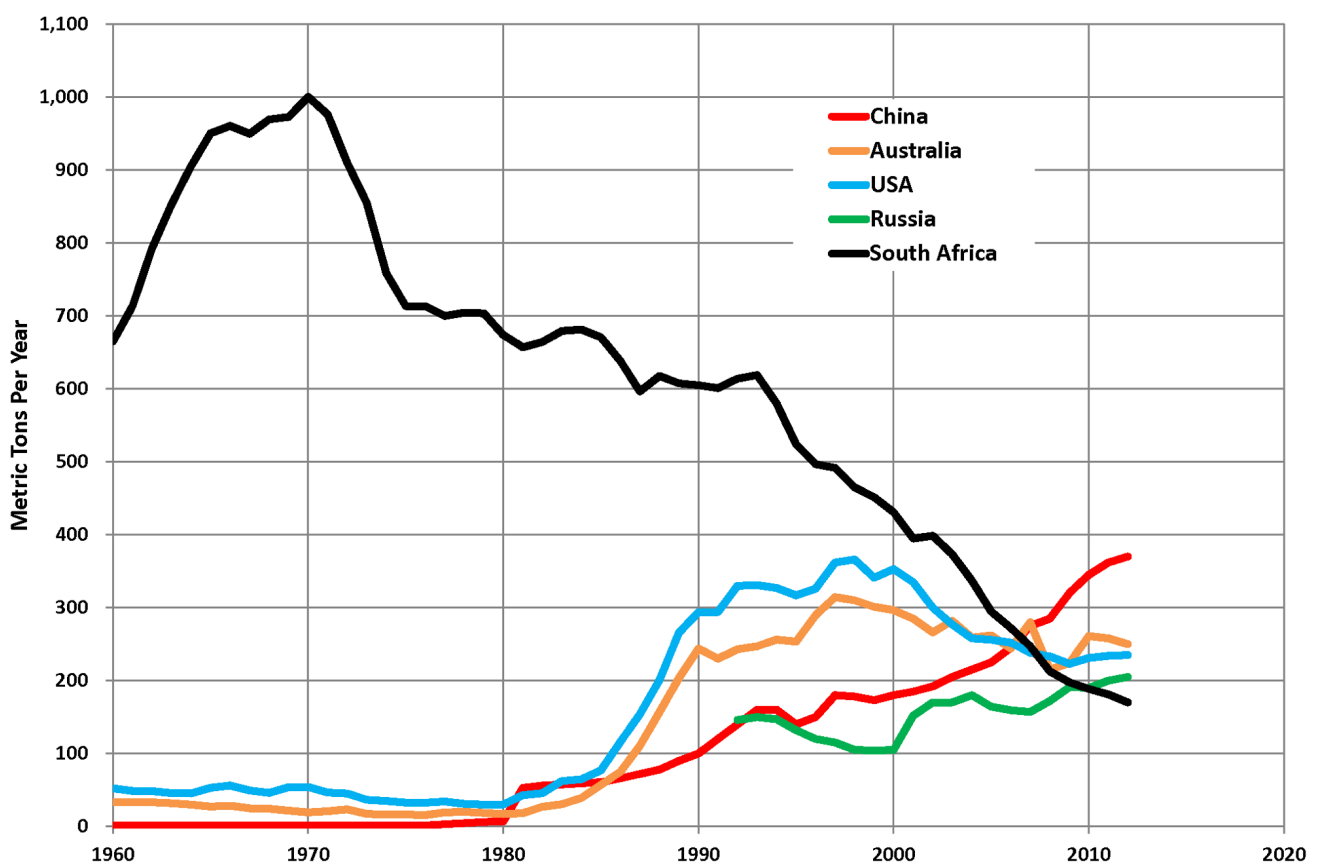
"All over the world, gold has emotional, cultural and financial value, which supports the demand for this resource across generations. "Gold is fashioned into jewellery, gold is used to manage risk in financial portfolios, to protect the wealth of nations, it is found in smart phones, and cutting-edge medical diagnostics." (WGC, 2016 p.1). The diverse purposes for the use of gold and the prominence in different sectors, emphasise the importance of the material over time. The total gold demand for infrastructure, technological and medical devices increases parallel with a rise of the middle class (UNDP, 2013, Birdsall, 2015). To facilitate the horizontal and vertical development and access to technology, humanity is highly dependent on the access to non-renewable materials, including gold.

Since the late 1970s, the rise in gold prices, combined with the development of different mining techniques and the evolution of machinery accelerated a gold mining boom (Mudd, 2007). This development enabled

global exploration in known, as well as in newly discovered areas. From this time on, the economics of gold mining was radically re-defined (ibid.). In some gold mining countries this led to a renaissance, however, in South Africa, this pattern did not emerge, mainly because of the underground nature of the mines combined with political and social issues (ibid.).

Currently, global mining produces 2,500-3,000 tonnes of gold a year; this is in addition to the above-ground stock of gold (WGC, 2016). Below-ground reserves are currently estimated to be approximately 56,000 tonnes (USGS, 2017). However, this estimation is dependent on multiple factors such as the global gold price, the costs of mining inputs, exploration and discoveries and prior geological survey coverage and capabilities (WGC, 2016). The table below shows the top five gold producers.

FIGURE 9: THE TOP 5 GOLD PRODUCERS



Source: USGS, 2013

However, long-term gold production trends include declining ore grades, an increase in solid waste (Mudd, 2007) and strategies to recycle resources from the urban mine. The urban mine is a concept to describe a process where raw materials, such as gold, are extracted from existing devices, infrastructure etcetera. The Business of Mining (2012) states that the recycling of metals is fundamental in shaping the future. These developments suggest that the amount of gold that will be mined classical (extracted directly from the earth) in the future, together with the jobs that the classical mining sector provides, will decline. "Over the last decades the relationship among corporations, government and communities has changed. Globalization, deregulation and privatization have shifted away from the 'command and control' regulatory role of the state to the informal, voluntary and corporate 'self- regulation'. The impact of this has been that corporate organizations, especially transnational corporations, are able to wield more power than most developing countries' governments because of their financial and global clout." (Chenga, Cronje & Theron, 2006, p. 59). Governments and companies understand that a continuous access to non-renewable resources is a source of power and influence. However, it is also a potential source of conflict, often labelled as the resource curse. This conflict could occur due to the marginalisation of people, the exploitation of workers and land. Furthermore, moving from boom to bust, mining operations create significant local consequences for the environment and the surrounding communities (Marais et al., 2017). On a global scale, however, countries are increasingly aware of the influence they have on the social sustainability of the gold supply chain. Recently, the Dutch minister of Foreign Trade and Development Cooperation, designed a covenant with stakeholders in the gold sector to ensure transparency and a fair supply chain and to prevent conflict in the access to gold. This treaty is currently only implemented in the Netherlands. However, with this covenant, initiated in June 2017, Minister Ploumen aspires that through legislation in the European Union, more countries will follow globally (NOS, 2017).

4.2 Mining for development

Over time, mining has been a key catalyst in (economic) development (Marais et al. 2017). However, all over the world, mining companies are facing economic challenges (Neingo and Tholana, 2016). According to Bristow (2014), the governments of mining countries have focused too much on short term gains instead of sustainable profitability. This resulted in a decrease in quantity and quality of the global mineral reserves. Therefore, investors are more cautious in providing exploration budgets (Bristow, 2014). South Africa is not an exception and is furthermore facing context specific operational- and social challenges.

Although the extractives industry is accustomed to volatility, the mining sector has been stricken by impacts of economic powers like China (Deloitte, 2014). Due to globalisation, countries are not immune to global developments (Neingo and Tholana, 2016) and therefore a global interconnectedness and interdependency regarding the mining sector is guaranteed. The global financial crisis in 2008 has confirmed this interdependency. "The mining industry in South Africa was heavily affected by the crisis on account of its dependence on global growth to stimulate prices and demand, liquidity in the global economy, and conservative investment strategies in times of insecurity." (Bexter, 2009, p.113). To secure the sustainability and the viability of the gold mine industry, companies in South Africa need to be innovative in creating solutions to global and local challenges.

To summarize, the history of global gold mining has been associated with positive as well as adverse social-, environmental-, and economic impacts (Mudd, 2007; Ali, 2006). However, recently the gold mine industry has been moving to a more sustainable approach. "For example, the European Commission (EC) is actively involved in promoting corporate sustainability and has specifically addressed the mining and minerals sector". (Azapagic, 2004, p.640), due to the impacts on the environment and on people. The EC calls for reconciling the need for more secure- and less polluting extractive activities while maintaining the competitiveness of the industry (ibid.).

During the Earth Summit in 2002 in Johannesburg, the mining sector adopted the recommendations of the report; Minerals Mining and Sustainable Development, in which progress and the sustainability of the industry are key points. In practice, accepting this report encompassed that companies started to proclaim not only on their financial performance but included sustainability performance in their progress reports (Mudd, 2007). Furthermore, the Minerals Mining and Sustainable Development report drastically turned the tides for the global debate, by arguing that not the individual mine or company should be held responsible for sustainability around their sites, but sustainability should be applied to the sector as a whole. Hilson (2001) continues by arguing that this renewed perspective on sustainability allows for a wider consideration of a balance of social-, economic- and environmental facets for the total industry. Therefore, it is the total of all mines over time and space and their impacts which should be considered to evaluate sustainability of mining (Hilson, 2001). A focus on the entire sector is, therefore, necessary to assess sustainability. However, individual mine performances remain critical (ibid.). Critics argue that the application of sustainable development concepts to mining, particularly in the gold sector, is still an issue (Mudd, 2007), moreover because of the multiple forms of mining.

4.3 The mining spectrum

Three forms of mining can be distinguished in the mining industry. Industrial mining is done by large scale companies, with heavy equipment, experts and advisors to determine the exact location and machines necessary to optimise profits. Small-scale mining is done by small businesses or cooperations with professional equipment, they are semi-mechanised and they employ a number of workers. Artisanal mining is mostly done by legal or illegal individual miners or groups/communities, using basic tools and mainly manpower to get the resources out of the ground to provide to the (international) market.

Most of the discussions relate to the definition of artisanal mining. According to the Minamata Convention, the most recent treaty, artisanal

mining is conducted by individuals or small enterprises with limited capital investment and production. However, different perspectives worldwide determine whether artisanal mining is defined by production output, the number of employees or by the type of machinery used (Villegas, 2015A). A misunderstanding is that artisanal mining is on the margins when it comes to production and employment. Artisanal miners are the world's hidden suppliers of resources and labour (ibid.). The three forms of mining are best viewed upon a spectrum, where the division between legal, illegal and informal operations is ambiguous. In South Africa, this ambiguity is mainly reinforced by governance. Challenges arise on behalf of the rights to mine according to traditional law and the mining permit according to official legislation and all forms of engaging in the gold mining in between. However, industrial-, small-scale and artisanal miners are not exclusive and can coexist in one space (ibid.).

In the mining industry LSM can follow ASM, or ASM can follow LSM (Villegas, 2015B). Due to a declining profitability of the LSM industry in South Africa, companies sell their mines to smaller businesses and this cycle eventually creates an abandoned mining site, without proper rehabilitation of the physical landscape. These abandoned shafts create opportunities and risks for artisanal miners in the area. Whereas "the relationship between large-scale mining companies and the artisanal and small-scale mining sector is often poorly understood and has been troubled by a general mismatch of expectations which has led to mistrust and conflict in some cases." (Villegas, 2015B). This mismatch is also visible in the recent strikes of employees of one of the big gold mine companies Sibanye starting in May 2017. The employees were protesting against the statement of Sibanye to root out illegal mining from its Cooke operations in the West Rand Group. Sixteen employees were arrested due to an accusation of collusion with criminal elements by Sibanye (Stoddard, 2017). These employees were members of the National Union of Mineworkers and were in a critical condition in the hospital (ibid.). The interweaving of legal and informal or illegal mining in South Africa recently provided (inter)national attention on the issues related to the mining industry. Last years the focus is on community-

related issues and sustainable livelihoods (Villegas, 2015B). Furthermore, experts are orientating on possible solutions to harmonise LSM and ASM mining operations; this could be in the line of formalisation, legalisation and professionalisation (ibid.). A more inclusive legal framework will lead to an increased market access and this “emphasises the useful role that global markets can play in providing incentives for responsible mining.” (ibid.).

