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Sustainability in the South African gold mining industry: managing a paradox

A research project submitted by:

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Abstract

The history of the gold mining industry and that of South Africa are closely linked and will continue to be so for the foreseeable future. Despite declining production figures in the last decade, the gold mining industry remains a key contributor to economic development in the country. The legitimacy of the industry has been based almost entirely on the financial contribution to the fiscus and job creation. More recently, this legitimacy has been questioned by perceptions of shortcomings in the contribution to sustainable development.

The purpose of the research was to gain an enhanced understanding into how the gold mining industry is respond to the challenges of sustainability in South Africa. Through a combination of qualitative interviews and secondary data review, the research had specific aims to: Establish the strategic stances of South African gold mining companies on sustainability Identify key drivers and impediments to implementing sustainability strategies into the day-to-day decision making; establish the maturity levels of the practices adopted by the companies; and establish an approach that can be used to assist South Africa's gold mining companies embed sustainability in their strategies.

By and large, the South African gold mining industry recognises its responsibilities towards society and the ecosystem. However, the focus seems to be more short-term and based on liability, cost and risk reduction. Additionally, there seems to be a gap between intent and actual performance. The Mining Charter and global sustainability frameworks are key drivers in the companies' response to sustainability challenges.

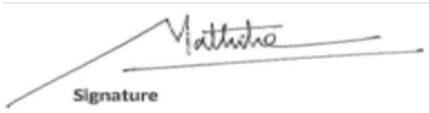
Leadership within the industry, the credibility and trust deficits, and the fragmented approach to sustainable development were identified as major impediments.

Key Words

Sustainability, gold mining industry, key drivers, key impediments

Declaration

I declare that this research project is my own work. It is submitted in partial fulfil of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.



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Chapter 1: Problem Definition

The following section describes the relevance of the topic "Sustainability in the South African gold mining industry: Managing a paradox", while outlining and defining the problem that the researcher wishes to address.

1.1 Introduction to the Problem

Business leaders operate within a world that faces a range of urgent global issues (Smith & John, 2010). Alongside a challenging competitive context and a shifting social contract between business, government and civil society; critical social and environmental issues have increasingly become part of the landscape (Mirvis *et al*, 2010).

The United Nations Summit on the Millennium Development Goals (MDGs), held in September 2010, expressed deep concern that worldwide progress across the eight poverty-related goals has fallen far short of what is needed. This is particularly true of African countries. The poverty related problem areas are concerned with concern hunger, education, women empowerment, child mortality, maternal health, HIV/ Aids and malaria (United Nations, 2010)

Similarly, environmental degradation still continues despite all the danger signs. The Department of Economic and Social Affairs of the United Nations Secretariat, in its publication, Trends in Sustainable Development: Towards Sustainable Consumption and Production (2010), noted that humans have changed ecosystems in unprecedented ways over the last 50 years. Sixty percent of the world ecosystem services have been degraded,

which is putting such strain on the natural functions of Earth, to the extent that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. Additionally, Ecological Footprint analysis — which compares humanity's ecological impacts to the amount of biologically productive land and sea available to supply key ecosystem services — found that the global economy started exceeding the planet's bio capacity in the 1980s, and overconsumption of resources has increased since then (United Nations, 2010).

Moreover, business leaders are increasingly faced with challenges related to legitimacy and trust (Maak & Pless, 2006). This is as a result of ethical misconduct and bad leadership (such as Martha Stewart and global financial meltdown), environmental disasters (such as BP and Shell Nigeria) and accounting scandals (such as Enron and WorldCom).

As global power relations are shifting, stakeholders and communities around the world are no longer satisfied that corporations and their leaders are merely law-abiding as they go about increasing shareholder value. Instead, Maak and Pless (2009) argue that, stakeholders and communities expect awareness and commitment to the needs of communities.

Thus there is a common need to develop a value proposition for business that enriches and aligns its relationships with shareholders and stakeholders across economic, socio-political, ecological, and moral spheres (Mirvis et al., 2010). It is about managing the paradox of trying to simultaneously improve social, environmental and economic performance.