Many of the adverse social impacts that ASM communities are facing, are similar to those associated with large-scale mining operations (Morais & Veiga, n.d.). The boom and bust of the gold mine industry in South Africa creates economic-, social- and health problems for companies as well as communities (ibid.). However, the consequences of the challenges within the different scales of operations could be related. For example, the shredding of jobs in the industrial mining industry, parallel with the lack of alternative sustainable economic activities, results in entrepreneurship and the development of livelihood strategies related to artisanal and small-scale mining. This relates to the fact that the two realities of on the one hand poor, unemployed people that did not enjoy the economic benefits of the country trying to survive in a desperate environment and on the other hand powerful multi-shareholding, wealthy individuals, rarely come together and are constantly in conflict (Rutledge, 2016C).

4.4 Mining legislation; a continental perspective

At the continental level, an approach to the mining industry has been developed by the African Union to tackle “the paradox of great mineral wealth existing side by side with pervasive poverty.” (African Union, n.d.). The Africa Mining Vision (AMV), adopted in 2009, is a policy tool to help African governments better harness their natural resource wealth by building social and economic linkages that lead to development at local, regional and national levels (ibid.). Meaning integrating mining in such a way that this sector can contribute better to development, as, and mine communities experience benefits and their environment is protected (African Union, n.d.). The goal is to move away from a model of extractive resource exploitation based on a high dependency on international export markets and to

transform the continent into a manufacturer and supplier of knowledge-based services (ibid.). This joint approach illustrates the influences of global developments on a continental level. The AMV stimulates African governments to negotiate contracts with multinational corporations to create local input for operations (African Union, n.d.), this elaborates on the global-local inter-dependency. Additionally, the AMV recognises the local developmental role of artisanal and small-scale mining in Africa (Oxfam, 2017).

The AMV provides a continent wide framework (Expert 3; academic researcher, 2017). This framework needs to be contextualised to an individual country in order to comply with context specific factors. Regarding the AMV, South Africa is still in the negotiating processes. In the South Africa context critics argue that the AMV encloses a top-down development framework. Instead of transforming the sector, this framework is stimulating the cheap extraction and export of resources parallel to increased financial-and trade liberalisation (Rutledge, 2017). Rutledge continues by arguing that the AMV may be designed to create shared prosperity, the deep-rooted ideological biases within the AMV still require a process of decolonisation and introspection (ibid.). Research by Oxfam concludes that the impact assessment as stimulated by the AMV is vital step in the mining project cycle. However, the AMV does not provide specific guidelines to address ongoing social and environmental issues caused by the mining industry (Oxfam, 2017). Because most people living in Africa are affected by the extractive industry, direct or indirect, the AMV structurally and systematically excludes the affected communities (ibid.). "Given the transformative potential of the AMV, it surely deserves more attention and commitment from all stakeholders in Africa's mineral sector." (Oxfam, 2017, p. 26).

This chapter illustrated the importance of gold on multiple levels, emphasising the role of mining in (economic) development. However, recent global trends, including declining ore grades and the impacts of gold mining on the environment and people, show that the gold mining sector has to address some serious challenges. Sustainability has therefore become a crucial concept in order to ensure fair and cleaner global access to this non-

renewable resource now and in the future. Creating mining legislation on a continental level supports the idea of a more inclusive approach to optimise this industry.

Chapter five zooms in on the national level, the meso scale, in order to better understand how these global developments influence South Africa as one of the top five gold producers. This shift implies a contextual perspective on the challenges mentioned above. This vertical, three-level, analysis of the processes occurring in and around the gold mining industry will provide a better understanding of the influences of the stakeholders, their interaction with legislation and inherently the impacts on communities and the informal economy.

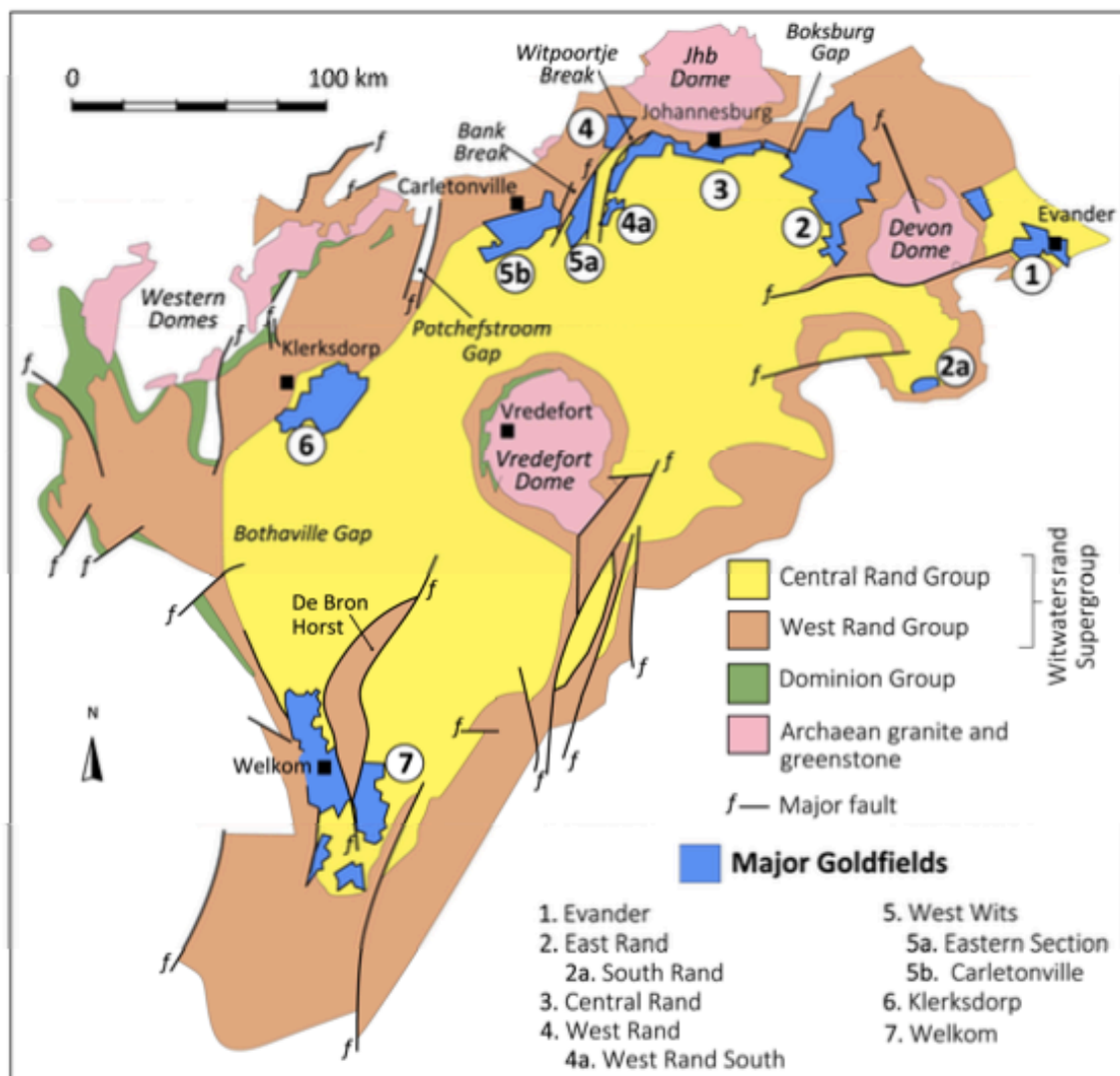
FIGURE 10: E-GOLI, PLACE OF GOLD, PHOTO: AUTHOUR



5. A NATIONAL PERSPECTIVE

After focusing on the macro scale, the objective of the research is to elaborate on a smaller scale in order to better understand the national mining context. This chapter therefore zooms in on the South African gold mining industry. A brief perspective on South African history relevant to the mining industry will be discussed in this chapter. Furthermore, the evolution of- and current national legislation and ASM in the South African context will be examined.

FIGURE 11: THE POSITION OF THE 7 MAJOR GOLD FIELDS



Source: Frimmel et al., 2005

Historically, South Africa's mining industry has been at the heart of the economy's development (Antin, 2013, p.1). The gold mine industry has played a vital role in attracting international investment and creating leading global companies (ibid.). Throughout history, over 30% of the total gold production of the world is mined in South Africa (Viljoen, 2009). The country was the number one gold producer until 2009 when China became the leading producer. Currently, South Africa has fallen back to a fifth position (Neingo and Tholana, 2016). With a decreasing production; from over 250 metric tons in 2007 to less than 150 metric tons in 2016 (figure 11). Expectations are that South Africa has still about 30 years of production.

The economic well-being of South Africa has been based mainly on mineral wealth (Mogotsi, 2005). The first gold in South Africa was discovered in 1886 in the Witwatersrand basin. The following gold rush attracted global interest and created capital investments and new activity (Tucker, Viljoen and Viljoen, 2016). The city of Johannesburg and many towns around the big city have been the result. Furthermore, this sudden development led to (job) opportunities and wealth creation, parallel with inevitable conflicts (Antrobus, 1986 in Tucker, Viljoen and Viljoen, 2016).

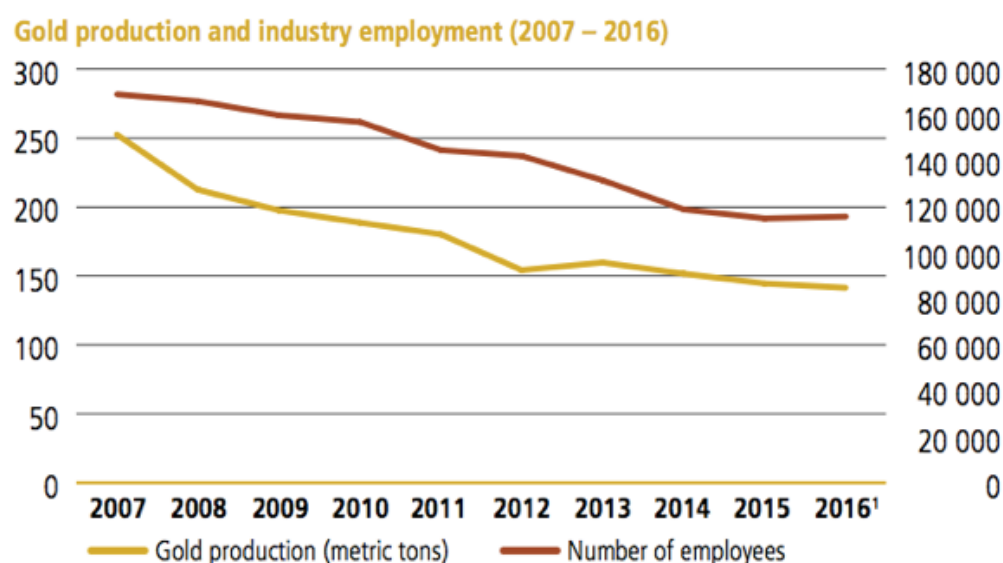
After the first gold boom, political developments in the 1970s began to affect the mining business negatively (Antin, 2013). Followed by the first legal strike, regulated by the National Union of Mineworkers (NUM) in 1984. This strike was the result of massive job losses, a process that took place almost exclusively in the South African gold industry. Nearly 60% of its employees lost their jobs within a decade (Malherbe, 2000). These impacts can be explained by a decline in gold prices, combined with a rise in wages for mine workers and increasing pressure from shareholders on companies (Antin, 2013).

Although having many advantages in mineral endowment, South Africa is facing another wave of serious societal challenges since the beginning of the global financial crisis in 2008 (Antin, 2013), including the Marikana Massacre in 2012. This event is a result of increasing calls for the nationalisation of mines as a solution to the hardships of poverty, inequality and unemployment in the country (ibid.). South Africa needs to address these

societal- and operational challenges, that are threatening the survival and the global competitiveness of the industry, while balancing national- and community needs (Neingo and Tholana, 2016). "Profit margins are decreasing, while labour productivity is greatly affected by intermittent labour unrest." (Neingo and Tholana, 2016, p.1). Other challenges include the current gold reserves, which have been decreasing over the last decades. The high-grade ores have been almost entirely exhausted, meaning that companies currently have to exploit deeper lying lower grade ores. The costs and difficulties of increasingly deep-level mining, combined with an increase in labour costs and labour unrest, decreasing commodity prices and the volatility of the gold prices, results in closure of many mines in South Africa and a downfall in the ranking of biggest gold producers globally (Viljoen, 2009).

According to the statistics from the Chamber of Mines, 6000 mines of the total of 7500 mines across the country are now abandoned (Chamber of Mines, 2016). Additionally, the gold production declined from over 250 metric tons in 2007 to less than 150 metric tons in 2016. Investors are moving to more lucrative areas, mines close and employees are losing their jobs (figure 11). Between 2007 and 2016 the formal industry employment decreased with almost one third.

FIGURE 12: GOLD PRODUCTION AND INDUSTRY EMPLOYMENT (2007-2016)



Source: Chambers of Mines, 2016

These trends, in their turn, have an adverse impact on the technical-, economic-, social- and operational development, and the declining competitiveness of South Africa within the global gold industry (Neingo and Tholana, 2016). Beech (2014) summarises the challenges in the following list;

- ✦ The global financial crisis, and the impact that this has had on global demand
- ✦ Regulatory and legislative uncertainty
- ✦ Infrastructure, ports, rails, water, roads and electricity
- ✦ Labour uncertainty
- ✦ Health and safety
- ✦ Environmental compliance requirements
- ✦ Illegal mining operations
- ✦ Community activism

Since 1984, the number of unskilled employees within the South African gold mine industry dropped from 450.000 to 130.000 (Mogotsi, 2005). Additional, each mining job has between 7 and 12 dependents which increased the wider social and economic damage (ibid.). A current development in South Africa is that large-scale mining companies are 'closing' their unprofitable mining shafts. Often smaller companies are permitted by the Department of Minerals and Resources (DMR) to access these mine shafts or the waste deposits (Expert 1; researcher, 2017). Mining rights are being bought by companies to reclaim fragments of gold that remain in waste dumps and old shafts (Bobbins & Trangos, 2015). These smaller businesses often have less social- and environmental responsibilities (Olalde, 2017), i.e. less (financial) means to contribute to the sustainability of the industry, the resilience of employees and to enhance the environment, including mine communities. After these re-mining activities, the businesses will apply for a mine closure certificate from the DMR. Furthermore they are intended to rehabilitate the area and prepare it for redevelopment (Bobbins & Trangos, 2015). However, without proper rehabilitation, these mining sites

become a forgotten responsibility of those who once profited from the South African resources and become an environmental and social burden or an economic opportunity for communities living around the abandoned mines. Resulting in the fact that artisanal and small-scale miners (often former employees, who get social support for only a short period) try to find new opportunities to support their livelihoods in these abandoned mines (ibid.). This form of mining is not legalised by the DMR since mining occurs without a permit. Unemployment and job insecurity make mine communities ask to address the historic destructions to individuals and their community and to increase the access to opportunities within education and the work sector and entrepreneurial prospects (Mogotsi, 2005). Thereby, it is important to keep in mind that the gold industry is inseparable from the industrial development in the economic hub of Johannesburg and that there are potentially other opportunities to sustain livelihoods, which should be encouraged (Expert 2; professor/researcher, 2017).

Viljoen argues that "Gold mining activities in the past have left a legacy which has negatively affected the surrounding environment and nearby communities." (Viljoen, 2009, p. 135). Most mining communities in South Africa are characterised by deprived social and economic conditions such as poverty, unemployment, inadequate housing and (physical) infrastructure, crime, family disorganisation, illness and a high influx of (undocumented) migrants (Cronje & Chenga, 2009). The labour unrest and the mining strikes of the last decades resemble a powerful reminder that despite the cultural and legal transformations since the country's democratic transition in 1994, there is severe social and economic unrest. This is because issues have been virtually unchanged for the majority of the South African population despite the promises of the legislation, like the BBBEE (Candy, 2013). However, currently, there has been an increase of (inter)national pressure on the extractive industry to move towards more accountability and transparency of the effects of their operations in mine communities (ibid.). For mining companies, this includes a shift in their core business. Companies are not only accountable for a maximisation of production and profit, but also on corporate social responsibilities (CSR) and sustainable development (ibid.).

5.1 Apartheid legacy

It would be neglectful to exclude South Africa's history and the legacy of apartheid. The bottom line of the industry during that time was a spatial strategy that ensured a continue supply of cheap labour (Bezuidenhout & Buhlungu, 2011), exploiting mainly domestic and international migrants and black South African people. Communities, as well as companies and the government, continue to deal with post-apartheid structures in the context of mining (Cronje & Chenga, 2009). Previous research shows that although the state apparatus of apartheid has been dismantled in the 1990's, the dogmas are still existing in the industry, emphasising the separation and differences between the companies and the communities (ibid.). The Legal Resources Centre (LRC) stated that "inequity in the mining industry has its roots in the dispossession of the African population of their land." (LRC, 2007, p.1).

By renewing the South African mining legislation, the country's mineral wealth was placed into the State's hands, which may enhance the people to benefit from extraction in the future. However, it cannot compensate for injustice in the past (Rutledge, 2016). This forward looking legislation intended to redress the negative impacts of mining during apartheid, when companies exploited cheap black labour (Sguazzin, 2017). Although a part of the black population 'the middle class' has economically benefitted, change and development, unfortunately, has not reached all corners of the South African society (Frye, 2004), including mine communities.

5.2 Mining legislation; a national perspective

"The resources are discovered somewhere, not everywhere. And that locality has some rights, but not absolute rights. The resources are under the ground. The local community that lives on top of the ground didn't put the resources there. And so it's not really right to think of the local community as owning the resources. They didn't create them. Nobody created those natural resources. And so who should own them?" (Collier, 2015B). However, resources and land can have spiritual, physical, social and cultural meaning to the people inhabiting this land. "Land and resource-related rights are crucial

to indigenous peoples for reasons such as, the religious significance of the land, self-determination, identity, and economic factors". (Bouma et al. 2010 p. 255), without this land, the people might not have access to fundamental (natural) assets.

Although Collier is discussing the entitlement of natural resources, perhaps a more relevant question is, how can the large majority of people directly or indirectly benefit from them? In South Africa, the mining legislation is governed by the Department of Mineral resources and the Mine Health and Safety Inspectorate which is covered under the Department of Mineral Resources. The Mineral and Petroleum Resources Development Act (MPRDA) is the legislation covering the mining industry; this legislative framework is active since 2004. The MPRDA ensures that the resources belong to the people of the nation, under the custodianship of the state, in other words, the state claims the right to administer the mineral resources for the good of the citizens (Nhlengetwa & Hein, 2014). Its precursor, the Mineral Act, was a "hybrid system of a common law with statutory interference" (ICLG, 2016, p. 2) in which the mineral rights were held mainly privately and in some exceptions by the state. The MPRDA allowed mining companies to renew their rights to mine under the new legislation. While obtaining their renewed mining rights, companies had to develop a Social and Labour Plan (SLP). Based on Corporate Social Responsibility; the SLP includes the company's plans to benefit the local community. The SLPs include promotion of local employment, advancing social- and economic welfare and a statement on the transformation of the mining industry to ensure that mining companies contribute to the development of the areas where they operate (CALS, 2017). The transition from the Mineral Act to the MPRDA raised high expectations. The government promised to "Make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources; and to provide for matters connected therewith." (DMR, 2002, p. 5). Furthermore, the Department of Mineral Resources recognised that minerals are non-renewable resources, it acknowledged that these minerals belong to the nation, it affirmed that it is the state's obligation to protect the environment and to promote economic and social development, it recognised

that local development needs to be promoted as well as the right of communities affected by mining to social upliftment and it reaffirmed the commitment of the state to bring equitable access to South Africa's minerals (ibid.).

Besides the MPRDA, the Mining Charter is developed collaboratively by the DMR and the industry to enhance socio-economic transformation. The mining companies are required to convert their mineral rights in order to mine on the properties. The new rights contains the following criteria; human resource development, employment equity, migrant labour, mine community and rural development, housing and living conditions, procurement, ownership and joint ventures, benefaction and reporting (DMR, 2003).

The design of the legal and regulatory framework in South Africa sounds very promising in terms of promoting equity and social justice. However, "experience has shown that a legal system is only as effective as a country's ability to enforce it effectively" (Heller, 2015) and currently, critical voices are being raised amongst NGOs and mining affected communities. "Most of these policies have been stated but not implemented, despite the new political dispensation." (Cronje & Chenga, 2009, p.414). The result of the Mining Charter and the MPRDA is that the mining industry at national policy level now has the responsibility for (social) sustainable development. However, the guidelines are ambiguous and what is missing are rules in practical terms. The DMR does not have a measuring tool, nor the capacity to monitor to what extent companies are implementing their corporate social responsibilities (ibid.). Rutledge (2016) argues that the MPRDA has failed to deal with the community as a stakeholder that have a direct interest in mining activities, the effects of mining on health, livelihoods and heritage. Moreover, the legal framework failed to "adequately consider how the industry has historically contributed to the dispossession of black people in South Africa" (Rutledge, 2016, p.3). Therefore the question is to what extent the objectives of the legal framework are able to "transform the overall South African society and particularly the lives of rural communities impacted by mining." (Rutledge, 2016, p. 3). According to expert 1 (Researcher; 2017) the government is strictly regulating the business. This results in enhancing the

formal gold mine sector in Johannesburg. However, in practice, the mineworkers are not benefitting from this law enforcement. While unemployment rates in the formal sector are increasing, the small scale and artisanal mining is being counteracted and criminalised. The hope of the mineworkers is on a liberal system, where big companies can mine parallel with small scale mining companies and artisanal miners, and free the sector of its current regulations.

While expectations for local content, such as job opportunities, local business development and financial compensation are high, the actual number of opportunities are disappointing (Collier, 2015B), this means that the communities' access to resources, i.e. the benefits of mining, whether directly or indirectly, is displeasing.

5.3 Zama zamas

Artisanal and small-scale mining has been associated with social issues such as conflict, environmental destruction, health risks and child labour (Nhlengetwa, 2016). On the other hand, ASM plays a fundamental role in the economy as a primary source of livelihood for many households. According to the CoM (2017), there are 14.000 people involved in the illegal mining, and much more people dependent on the (secondary) activities associated with illegal mining. Therefore it is critical to understand the background of the artisanal and small-scale mining, and the way in which it is governed by the DMR.

According to the MPRDA, all forms of mining without permission is redeemed illegal, despite the context in which the mining takes place (ibid.). Despite the widespread contribution to employment by the large-scale industry in Johannesburg since the 19th century, or perhaps due to the fact this industry is declining and shredding jobs, the artisanal and small-scale mining in South Africa is very prevalent. However, unpermitted mining is not homogeneous. As mentioned earlier, the abandoned mines in the Witwatersrand create opportunities for small-scale and artisanal miners illegally entering the decommissioned mines. These miners are often called *zama zamas*. Zama comes from the Zulu language and means "to

try" (Rutledge, 2016C). This form of mining is considered illegal by state authorities, as it is conducted without the necessary mining permits. Furthermore, the zama zamas violate the law by trespassing land they do not own, and they are in possession of gold ores.

On the other side of the spectrum is the informal 'community based mining', that often follows customary law, but is not officially legalised by the DMR (Nhlengetwa, 2016). NGOs have campaigned for informal and illegal activities to be formalised under South African legislation, but without success (ibid.).

FIGURE 13: ARTISANAL MINING AT MATHOLE, PHOTO: AUTHOUR



The reason for people to enter the informal or illegal mining sector is highly dependent on the context. The Chamber of Mines (2017) states that mainly due to socioeconomic issues many individuals are drawn by illegal mining activities. Furthermore, former employees that have worked as miners for years, living around mine shafts, often do not have other options but informal mining to support their livelihoods. However, according to the CoM (2017), the illegal mining market is a well-organised five-tier system. The first tier consists of the underground miners, which are mostly men and often (illegal) immigrants. Many of the underground miners have previously worked in the LSM industry. The second tier consists of the buyers, who are active on the premises around the mines. These buyers also group the zama zama miners, directing them to different shafts, protecting them and supporting them with equipment. The third tier consists of the global bulk buyers, who are often permitted under the Precious Metals Act (PMA) to trade in these resources. The fourth tier includes people who distribute the metals on a national or international level, via companies of legitimate exporters. The fifth tier consists of international distributors and receivers, via global refineries and intermediary companies. This organised system involving illegal mining is an ongoing concern across South Africa. Not only does it cost the industry and fiscus more than an estimated 20 billion Rand (1,4 billion dollars) a year in lost sales, taxes and royalties (CoM, 2017). Moreover, health and safety issues amongst ASM workers is increasing rapidly (ibid.). Zama zama miners, as well as informal miners, often spend weeks or months underground risking their lives, sometimes working without any income. Falling rocks, explosions and poisoning are common accidents in the Witwatersrand mines. Severe working conditions do not make ASM mining more attractive, employees only have a shack as protection and are excluded from drinking water and other facilities. Gangs are controlling mining sites, and conflict is a far reaching issue. Furthermore, the miners have to defend their possessions, are harassed by the police and are constantly under pressure from authorities (Rutledge, 2016C). However, despite the risks, this sector includes many people, directly, but also indirectly.

This industry often provides immediate cash for people or households whose livelihoods became insecure or less profitable (Villegas, 2015A). The low barriers to enter this sector, for migrants as well as for locals, contributes to the attractiveness of this work (ibid.). Another reason is that many people used to work in the formal industry, mining is all they know, to strike it rich is the dream they pursue (ibid.). Therefore, the chances and the challenges are profound realities (ibid.). The paradox, in this case, is that big mine companies in Johannesburg buy gold from the zama zamas which they sell through the formal market (Mbangula, 2017). "The zama zama mining is a multinational and multi-ethnic enterprise with global reach, driven by profit, like legitimate businesses." (Jinnah 2017 in Hosken, 2017, p.4). The competition for access to minerals is high according to the Chamber of Mines, and because illicit mining is a highly well-organised system, the government declared it as a national threat (Hosken, 2017, Com, 2017). "Because they are serving organised criminal bosses, the miners taking these risks are not seeing the real value of their labour" (CoM, 2017, p.1).

The coordinator of the MACUA, Mbangula, states that in the absence of formal employment within the mining industry, artisanal mining is a livelihood strategy and should be decriminalised by the DMR. This way it could it eradicate criminal gangs in the informal and illegal mining industry and improve the safety of the zama zama miners. Nhlengetwa (2016), claims that the creation of a legal ASM mining sector would create opportunities for entrepreneurship and it can play a role in development and poverty alleviation. This discourse dominates the news in South Africa. Moreover, the interviewees living in the West Rand communities, claim that the work they are doing may be illegal, but it is not that bad. They do not harm anyone with the way in which they are currently making a living. Another option to get money is through getting involved with criminal activities, but that is much worse (Expert 4; community-based organisation, 2017).

However, the issue resides with the government and the question if- and how the DMR can legalise this form of mining and if this is the solution to all mining related issues. The government is responsible for monitoring abandoned mines. However, the companies are responsible for the activities

taking place in their (former) mine shafts. The Chamber of Mines estimates that around 14.000 individuals are involved in illegal mining in South Africa. The CoM emphasises the fact that zama zama miners often end up working in this industry because of the promise of sizeable profits, despite considering possible death or arrest (CoM, 2017). Especially (undocumented) migrants end up working in this industry. Recruited from abroad, migrants travel far distances to provide companies with cheap labour and/or end up depending on illegal employment to support their livelihoods. Authorities involved in tracing and preventing illegal mining activities claim that inadequate border control and bribery is the cause. The CoM acknowledges that there are no clear-cut solutions to the issues related to the growing illegal mining sector (CoM,2017). Recently the CoM in cooperation with the South African Police Service (SAPS) launched a task force, to combat illegal mining (ibid.).

This chapter emphasized the crucial role of mining in South Africa's development. It took in on a historical perspective, the apartheid legacy and country specific challenges such as the techniques of mining, social unrest and the issues regarding informal mining. Chapter seven zooms further in on the local level, the micro scale, in order to better understand how the global developments as discussed in chapter four, and the country specific conditions (legislation, stakeholders, environment etcetera) influence mine communities in the West Rand.

6. THE LOCAL LENS

The previous chapters illustrated the relationship between the global gold dynamics and the national challenges of the extractives industry in South Africa. To better understand the local mining context, the aim of this chapter is to evaluate the conditions on the local level. The first step is to analyse the impacts of legislation on the micro level. It aims to differentiate between how the status quo should be according to legislation and the status quo in reality.

In the South African mining context many stakeholders are involved. The second step, therefore, is a stakeholder analysis. This chapter will zoom in on their interaction while analysing potential challenges. In order to better understand how the key stakeholders cooperate to identify the social and environmental risks of the gold mining industry and how the community is protected from harmful effects.

The last step is an analysis of the livelihoods of mine communities in the West Rand. This focus is fundamental in order to gain insight in if these communities have access to resources, participate in decision making processes and are considered a key stakeholder.

These three steps help to gain insight into the effects of the gold mine industry on the micro level, which will be the foundation of the discussion and recommendations in chapter seven.

6.1 The impact of legislation on a micro scale

The gold mine industry in Gauteng is slowly reaching the end of its lifespan (Bobbins & Trangos, 2015). Since most of the gold mining companies in the Witwatersrand in Johannesburg have been in operation for over a century, it is unlikely that new mines will be established in the near future. Although the capital generated from mining in the Witwatersrand has a direct influence on urban development in other South African regions, the extractives industry's aftermath fundamentally shapes areas in Johannesburg's society, landscape and ecological systems (ibid.). Due to the context specific character of the gold mine industry in Johannesburg, the city is built on tunnel systems that can reach a depth of 4 kilometres and are 16.000 kilometres long (Mills,

2016). This has its effects on the overall urban development of the city (Expert 5; professor/researcher, 2017). Bobbins and Trangos (2015) argue that mining capital has played a fundamental role in shaping the South African society along racial lines, combined with the influence of apartheid planning, this evolved into distinct economic divides and a fragmented urban form. The natural landscape has been distorted and created barriers to spatial integration ever since (ibid). Large-scale mining activities in the West Rand have radically transformed the local landscape and strongly emphasised inequality in the local society (Langanki, 2014), i.e., the presence of multinational corporations and forthcoming employment, wealth and investment contrasting with the reality of unemployment, conflict and poverty.

Declining ore grades, increasing extraction costs, rising liabilities and instability in the global gold mine industry, result in a decrease in applications for new prospecting rights in the Witwatersrand. Proper implementation of the Mineral and Petroleum Resources Development Act as a condition to gain mining rights, is therefore challenging. The MPRDA intends to give equitable access to the South African resources and ensures that the country's "mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development." (DMR, 2002,p.19).

While prospective community involvement regarding new mining operations is not relevant, it has to be made clear that gold mining is close to the end of its life-cycle in this region (Langanki, 2014). While envisioning the decline and closure of formal mining operations, a holistic and sustainable vision for the post-mining future should be developed. However, this does not exist yet for the Witwatersrand (ibid.). Such legislation can not be produced by mining companies alone but requires the involvement of all stakeholders. The Social and Labour Plan (SLP) could be the most important instrument to ensure participation of the affected communities.

"The legacy of mining in South Africa is of one of disparity between mine workers and communities on one side and mining management, financiers and shareholders on the other side" (CALS, 2016, p.6). However,

since the introduction of the MPRDA, while renewing mining rights, companies have to "provide financially and otherwise for a prescribed social and labour plan." (DMR, 2002, p.74), this is a corrective measurement developed by the government to address the legacy as mentioned above (CALS, 2016). These SLPs require companies to develop and implement comprehensive human resources development programs, a mine community development plan, a housing and living conditions plan, an employment equity plan, and processes to manage to downscale and mine closure (DMR, 2010). These programs aim to stimulate employment, promote the socioeconomic well-being of South Africans and ensure economic growth (ibid.). While developing this SLPs, the mine or the production operation must, through consultation with communities and relevant authorities provide a plan (DMR, 2010, p.18), which becomes binding when the company is granted with mining rights by the DMR. The Centre for Applied Legal Studies (CALS) conducted a study with data from 50 SLPs in 2016 and concluded that "communities seek a substantive decision-making role throughout the mining and SLP life cycle." (CALS, 2017A, p. 36). "Communities speak of consultation as a substantive role in decision-making regarding mining and SLPs." (CALS, 2017A, p. 36) The South African Human Rights Commission identified two key elements of communities' conception of meaningful consultation: access to sufficient information and being recognised as a stakeholder in decision-making (SAHCR in CALS, 2017A).

The SLP together with the Broad Based Black Economic Empowerment (BBBEE), covered within the Mining Charter, are primary mechanisms by which mining companies can channel the proceeds of their business into benefits for its employees, for the surrounding communities and contribute to the transformation of society as a whole (Rutledge, 2016D). However, the reality is multifaceted. The BBBEE is introduced in 2003 to distribute the country's wealth across disadvantaged South Africans and to withdraw the control of South African resources from colonialist and capitalist exploiters (Burgess, 2010B). However, the question remains to what extent the Black Economic Empowerment brought "substantial equality" for the majority of

previously disadvantaged South Africans. Rutledge argues that it remains “an elusive reality for mining affected communities.” (Rutledge, 2016D, p.1).

According to expert 1 (2017) the legislation regarding the gold mine industry and the implementation thereof is lacking. (Inter)national appointments regarding free, prior and informed consent are being “bought” with the help of traditional community authorities. The community is surpassed and political promises not being honoured. Furthermore, the promises of well-being and the creation of jobs in the SLPs have not been kept. Rutledge (2016D) argues that the SLP’s requirement to “consult with communities” is ambiguous and therefore this agreement is exploited by mining companies. CALS concluded that when it comes to community involvement; there are more constraints to community participation than channels to access information (ibid.), this results in the fact that SLPs are no more than loose promises to the intended beneficiaries of these plans (ibid.). Furthermore, the CALS concluded that communities are provided with insufficient and inaccessible information. “The implementation of SLPs is hampered by short-term profit motive.” (CALS, 2016, p.47), excluding long term planning and sustainability. The Centre emphasised the barriers to universal access (documents are only in English, not provided to the community members and lack of transparency), the SLP does not incorporate the dynamics of communities (over time), SLPs focus more on positive social impacts while neglecting the adverse social impacts (ibid.). Mining communities state that the wealth of the country is being extracted in their living area, however, “there is no drop that comes back to them as the mining community” (Rutledge, 2016D). Therefore, the SLPs are a good example of systemic inequality that is endorsed by legislation (ibid).

The SAHRC states in its report (2008) that the government should “clearly state what its criteria are for meeting the required standard of “consultation” by the applicant mining company with the affected community. This will further empower the affected community to assert their rights during the process as opposed to objecting to a process after the fact” (SAHRC, 2008, p.6). In a 2017 press statement from a coalition of multiple civil society organisations; Mining-Affected Communities United in

Action (MACUA), Women Affected by Mining United in Action (WAMUA), Mining and Environmental Justice Community Network of South Africa (MEJCON-SA), Land Access Movement of South Africa (LAMOSA), Action Aid South Africa (AASA), Land and Accountability Research Centre (LARC) and Womin stated that mining-affected communities, artisanal and small-scale miners, community-based organisations and civil society organisations from all over South Africa reject the MPRDA. They argue that the current legislation is designed to favour the big mining companies' interests and the politically connected elite, at the expense of communities that live around mines and ASM miners who depend on mining for their livelihoods (Bruce, 2017). And therefore, conflict, violence, poverty and environmental degradation continue to be the hallmarks of the untransformed mining regime (Rutledge, 2016B). Rutledge argues that to transform this system, inclusive engagement with all stakeholders is necessary.

Overall, communities, NGOs and the Centre for Applied Legal Studies agree on the fact that participation and free prior and informed consent is a fundamental deficit in the current mineral benefits system (CALS, 2017A). Ambiguity induced by legislation still allows for grand claims amongst the dominant elite and increases the exclusion of communities from the direct and indirect resource benefits (ibid.). To include these important stakeholders, the legislation should provide a clear set of background conditions for the design, monitoring and the completion of the SLP commitments (ibid.)

6.2 Mapping stakeholders

Identifying the relevant stakeholders and understanding their interests and role is a prerequisite for the evaluation of the social sustainability of the gold mine industry in Johannesburg. Therefore, this paragraph provides an overview of the relevant stakeholders within the South African gold mine industry.

FIGURE 14: STAKEHOLDERS



The issues associated with mining development are complex and multidimensional and they involve many stakeholders, as described above. These stakeholders often have conflicting priorities and values (Everingham, 2012). The International Finance Corporation (2014) created the following table which covers the three most important stakeholders' expectations for sustainable mining in Africa.

FIGURE 15: STAKEHOLDERS' EXPECTATIONS

Government	Companies	Civil Society / Communities
<ul style="list-style-type: none"> Local economic development Address capacity needs of the local government Poverty reduction More prosperous and resilient communities Better infrastructure Shared prosperity Clean environment 	<ul style="list-style-type: none"> Mitigate risks Reputational issues Social licence to operate Increased development impact Responding to shareholder concerns Reduce negative impact 	<ul style="list-style-type: none"> Improve well being Build capacity Reduce poverty Respect for human rights Access to improved infrastructure and services (water, energy, education, health, security) Access to jobs and income generation activities Clean environment

Source: IFC, 2014

Most of the stakeholders have an interest in the economic aspects of sustainable development, while others have more concern for the environmental- and the social risks that the gold mine industry entails (Azapagic, 2004). As illustrated in figure 13, the expectations and needs for civil society/communities are in a more developmental area. Mine communities in the West Rand do not have access to “proper services of housing, healthcare, water, education or sanitation.” (Jinnah et al., 2016, p. 21). The conditions in which these households live, induce expectations and perspectives on sustainable mining, such as; reducing poverty, building capacity, having access to infrastructure, employment and services.

6.3 Interaction stakeholders

“Finding cooperative approaches for engaging with the rest of civil society is a key to perpetuating improved sustainable development in industry.” (Boachie, 2012, p. 116). Effective stakeholder cooperation will mitigate risks and issues related to the mining industry (Esteves & Vanclay 2009). The importance of constructive dialogue and engagement between the main stakeholders such as government, mining companies and communities can not be over emphasised, however, according to SRK (2017) South Africa needs to improve its performance. “Many African countries are leveraging their mineral resources as a catalyst for broader economic development. To do that effectively needs a strong relationship between the public and private sector – to build trust that will endure through the demanding but inevitable commodity cycles.” (SRK, 2017). Transparency and cooperation provides stakeholders with the capacity to value their sacrifices and compromises, i.e., it determines whether or not the prize is worth what the stakeholders are prepared to give up (ibid.).

For mining companies corporate and social responsibility (CSR) “is the manifestation of a move towards greater sustainability in the industry.” (Jenkins & Obara, n.d). The CSR is encapsulated, in the Social and Labour Plan (SLP), which is the practical implementation of the goals of sustainability. Agreements concerning cooperation between the government,

mining companies and communities are captured in the SLPs. In these plans, companies frame their attitudes and strategies towards, and relationships with stakeholders, estimate risks and facilitate local socio-economic development for mine communities. The legislation, therefore, requires that social and environmental risks are being identified by mining companies and the surrounding communities (Expert 2; professor/researcher, 2017).

However, mining communities are protesting against the (lack of) engagement with companies and therefore their ability to cooperatively identifying risks and creating chances. Companies are facing a multitude of pressures and are increasingly aware of the fact that long-term success, will be achieved by effectively managing relations with communities where they operate (International Finance Corporation, 2014). The study of Ernst & Young (2013) indicates that 'social license to operate' and 'sharing the benefits' are among the top ten risks facing mining companies (ibid.)

"Companies that can do business in a way that provides opportunities for benefits sharing, community participation and local procurement, generates decent work and jobs, respects human rights and protects the environment can better manage risks and seize opportunities." (International Finance Corporation, 2014, p.4). Companies that implement this strategy also help to create more resilient communities and support sustainable livelihoods. (IFC, 2014). In an ideal situation a community forum is established to raise concerns, stakeholder engagement would be ongoing throughout the whole lifespan of the mine, trusting relationships needs to be created. However, this does not happen in reality (Expert 2, 2017).

In the cooperation between stakeholders power plays an influential role. According to Garvey and Newell (2004) mainstream approaches to CSR underestimate the importance of power in the interaction between companies and the communities in which they invest. In South Africa this leads to a trust deficit between the mining companies and the government but also between mining companies and communities (Expert 2, 2017). The social license to operate should be based on trusting relationships, and this is not only about benefits, it is about being open and honest about the good and the bad. In the past, and many people claim that this is still happening, companies

promised schools, hospitals and infrastructure, however, the companies will not mention that houses may crack, that people might get sick from dust and environmental pollution and that eventually the mine will be closed. However, the question remains who is responsible for providing and maintaining these services. There is a dispute between government, mine companies and (mine) communities about the responsibility for development. Resulting in the fact that many development issues have stagnated (Clements & Rutledge, 2017). Therefore, in the West Rand, communities are upset because their voices are not being heard, promises by companies and government have not been kept and poverty induces a harsh environment to sustain a livelihood. *"I do not know anything about mining legislation, but I do not care because the government can not help me anyway. People fight and die because of gold, but the government does not get involved."* (Respondent 16, 2017). Mine communities in the West Rand believe that they are not perceived as a key-stakeholder, being excluded from decision making processes. Moreover, tension and a trust deficit between the key stakeholders is being amplified by violent intervention from authorities, the lack of transparency from corporations and gang warfare due to the presence of illegal activities. *"So there is a problem. There are issues from the legislative side, the legislation has gone wrong the mining companies have done wrong, and communities have not always done the right thing either. Demonstrating that effective cooperation in this case has not worked."* (Expert 1, 2017).

In this local context, communities have no veto power; they have no power in this relationship whatsoever (Expert 6, NGO, 2017). Furthermore, stakeholders do not cooperate to protect communities from the risks of the mining industry, because this is not their job (ibid.). *"The job of the state is to ensure maximum tax revenue, the job of organized labour is to ensure health and safety and income for their members and the job of organized business is to ensure maximum profits for their shareholders. In that, the environment and the community are external costs which need to be, negotiated, need to be managed."* (ibid.). NGOs, as well as community-based organisations, are currently challenging the status quo. These groups strive for human- and environmental rights, in order to protect communities from risks as

associated with the mining industry. *"In terms of the derelict and ownerless mines I think government is not taking into consideration, the needs of the communities, but to them it is just reducing the risks in terms of kids or livestock falling into the shafts. So for them the main focus of the project is just sealing the shaft, it is more around safety, not really the social and economic consequences of that. "* (Expert 3, 2017). However, it is questionable if the government in cooperation with mining companies are successful in guaranteeing communities this safety, since accidents happen on a regular basis. The community as an equal stakeholder in the cooperation between the government and the industry, to address and mitigate social-economic- and environmental risks, is therefore far from achieved. *"We (civil society and communities) have to literally beg to be heard. If we want to be heard, we have to either beg or protest, or cause some kind of disruptions so that people will listen. And that is not a healthy way to engage in a democratic society. So we think that there should be institutional mechanisms that enforce community and civil society participation."* (Expert 6, 2017).

6.4 Achieving social sustainability in the extractives industry

According to the South African Human Rights Commission (SAHRC, 2008) the complex relationship between the country, the communities and mining has evolved over a substantial period. The vulnerabilities of the communities have not been adequately addressed and business in the extractive industries have put emphasis on the weaknesses and put inequality in a sharp focus (ibid.).

Given the wide range of stakeholders affected by or affecting the gold mine industry in South Africa, parallel with an increasing public awareness of mine impacts, it is important for companies to address the socioeconomic sustainability of their operations in cooperation with other stakeholders in policy documents (Hilson and Murck, 2000). Because mining activities adversely impact resources critical to the well-being of society, labour unions, such as the COM and NUM, employees, the government, businesses, investors, NGOs and communities have to cooperate to develop sustainable

solutions (World Finance, 2013). "Improved communications is proving integral in enhancing business relations in all industries, and extended corporate responsibility is now a growing expectation within the public domain." (Boachie, 2012, p. 116). Significant CSR can be achieved if individual mines improve communication, community relations and management strategies (ibid.).

Addressing the needs of all stakeholders from the various development phases of the mine is crucial to create social support. According to Epps (1997) the following strategies are essential in creating a social sustainable extractives industry;

- ✦ Mapping local population's perception of mine development
- ✦ Creating a social and environmental impact assessment, to determine the possible positive and adverse effects of mine development on community processes (livelihoods, interaction, behaviour, and social resilience)
- ✦ Determine in advance the degree of participation of local people in the mine operations
- ✦ Assessing whether (a part of) the population needs to be relocated due to the mining operations
- ✦ Calculating the costs of protecting the community's cultural and historical values and the local ecosystem (also after mine closure)

To enhance the sustainability of the mining operations and to mitigate harmful effects, a company can provide economic benefits to a community. This includes providing employment to the local population, using local services and contributing to regional developmental projects (Boachie, 2012). In terms of employment, it is critical to help develop the human capital of communities, to create resilience after operations cease to continue. To enhance the human capital, Bristow and Rocha(1997) suggest the following strategies;

- ✦ Implementing re-skilling projects; increasing the literacy level of employees, training in additional (industrial) work fields

- ✦ Establishing small and medium size enterprises to stimulate and attract entrepreneurship
- ✦ Developing educational and training facilities to boost business opportunities and improve skill levels

Warhurst and Mitchell (2000) define extended socio-economic responsibility as “the internalization of social and environmental effects of operations through proactive pollution prevention and social impacts assessment so that harm is anticipated and avoided and benefits are optimized”. (Warhurst and Mitchell, 2000 in Boachie 2012, p.114).

Currently there is an increasing expectation for corporations to operate in accordance with community groups that are potentially affected by industrial operations, and to address the needs of stakeholder parties when devising corporate policies. Socially, economically and ethically, a mine must identify up front all secondary parties potentially impacted by operations and address each of their needs explicitly in corporate policies, and employ residents, provide job retraining services, and help finance major community developmental projects.

6.5 The West Rand communities

“For decades South Africa’s mining sector has been profiteering while neglecting mining communities’ development needs”. (Cronje and Chenga, 2009, p.1). Communities living in and around the Witwatersrand basin in Johannesburg are dependent on the mining industry, whether LSM or ASM, for their livelihoods and development. The decline of the gold mine industry that has supported the local economy for decades has left behind a social legacy (Langanki, 2014). The West Rand hosts many former employed mineworkers, who are now living in poor economic and social conditions. Due to the surplus of (mainly migrant) labourers who can not access employment in the sector of services, commerce or other industries. Therefore, many people living in the West Rand maintain a livelihood that is (partly) based on informal artisanal or small-scale gold mining. In contrast to the government that is promising jobs but not providing them, or companies that shred jobs

due to retrenchment, an individual zama zama miner provides employment for ten to twenty others (Thornton, 2014). The zama zamas could be considered as true entrepreneurs in a society that was not able to create much entrepreneurial spirit (ibid.). Zama zama networks distributed positions in a value chain, in which the leader has the most knowledge and experience (Nhlengetwa & Hein, 2015). The network furthermore consists of gold panners, grinders (mostly women), the underground miners, the gold burners and the gold buyers. However, despite, or perhaps due to, this organised system, the socio-economic issues in the West Rand are evident (ibid.). Financial insecurity, social unrest and safety risks are often mentioned issues by respondents and are caused by a multitude of factors. Declining ore grades, a high demand but low offering of jobs, conflict on the basis of ethnicity etcetera. *"This household plays an important role as mediator within the community. Tribal diversity often causes conflicts in the community. The Shona and Ndebele can live in harmony, but violence, discrimination and conflict does happen. I try to solve these conflicts and then it is quiet for a while."* (Respondents 4 & 5, 2017). The social sustainability as discussed in paragraph 6.4, is in the West Rand communities therefore far from achieved.

According to Cronje and Chenga (2009) forces outside the gold mining industry, namely globalisation, the government and the communities have pressured mining companies to take on social responsibility and social development. While SLPs and other community projects aim for social sustainability in mining communities, there is a gap to be found between policy and practice, which could be ascribed to acculturation stress, power relations, communication and responsibility (Cronje and Chenga, 2009). Development initiatives can be found in education, health care and welfare. However, they have contributed little to solving the causes of social problems that mine communities face (Hamann and Kapelus, 2004). Mbangula (2017) national coordinator of the community-based organisation Mining Affected Communities United in Action (MACUA) states that the land has been taking away from the people by companies from all over the world. The people are very much attached to their land, which is from their forefathers and they

need to start looking at how they get their land and resources back. "If we have land, we have everything."

6.5.1 Household and gender differentiated impacts

The West Rand community members indicate that household structures are affected by the mining industry. The culture does not allow women to fulfil certain tasks in the mining sector. Women can not go underground to get the gold ores. Most women of the communities work at the processing site to crush the stones. However, it happens that when the men come back after days or a week underground and have not found enough soil, or if gangs steal the catch or if the police arrested the illegal miners, this will have a direct effect on the work of the women and therefore on their livelihoods. If there is less soil to crush, fewer women are needed to complete the work, and some of them will not have access to money. There is one creche in Mathole, that is nurturing young children of zama zama families. However, if people can not afford the creche; *"the women are supposed to stay at home and look after the children and will not have access to an income. The other option, is that the women take their children to the mining sites. Where the children are exposed to a lot of health risks, such as air pollution (dust) and water pollution (chemicals). A lot of children get ill at a young age"*. (Respondent 7, 2017). This results in an uneven gender impact. Women carry the burden of stress on the household and the social system (Makuluma, 2011), while excluded from most of the benefits (Munnik, 2005).

6.6 Communities' risks

The social- and environmental risks that have been acknowledged by the communities are diverse. They can be considered from a micro-, meso-, and macro level, relating to individual, household's or community specific risks. The following subparagraphs cover topics that the field research in the West Rand communities indicates as most prevailing social and environmental issues.

6.6.1 Health risks

Principle I of the Rio Declaration claims that "Human beings are at the center of concerns for sustainable development and are entitled to a healthy and productive life in harmony with nature" (Epps, 1997 in Hilson and Murck, 2000). However, mining activities have its effects on the local population. The risks and issues of the individuals working in the mining industry include an overall high health- and safety risk. Health and safety risks in the West Rand include air- and water pollution, due to the release of toxic materials. *"Health hazards are a problem. Due to soil erosion and monoxide in shafts, many people have chest problems". (Expert 4; community-based organisation, 2017).* The crushing of gold ores involves a lot of dust. This dust is directly inhaled by the grinders. Especially women are involved in this aspect of the industry and this health related issue is frequently mentioned amongst the interviewees *"There is no money for health care, but people drink milk to prevent dust from filling the chest."* (Expert 4, 2017). Furthermore, mine communities in the West Rand express a fear concerning health-issues on the long term: *"The government is not there to prevent bad things happening, illnesses are only visible in the long term"* (Respondent 3, 2017).

Furthermore, drinking water is intensively used for the gold mine industry. This leads to recurring water scarcity within the communities. The gold mining industry uses an enormous amount of water, especially during refinery (Respondent 5, 2017). The use of water for this industry is in competition with other users such as community members and businesses. *"I am upset that there is enough water for mining, but barely enough for consumption"* (Respondent 6, 2017). The municipality is currently interfering in the water usage of the West Rand communities and insists that the people should stop wasting drinking water on the mining industry, because water is scarce and people are suffering (Respondent 6, 2017).

Other health risks includes the exposure to chemicals (waste). While processing the gold ores, mercury and other toxic chemicals are being used. While mixing this water with chemicals, the water gets polluted. This polluted water ends up in the soil around the West Rand community. Although the miners and the community members did not express fear of environmental

degradation or pollution of their land, it often happens that people living near the processing sites have to be taken to a hospital (Expert 4, 2017).

Due to the fact that former mining landscapes are not properly rehabilitated, more health issues occur. Illegal access to the abandoned mine shafts often causes (fatal) incidents. Underground gold miners have the highest incidence of fatalities (Azapagic, 2004). Entering these mine shafts is currently possible due to corruption and inadequate security. Unrehabilitated mining environments; such as open shafts and mining waste are dangerous to people living in the area. Not only zama zamas are victims, but also children get injured when falling in these shafts. *"Whether LSM or ASM, safety is always an issue. People are dying and suffering, but it often does not get reported."* (Respondent 3, 2017). However, employees in the LSM industry are better protected from health impacts than ASM workers. Medical care is arranged in the contract of LSM employees, while ASM workers are dependent on their financial buffer for medical treatment.

6.6.2 Social risks

"The migrant labour system which is highly associated with gold mining in South Africa, leads to negative social consequences such as family breakdowns and high levels of pandemic diseases like HIV/AIDS." (Makuluma, 2011, p.32). Many households in the West Rand communities have young children, who are living with family in the home country. If the households earn enough income, remittances will be sent back in order to financially provide for the family. *"My children live with their grandparents, I send them money so that they can go to school".* (Respondent 9, 2017). However, parents, especially mothers, mention having a hard time, seldom seeing their children. Furthermore, for women it is especially hard to see their husbands go underground; *"He sometimes stays underground for a week, which makes me feeling very uncomfortable and worried. I do not know if he will come back from the mines and if he dies, I have to take care of myself and my family alone."* (Respondent 8, 2017).

Furthermore, the field research surfaced that tribal conflict between Shona and Ndebele migrants is one of the most problematic social issues in

mining communities in the West Rand. *"Tribalism plays a huge role, not only in the conflicts within the community, but also within the division and segregation of work. Underground miners, often a team of 2-4 men, are collecting the soil from underground and can decide on the women who will grind their ores. Often Shona men will provide Shona women with work. However, the Ndbele women do not have a good reputation when it comes to hard work. Sometimes, when the Ndbele men come back from the mines, they want the Shona women to grind. This gives problems and misunderstanding amongst the women and the different tribes."* (Respondent 9, 2017). Discrimination of migrants and tribal conflict has impacted the social cohesion of the community.

"A wave of new community members every time increases the competition for employment." (Respondent 1, 2017). Since the early 2000, a lot has changed in this area. I do not like it. The community used to be very small, currently it has grown enormously. Because there were not enough houses to accommodate the undocumented newcomers people are now living mainly in shacks." (Respondent 7, 2017). Gold scarcity, combined with an increasing community population, leads to inevitable conflict. *"Some people are just greedy and they take the stones and soil from others. Gold is a source of money but also a source of conflict."* (Respondent 16, 2017).

Conflict furthermore arises because the profit of the gold mine industry, whether obtained from LSM or ASM, is declining. As discussed in chapter five, the large scale mining industry has difficulties in remaining financially profitable. Unemployment in this sector is increasing and pushes people into socially and economically deprived positions. Many of the former employees got only one skill; gold mining, and end up in the informal or illegal gold mine sector because they can not maintain a livelihood in other sectors. Illegal work, often combined with an illegal residence status, results in the fact that many community members are subjected to, the financial loss and emotional fear of, bribery and corruption.

These social risks are leading to a feeling of unsafety in the West Rand communities. *"The police never intermediates and never comes in the community just to solve crime. The police only come here to arrest and*

deport people. After a recent memorandum, it is decided that the police should visit more often to prevent murder, rape and other criminal activities in these communities." (Respondent 7, 2017). "This is not a nice nor a safe place to live, because there is so much crime. Everyday something bad happens here, because people do anything for money. I thank God everyday if nothing has happened to me." (Respondent 8, 2017). "Financially I can benefit from living here, but on a social level the risks and dangers are enormous. People are being attacked in day- and in night time. I stay here to have access to immediate cash, but everyday I am afraid." (Respondent 11, 2017). In reality "There is no one protecting the miners from health risks or from social risks." (Respondent 2, 2017).

6.6.3 Economic risks

Income insecurity and income instability are common economic issues amongst mining communities. In the LSM sector income instability is irrelevant, because employees are working with a contract and salary is ascertained. However, recent mine closure from large scale operations comes with employment insecurity and many employees lose their jobs.

In the ASM sector, the income varies on a daily basis. The income depends on the amount of gold that is found underground, how many people are competing for work and the availability of tools and equipment. "In 2014, when I first arrived in Mathole, there were little people and a lot of money, now it is the other way around." (Respondent, 10). Many community members therefore claim that it is an unstable job, it is illegal and it comes with financial highs and lows. "Zama zama mining is a good solution for people who do not have anything, if there was no opportunity for them to mine, there would be a lot more criminals. Now the people are just trying for themselves to make a living." (Respondent 2, 2017). "We can benefit from the resources underground, and it is always better than nothing." (Respondent, 16). Unequal wealth distribution and unemployment are economic orientated issues that increase the risks of social conflict amongst people working in- and living around the gold mines.

Financial risks and issues are not limited to individuals or households who are directly involved in the mining industry. People indirectly related to

the mining industry, such as shop owners, sellers and the people providing services, encounter direct consequences of income instability and insecurity amongst their (potential) customers. *"In the Mathole area there are approximately 2000 underground miners, other people are processing the soil, buying or selling gold, security guards or cooks. Everyone in the community has a role."* (Respondent 2, 2017). This also induces a strong interdependency, *"If the zama zamas do not have money, the whole system and community collapses. The solution to this insecure livelihoods would be to guide and educate the informal miners, they often do not know about the long-term dangers and they need help. Many people in the community risk their lives on a daily basis."* (Respondent 7, 2017).

6.6.4 Institutional risks

In South Africa artisanal and small-scale mining is declared illegal by the Department of Mineral Resources, as explained in chapter four. However despite the legislation, many people's livelihoods revolve around ASM mining. *"The problem is that there is no work for the people in these communities, therefore they are vulnerable to do the illegal work of mining. There is no other option to support their livelihoods".* (Respondent 4, 2017).

Furthermore, there is a negative attitude towards the large scale mining companies. Migrants, who have been recruited to work for low wages in the past, are now losing their jobs because of retrenchment. *"These people, and all other people in mining communities in the West Rand do not benefit from the South African richness underground, only the big bosses of the companies do."* (Respondent 13, 2017).

Safety and security issues in ASM communities often lead to corruption and bribery by authorities. Within authorities, there is no one who can say they have not been paid, or know of someone who's been paid, to look the other way (Hosken, 2017). The biggest fear within these communities is therefore the fear of authorities. *"The police takes and destroys anything they get their hands on. Last time they destroyed the complete drainage system and the zama zama miners had to start from scratch."* (Respondent 6, 2017).

The SAPS often raid communities to deport people to their home countries and demolish mining equipment. Community members are sometimes offered to pay cash to prevent deportation or destruction to their property and belongings. This bribery and corruption leads to fear and anger and changes the social environment. This fear and anger is projected onto institutions and on fellow community members and often results in conflict. These situations are strictly being watched by (international) NGOs and human rights organisations such as ActionAid and SAHRC. *"I get upset about the fact that the government is portraying the zama zama miners as illegal and try to get rid of them, while I question who the real criminal is? The police steals money and tools from poor people who have nothing else. Therefore, gangsters are guarding the mine shafts, but having these gangsters with guns in the area also makes the community feel unsafe."* (Respondent 6, 2017).

FIGURE 16: ARTISANAL MINING EQUIPMENT "PENDUKAA", PHOTO: AUTHOUR



7. CONCLUSION

7.1 Discussion

The integration of the concept of social sustainability into governance of mining development is a challenging and a complex task (Everingham, 2012). While considerable attention has been devoted to analyse, reduce and mitigate environmental impacts associated with the extractives industry, less is known about managing the social impacts of mining in sustainable ways (ibid.). This final chapter will summarise the issues that are currently interfering with accomplishing social sustainability of the mining sector in the Witwatersrand and provides context-dependent recommendations.

7.1.1 Transparency

Conflict has been a central theme in this research. "Extractive industries tend to ignite conflict because they make deeper environmental footprints compared to other industries." (Magno, 2015), moreover, environmental damage has an amplifying effect on issues in the social sphere. In the LSM gold sector in Johannesburg, conflict of interests between policy makers and employees, or conflict of interests between communities and companies, impacts the functioning- and the (inter)national reputation of the enterprise.

According to the report of the World Bank and the International Finance Corporations (2002), the importance of transparency and communication in regards to the prevention of conflict between the stakeholders, can not be emphasised enough. Therefore, one of the recommendations is to increase the transparency of the company towards other stakeholders and the public. Transparency includes the continuous flow of relevant, timely, and reliable information, which is accessible to all stakeholders (Kaufmann, 2015B). Local communities, local government and the wider public should be informed and engaged prior to-, during- and after the mining operations (Thematic Group SDSN, 2013). All stakeholders should be notified about the vision for the resource. Furthermore, all stakeholders should be able to express their concerns within decision-making processes (ibid.). This will enable communities to understand how their environment and

livelihoods will be affected and to contribute to the development of socio-economic strategies. Noting that the different stakeholders (including government, company, national population and the local community) have different interests and priorities, transparency and involvement should contribute to a more harmonious cooperation.

7.1.2 Governance

Natural resource wealth can be a platform for sustainable development. However, mismanagement can result in corruption and political-, social- and economic conflict (Magno, 2015). "The quality of governance in a country has a dramatic impact on both the nature and the magnitude of the economic and social contributions of the mining sector." (ICMM, 2016 p.45). Therefore, the primary responsibility of the government is to formulate a clear cut legislative framework. Within the legislation all stakeholders should be engaged with , companies and communities should be monitored and the extraction should be managed in a way that it can benefit current and future generations (ibid.).

The legislative aspirations of the MPRDA were to stimulate black ownership and community engagement. The government hereby acknowledged the importance of an enabling environment for the mining industry to support development, boost the economy and reduce social unrest (International Finance Corporation, 2014), however, in South Africa this has not actually worked (Expert 2; professor/researcher, 2017). The promising legislative framework does not work in reality, and there are many reasons why (ibid.). The Department of Mineral Resources is largely absent at the moment, while labour unrest, illegal practices and tension between companies and communities increases. The Centre for Applied Legal Studies claims that ambiguity in the legislation perpetuates the exclusion of communities from the mineral benefits (CALS, 2017A). The DMR must provide a clear set of background conditions for public participation in the design and the monitoring of companies' policies (ibid.). According to the CALS meaningful inclusion of communities as stakeholders is the minimal requirement for community agreement to SLPs and access to information,

relating to transparency, as discussed above. According to Expert 1 (2017), this also includes closure planning and mitigating the social and environmental impacts of post closure in the context of gold mining in the Witwatersrand. The government and the companies are responsible for the effects of the mining operations, so measures from both stakeholders should be taken to ensure that these impacts do not lead to deterioration in livelihoods (ibid.). The solution for a sustainable and fair industry lies in honest, inclusive engagements with real stakeholders (Rutledge, 2016B). The CALS research findings indicated that the legal framework does not provide sufficient guidance on the role of community participation. The recommendation would be to move towards more clarity in the legislation. The legislative framework should pursue good governance through a shared value by the government and the extractives industry, to stimulate broader development for the nation. Good governance underpins a transparent non-discretionary framework (Stanley, 2015). If governed well, the fiscal revenues from the extraction of minerals in South Africa could enhance the development of future generations (Liebentahl et al. , 2005).

7.1.3 Critical mass of citizen understanding

"A critical mass of misunderstanding amongst citizens can force governments into taking really stupid decisions that destroy the opportunity created by natural resources." (Collier, 2015B). Therefore, a critical mass of citizen understanding is needed to guide good governance, "and the task is really to reinforce the rules and the institutions which a government authorising environment needs to build." (ibid.). Collier continues by saying that legislation can be paper tigers, therefore, critical and well-informed citizens are required to monitor institutions and their policies. Misunderstanding or ignorance could be a crucial element for conflict. Many companies, as a part of their Social and Labour Plan, provide development projects or facilities to the area in which they are operating. However, the question is who's responsibility this is regarding education and health care, and still, these initiatives are not accessible to everyone (Expert 1, 2017). And South Africa, as a resource rich country, has many people who feel excluded from the

profit from this mineral wealth and are exposed to a lot of risks associated with the industry. Although the Witwatersrand is a highly complex case, the failure is going to be blamed on the government, blamed on the companies, blamed on apartheid and blamed on migrant labour and blamed and so forth (ibid.). Due to the fact that a majority of the people are poorly informed about the legislation and the responsibilities of the stakeholders, communities share their feelings of exclusion, injustice and distrust.

Gold, as a non-renewable resource, is temporary and therefore a part of the revenues have to be invested in the future. Zarsky & Stanley argue that "a strong sustainability principle, which requires that current human activities do not eliminate future options, would rule out mining as a sustainable development strategy." (Zarsky & Stanley, 2013, p. 132). However, mining can be considered to promote sustainable development if it gives rise to long-term benefits (Amezaga et al., 2011, p. 21). The misconception about citizens to only think short-term and that governments know what is best for the country is refuted by the fact that people do think in long-term because they have children and so people instinctively think long-term to give their children a better future (Collier, 2015B). And therefore the population should be sufficiently informed to hold the government and companies responsible. "Governments which use natural resources to throw a party for the present instead of to build an inclusive future need to be thrown out by citizens, not rewarded." (Collier, 2015B).

7.1.4 Resilience

If mining communities are not pro-active and do not implement replacement economic survival strategies, they will probably undergo a silent death when the mine closes down (Cronje & Chenga, 2009). Resilience is therefore empowering individuals and communities when a restructuring of the livelihood strategy is needed. Resilient communities have a strong sense of social cohesion and the ability to adapt and to work collectively to absorb disturbance and embrace change of the system (Colwell, 2015). Resilience is about valuing and using the (collective) assets and capital to address challenges, and being able to recover and rebuild (ibid.). With the

retrenchment in the formal gold mining sector in the Witwatersrand, the Social and Labour Plans are developed to require companies to implement comprehensive human resource development programs, a mine community development plan and processes to manage downscaling and mine closure (DMR, 2002). These programmes are aimed to enhance the resilience of mine workers and mine communities. According to Hilson and Murck (2000) the best route to create resilience is to support local training/education institutions, to ensure the continuation of training and (re)-skilling of workers, to provide assistance with job search facilities and to compensate employees and families to cope with readjustment strategies and (temporary) unemployment. However, many former employees and many migrant labourers without a legal status end up working in the informal mining industry. The question is if- and how resilient this parallel industry is. According to expert 1 (2017), the communities are very resilient because they have managed, they have continued to survive. Moreover, the industry continues to survive, in a different form, but still the industry (ibid.).

Sustainability of the sector and the resilience of mining communities in the Witwatersrand should be perceived in a wider geographical context and in relation to the economic development in the thriving city of Johannesburg (Expert 1, 2017). The mining industry and the West Rand communities are not isolated from the economic hub, and therefore other opportunities for livelihoods are in the proximity (ibid.). It is arguable if resilience in the context of the gold mine industry for the communities near the Witwatersrand, would include the formalisation of the zama zama industry. When legalised it could be a viable livelihood opportunity, however, health-, safety-, and social risks related to the artisanal and small-scale mining industry should be better managed.

7.1.5 Rehabilitation projects

The government aims to develop alternative futures for Johannesburg by providing funds and consultants in the mining affected areas. Ideally, after rehabilitation projects, mine shafts can close properly and the physical landscape improves. An example is the Gauteng Department of Agricultural

and Rural Development (GDARD) program. This program strives to reclaim and rehabilitate mine waste landscapes (ibid.). This initiative is focused on the preservation of the natural functioning of the environment and the redevelopment for housing and food production (GDARD, 2012). A second example is the coordinated initiative of the DMR, which has allocated additional funds to rehabilitate a total of 50 ownerless and derelict mines until 2018 (Department of National Treasury, 2015). These projects have transformed some former mine sites into touristic attractions, like Gold Rush City (Pedro, 2015). Other areas have been restored to their initial use, such as farming landscapes or have been decommissioned for real estate purposes (ibid.). And since the 1970s mine dumps have been pushed out of the city. What used to be mountains of contaminated mine waste, is now urban development; shops, housing (Expert 1, 2017). However, a fundamental challenge is the costs associated with rehabilitating the former mining sites. For both government and private investors, these costs are a constraint and therefore projects for transformation in the long term, are still limited (Department of National Treasury, 2015)

It is argued that the legacy of the gold mine extraction needs to be addressed in order to create a liveable and equitable urban environment, otherwise these landscapes will remain an obstacle to urban and social development in the future (ibid.) and they will create opportunities for zama zama miners, who understandably come in, and it makes that space unsafe and a sort of no go zone (Expert 1, 2017).

7.2 Conclusions

Georgius Agricola already wrote about the devastating environmental impacts of mining in 1556 (Makuluma, 2011), but until today the extractives industry continues to affect the social-, economic- and physical landscape. "Although mining is the backbone of South Africa's economy, its success is not without consequence. Only by considering environmental- and social well-being alongside financial performance can leading companies pave the way for sustainable growth. As the country's mining industry enters into the modern

age, it is essential that companies work responsibly and, in doing so, benefit all corners of society." (World Finance, 2015, p.1).

The objective of this research was twofold. The first objective was to contribute to the understanding of the impacts of the gold mine industry on the West Rand communities in the Witwatersrand, Johannesburg. The second objective was to interpret the social sustainability of the industry, by implementing an assessment on the South African mining legislation, mapping relevant stakeholders and interviewing West Rand communities. The impacts of the gold mine industry in South Africa on communities are subjected to (inter)national attention and debate. The consequences of the closure of many large-scale mines and the upswing of artisanal and small-scale mining activities, put pressure on the stakeholders involved and on the social sustainability of the gold mine industry in South Africa as a whole. Striving to provide a source to inform the public discourse, this study aims to stimulate initiatives focussing on improving the (social) sustainability of the industry and mitigate adverse impacts on communities. Whereby the following research question will be answered "What are the local social impacts of the gold mine industry in Johannesburg and how does the industry contribute to social sustainability?".

This research started with introducing the global developments regarding the gold mine industry and attempted to surface the local consequences of these developments by a multi scalar analysis. The theoretical approach of this research was through the concepts of neo-Malthusianism, resource nationalism and social sustainability. The quest for non-renewable natural resources, such as gold, is mainly driven by a growing demand for- and the scarcity of the material. The rise of the middle class and the acceleration of the high consuming lifestyle of the upper middle class (UNDP, 2013, Birdsall, 2015) leads to an increase in consumption and therefore a high demand for (non-renewable) resources. The neo-Malthusian theory emphasises the interrelationship between population growth, the scarcity of resources, environmental degradation and conflict. Therefore, neo-Malthusian theory allowed for a link between global (macro) developments regarding resources and the local (micro) effects of the gold

mining industry in Johannesburg. Due to the high demand for gold on the global market, the economic value of the material is high. This means that in gold rich countries, the gold industry economically provides for households (in the form of jobs), companies (in the form of profits) and the state (in the form of royalties). In the country ranked as number one on the Gini index, which illustrates inequality in terms of income distribution (World Bank, 2017), many people see the economic opportunities of the resource and want a share in its benefits. Gold, therefore can provide people a way out of poverty. However, not everyone is able to profit from this resource through formal employment. Therefore, in the Witwatersrand numerous communities are creating livelihoods around informal artisanal and small-scale mining.

"Wars in the South are now frequently about who will control the revenue from the extraction of resources for sale on the global market." (Kaldor, 1999 in Kofman & Youngs, 2003). Therefore, related to global shifts, one major development in South Africa is resource nationalism. Burgess argues that resource nationalism in South Africa "is set against the backdrop of a government that has not been able to deliver on many of its promises of employment and greater prosperity for the impoverished masses." (Burgess, 2010b, p.4). This nationalistic approach, supported by the BBBEE law, transformed the South African mining sector. It became a disincentive for investors and a source of decline in the macroeconomic performance of the country (ibid.). In addition to technical inabilities, this currently leads to retrenchment in the South African gold mining sector. Mine closure and the inherent unemployment is a factor for the increase in zama zama mining in the West Rand. On a micro level, this form of mining has considerable social- and environmental impacts. Although, mining the amount of materials that is needed to satisfy our consumer society, leaves us all responsible for the social and environmental consequences (Abraham, 2015).

This brings forward the concept of social sustainability. Regardless of the ambiguity of this definition in the context of mining (Mudd, 2007), in general this includes the availability of- and access to resources, a productive environment and a healthy community at current and former

mining sites (Mudd, 2007; Azapagic, 2004; Cowell et al., 1999; Gordon et al., 2006). The definition of social sustainability should include multiple key factors to create a holistic and workable concept. However, the selection of indicators is not founded in theory, but rather in a practical understanding of the term (Grießler & Littig 2005). Therefore, in this research the concept of social sustainability included the social disruption to communities, inclusive stakeholder dialogue, transparency of operation and the identification of risks. However, this research underwrites that "the social dimension is subjective, qualitative, difficult to measure and perceived differently by the various stakeholders within the gold mining sector." (Obiri et al., 2016, p.2). Although, the South African government and the industry is believed to take action to improve the economic-, social-, and environmental well-being of mine communities, the questions remains to what extent this effort is contributing to an overall enhancement of the (social) sustainability of the gold mining industry in South Africa. Particularly, due to concerning alerts from mining affected communities and NGOs.

"I am afraid that the gold will be finished soon. People are already moving from area to area, in the hope that they can still find some gold. If the resource is depleted, I am afraid that my children will suffer, they will grow up without having access to education and will have no employment.

" (Respondent 16, 2017).

The mining of gold is a temporary activity, since it involves extracting a non-renewable resource (Langanki, 2014). Due to technological development and the high demand for gold, the life span of the gold mine industry in the Witwatersrand has been extended for decades. However, the current decline of the industry that has supported the national economy for over a hundred years and has attracted workers, companies and investors from many places, has left behind a social legacy (ibid.). The West Rand is subjected to high unemployment rates and therefore a surplus of workers. Due to the nature of their skills, often combined with their residence status, most of the people in the West Rand are unable to find jobs in other sectors. A sustainable approach for the post-mining future of this area doe not exist (Langanki, 2014). While mining companies have impacted on the Witwatersrand's

environment, society and economy, the local communities will encounter the consequences for years (ibid.). "This locality can only be re-claimed by rehabilitating the landscape, stimulating social sustainable and building an alternative economy, long after gold mining companies have left the scene." (Langanki, 2014, p.3).

As aforementioned, "social sustainability encompasses the long term transformation and improvement of the livelihoods of people in a given social context." (Cronje and Chenga, 2009, p. 416). However, "mining's full potential contribution to development requires a strong governance framework, not just at the national level, but regionally and locally." (Thematic Group SDSN, 2013). The DMR makes an effort to enforce social sustainability through legislation. While obtaining mining rights, companies are obliged to develop the Social and Labour Plan. The SLP considers the economic, social and environmental risks that communities might encounter during the mining operations, and develops projects and programs to minimise socio-economic issues to create resilient mine workers and mine communities. A proper SLP is required in order for the company to get permission to mine. However, the results of research implemented by CALS, and emphasised by mining communities, indicates that companies often do not involve all stakeholders while developing the SLP. Furthermore, the projects are often unrealisable due to financial gaps. NGOs and communities have expressed their concerns on the current mine closures. Agreements on how to rehabilitate the environment, how to provide for former employees and how to develop mine communities are not a priority during the closure process. Therefore, the conclusion is that the legislation, as developed by the DMR, is at first sight promising and forward-looking, however, it turns out to be a paper tiger.

A lack of clear cut principles within legislation and the power to enforce legislation is only one part of the complex reality. It goes hand in hand with a lack of transparency in companies' policies, a lack of open dialogue with all stakeholders involved and a lack of responsibility from all stakeholders. These issues leave a gap for interpretation and contribute to an increase in negative social-, economic- and environmental- impacts and stimulates mistrust between stakeholders, corruption, health issues, safety

risks and the rise in informal or illegal practices. Informal and illegal practices within the gold mine industry in the West Rand concentrate around Roodepoort and are mainly taking place in Mathole. The local conditions are the result of unemployment, the legacy of abandoned mines and the lack of proper rehabilitation projects in that area. People are living in and around abandoned mine shafts and tailings. Many internal and international migrants move to this area in order to live under better socio-economic circumstances. Despite the challenges of gold scarcity and the invasion of authorities, migrants and former employees reside in the area to maintain their livelihoods.

“The lack of appropriate institutional, financial and technical support mechanisms curtails ASM's sustainability.” (Gisore & Matina, 2015, p. 39). Furthermore, illegal mining in the West Rand is inherent to social issues, partly because of an increasing population combined with a decrease in the availability of gold. These developments lead to a rise in criminal activities, tribal conflict, poverty and a higher potential of health and safety risks. The social cohesion can be boosted by the interdependency of community members and the feeling of a ‘common fate’. However, due to discrimination, competition and loss of income, many community members believe that the West Rand is an unsafe living space. The challenges faced by zama zamas form a vicious circle, which has a self-reinforcing effect on the informal mining activities. ASM miners are therefore trapped in poverty, where their activities rarely graduate above subsistence and remain unsustainable (Gisore & Matina, 2015). The distorted social balance of the West Rand communities is ascribed to the difference between an ideal legislation and transparent cooperation between stakeholders and the reality of depending on a non-renewable resource for a livelihood and inherently the social-, economic-, and environmental risks.

The most crucial challenge of the sector is creating a balance between the needs of the community, the preservation of the environment and the extraction of resources (NRGI, 2014). The social exclusion and social risks that derive from the mining industry, combined with governance challenges,

environmental risks, resource depletion and conflict, induce that the sector is at the heart of the sustainable development challenge (Sachs, 2015A).

Through inclusive stakeholder engagement, companies, the government and communities can identify and build understanding of the importance of sustainability issues and analyse their potential impacts (IFC, 2014). Understanding the local needs, the assets and strengths of host communities, the roles of institutions involved, mining companies' strategies and the role of the government are the main factors to create a social sustainable gold mining industry. In this case, environmental-, economic- en social risks can be managed and mitigated through a transparent and participatory framework in order to develop an industry in which all stakeholders can benefit from the introduction of mining to the closure of the mine and beyond. "This way mining operations can leave a lasting legacy of sustainability and well-being to the community, mitigating environmental degradation and social dislocation." (Veiga et al., 2001, p. 192).

Examining the social dimensions of the extractives industry highlights the essential importance of local context and the fact that it is not possible to generalise from individual case studies. Impacts are context specific. For example, at one operation, mining practices and the impact on the local social fabric could induce criticism and resistance from various stakeholders, as in another relatively similar case, it could not (Solomon et al., 2008).

This research, emphasized the importance of unravelling the relationship between LSM and ASM mining, and the role of illegal mining in livelihoods, in order to consider how to transform natural resource wealth into sustainable development in the South African context. Mining communities in the West Rand, supported by community based organisations and (international) NGOs, are currently protesting against their deprived position as zama zama miners and are hoping that the DMR in cooperation with the gold mine industry, will soon acknowledge illegal miners' issues and prevent the correlated socio-economic and environmental risks.

7.3 Reflections and recommendations

Every attempt is made to acquire data from a wide range of sources within the constraints of time, access and budget. However, a critical evaluation of the research exposes certain deficiencies and limitations. These limitations are described to inform the reader and to give future researchers interested in the social impacts of the extractives industry thought.

The first challenge is the lack of available data regarding the mine workers that work within a formal/legal context. Unfortunately the researcher was unable to interview mine employees from the gold mine companies. The formal mining business is strictly secured, and therefore the researcher was unable to access direct information from companies or employees. This lack of data required the researcher to limit the scope of analysis and formulate a conclusion based on the results from articles and media content and the expert interviews. This impacted the study in a way that there is no primary source data. The recommendations for future research will, therefore, include a better representation of formal mine employees to better evaluate the social sustainability of the overall gold mine industry in Johannesburg.

As this research is focussing on the social sustainability of the gold mine industry in Johannesburg, it implies an evaluation of the effects over an extended period of time. The time available to this research was insufficient to study longitudinal effects, to measure change in, for example, the access to gold, whether through LSM or ASM, and to measure the long-term impact on the social aspects of sustainability. Furthermore, this industry is currently subjected to rapid developments and (inter)national attention, which means that the sector's dynamics might change drastically within a short period of time.

The language barrier during the field research; whether expert interviews or key informant interviews the communication was in English or partly translated by the fieldwork assistant. For most interviewees, as well as for the field work assistant and the researcher, English is a second or third language. The researcher is therefore limited in posing questions and understanding the (into English translated) information. This could result in an incomplete transfer of information, and therefore this language deficiency is

acknowledged. Working in a second language or working with translators will always come with challenges around understanding, semantics and interpretation.

Related to the language deficiency is the cultural bias. The cultural bias recognises the inaccurate perception of the researcher linked to- or measured against- the standards of their cultural value system. This cultural bias is already visible in the formulation of the issue, the research questions and the research objectives. Issues and priorities that were preliminarily selected to study could be irrelevant or not prevalent in a different (cultural) context. Furthermore, ethnicity, gender and (social) class of the researcher and therefore the expectations of the key informants towards the researcher have been an issue. Being escorted by a fieldwork assistant that is familiar with the people and the area, gave people more trust. However, many participants expressed their hesitation and acted suspiciously while the researcher entered the community. Participants were insecure about where their personal information would become public, what their benefit would be of opening up to a stranger and questioned if the researcher was not related to the government or authorities. These issues put restrictions on obtaining complete information from interviewees.

While obtaining the data, all key informants refused to share experiences and knowledge if the interview would be recorded. Therefore analysing data; the notes from the field work assistance and the researcher could be biased in the way that relevant aspects are omitted (selective memory), or in the way the researcher ordered events, people and places or a biased connotation of certain parts in the research.

The foundation of the field work within this research is self-reported data. However, the reliability of self-reported data is limited since it can not be independently verified. The self-reported data from the interviewees have been taken at face value and were written down by the researcher and field work assistant during the interview. Biases include selective memory from the participants and attributing particular negative or positive consequences in their lives to agency or external forces. Therefore the impact of the biases

related to the reliance on self-reported data might be significant and may not be discovered.

7.4 Suggestions for future research

First I would like to emphasise the importance the ethical clearance. To obtain an ethical clearance the researcher is required to think about data collection and data processing, mainly concerning critical or sensitive data. It provides the researcher with better understanding of the importance of working with people on an ethical basis. Therefore, the suggestion is that when research involves collecting data from human participants, researchers should apply for an ethical clearance.

Not having access to data could be crucial for drawing conclusions. During this research, I had trouble to access formal companies and labour unions, and could only access the data available online. Working in a different (geographical) context can make it difficult to estimate your chances of getting access to the information you need. Therefore, the second suggestion would be to inform within your local network (local supervisor, or host organisation) if certain stakeholders are difficult to access.

Suggestions for future research on a content level would include a research focus on zama zama mining from a historical perspective and in relation to migration. Implementing the fieldwork, it occurred that migration is a central theme in the ASM industry, but it would be fascinating to examine migration in this industry from a historical perspective. The second thing that occurred is the different perspectives and different impacts of this industry on women. A gender-related impact assessment on the access to- and benefits from this industry would be another interesting focus for future research. The third suggestion for future research would be to examine the links to broader aspects of the informal economy. The last suggestion would be to evaluate the impact of the mining industry on the communities and to develop a holistic approach to social development or a strategy to mitigate the adverse social effects.

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APPENDIX - ETHICAL CLEARANCE

Ethics Committee ECFLM

Visiting address

Thomas van Aquinostraat 5
6525 GD Nijmegen

Postal address

P.O. Box 9108
6500 HK Nijmegen
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Lichelle de Bruijn

Date

25 April 2017

Our reference

ECFLM Ref No: 2017.04

Contact

ecfrm@ru.nl
(024) 362 00 68

Subject

Ethical Approval letter by the Ethics
Committee ECFLM

Dear Lichelle de Bruijn,

Thank you for your formal application for an ethical committee approval for the Research Data Management Plan and the research activities regarding your master thesis research project *Goldmine Industry in Johannesburg*.

The *Ethics Committee Faculty of Law and Nijmegen School of Management* (ECFLM) of Radboud University Nijmegen has reviewed your application, registered under ECFRM number 2017.04, and closely assessed the documents you have sent us: a summary of the research project proposal, ethical issues table, verbal/written informed consent form, and the research data management plan.

Generally, our assessment is that you have clearly and adequately addressed the issues of information provision, consent and privacy. The ethical standards of the project with regard to your research data management are well-elaborated and sufficiently explained in the Research Data Management Plan.

In general, therefore, we consider the ethical aspects of your project to be well thought through and give our ethical approval of the Research Data Management Plan with confidence. Please contact us if you should decide to interview minors at a later stage in your research. In that case you need to make sure to obtain parental consent.

Do not hesitate to contact the Expert Centre Research Data of the Radboud University Nijmegen in case of future questions regarding data management and data storage. For further questions and advice regarding the ethical aspects of your research during the project's duration, you can always the ECFRM.

We wish you every success with your project.

On behalf of the Ethics Committee,

Dr. R.B.J. Tinnevelt

Chair of the Ethics Committee of the Faculty of Law and Nijmegen School of Management

APPENDIX - INFORMATION SHEET

Title of research project: Gold mine industry in Johannesburg

Student name: Lichelle de Bruijn

Student email: l.s.debruijn@student.ru.nl

Student contact number: 0031645268332

Supervisor name: Lothar Smith

Supervisor email: l.smith@fm.ru.nl

I would like to invite you to take part in this study as it will help to understand the effects of the gold mining industry in Johannesburg, South Africa. And to interpret the social sustainability of this industry.

What does this study entail?

Your participation in this study will include the following:

*Individual interview

Risks: There are very few risks in participating in this study. I will ask you some personal questions about your life and work. You may experience some discomfort in discussing some of the topics in the interview. If for any reason you are uncomfortable you can skip a question or choose to stop the interview at any time.

Benefits: You may not receive any direct benefit from participating in this study. But, this research will help me to understand the effects of the gold mining industry in Johannesburg, South Africa and to interpret the social sustainability of this industry.

Costs: There are no direct costs associated with this research project.

The information that will be collected is purely for research purposes.

The information that you share with me may be written up in research reports. I will NOT use any of your personal details and it will not be possible to identify you personally in any of the research reports.

Your responses may be made available in an anonymised format for a variety of subsequent purposes, including for future teaching and research projects.

Participation is completely voluntary; you are under no obligation to take part in this project.

You may withdraw from this project at any stage; this will not affect you in any way.

- **Do you have any questions?**
- **Would you like to go ahead with being part of this research project?**

APPENDIX - INFORMED CONSENT FORM

GOLDMINE INDUSTRY IN JOHANNESBURG

Lichelle de Bruijn
l.s.debruijn@student.ru.nl

Radboud University faculty of management

	Yes	No
I understood the information given prior to the interview and have had the opportunity to ask questions.		
I understand that I am free to withdraw from this study at any time with no negative consequences.		
I understand that all information will be confidential and my responses anonymised. It will not be possible to identify me in the final report.		
I give my consent to be audio taped during the interview.		
I consent to participate in this study.		

PARTICIPANT:

Name of Participant

- I, Lichelle de Bruijn, herewith confirm that the above participant has been fully informed about the study and has given consent to participate as indicated above.

Name

Signature

Date