1.2 Research Justification

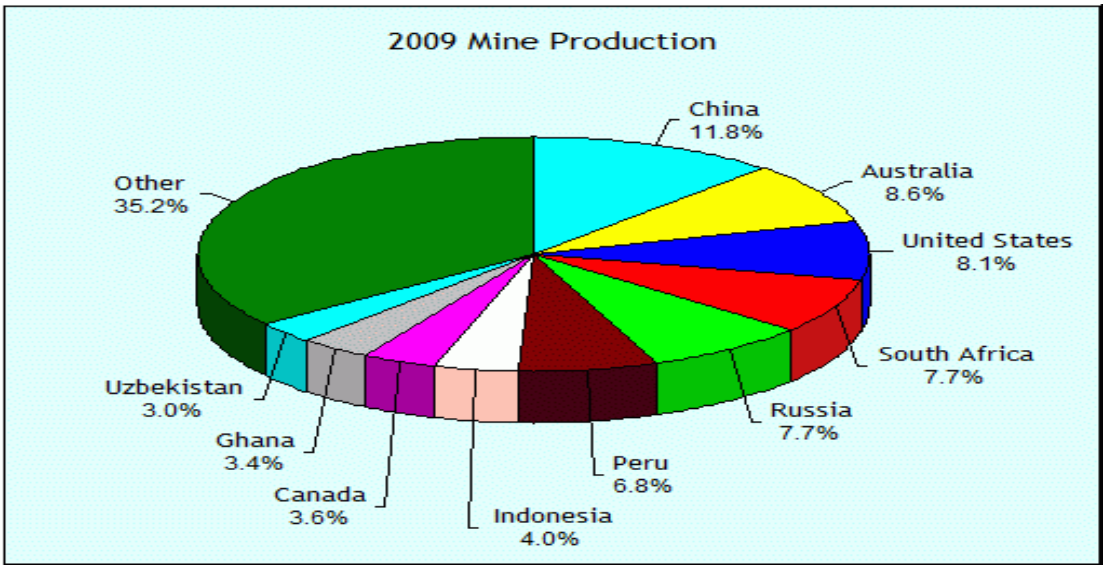
In South Africa, the gold mining industry remains a key contributor to economic development. According to the Chamber of Mines (2009), the sector accounted for R49 billion in foreign currency earnings or 8.8 percent of total merchandise exports (the second largest export earner after platinum). The industry also contributed 2.4 percent towards the GDP (if the multipliers and induced effect are included) and employed 159 925 who earned R17.4 billion in wages. As a rule of thumb, "for every one person employed in the mining industry, eight to ten people benefit economically from such employment." (Badenhorst, 2011, p.1)

Furthermore, the industry invested R10.3 billion in capital expenditure in the country, paid an estimated R1.4 billion in direct taxation to the state and R506 million in dividends to the providers of capital (Chamber of Mines, 2009). Additionally, the gold mining sector has historically led to the establishment of metropolitan centres such as Johannesburg, Welkom, Orkney, Springs, Benoni, Witbank and Klerksdorp (Radebe & Short, 2008).

Until 2007, South Africa was the world's largest gold producer. In 1995, the country produced 23.3 percent of the world's gold with the United States a distant second at 14.1 percent (Goldsheet Mining Directory, 2009). However, South Africa's share of global gold output has consistently decreased over the last decade. In 2007, China surpassed South Africa as the world's largest producer with production levels of 10.9 percent and 10.1 percent respectively.

In 2009, China (11.8%) continued to increase gold production and has remained the leading gold-producing nation, followed by Australia (8.6%), the United States (8.1%) and South Africa (7.7%) (Goldsheet Mining Directory, 2009). The scaling down of production can be attributed to increasing mine depth and declining grades, a relatively strong rand which has dampened the effects of an increasing dollar gold price, as well as higher material input costs (Radebe & Short, 2008).

Figure 1: 2009 World gold production



Source: Goldsheet Mining Directory, 2009

Whilst many mining houses have a much-improved record regarding environmental management and social responsibility, South Africa's history is littered with examples of abusive practices, disregard for the environment and abandoned operations that took no account of the environmental or social consequences (The Sustainable Business Handbook, 2008). Furthermore, an issue of significant concern is the disjoint between intent, as

reflected in policy coverage of issues; and implementation, reflected in actual performance (Chamber of Mines Mining Sustainability Fact Base, 2009).

It follows then, "that in a country with deep mining roots and a need for significant social upliftment, eyes turn to the mining industry to breach the gap and to bring about an immediate improvement" (Badenhorst, 2011, p.1).

1.3 Mining and Sustainability

At first glance, sustainable mining appears to be a contradiction, as minerals are not renewable and similarly all ore bodies are finite and therefore exhaustible (Spitz & Trudinger, 2009). The non-renewable nature of minerals received a great deal of attention in the literature from 1950 into the 1970s (International Institute for Sustainable Development, 2002).

An emerging argument is that, at a macro level, the non-renewable character of resources is relatively unimportant from a sustainability perspective (Spitz & Trudinger, 2009; International Institute for Sustainable Development, 2002). The argument put forth is that several millennia of mining has shown that as ore bodies get depleted, new ones are discovered, leading to development of new projects. According to Spitz & Trudinger (2009), the industry as a whole has proved to be quite resilient throughout human civilization.

The focus, instead, should be on "mining as an activity and its implications for the communities and renewable resources within which minerals are imbedded" (International Institute for Sustainable Development, 2002). To this point sustainability is concerned with

whether the implications from mining activities are net positive for human society and the ecosystem.

Spitz & Trudinger (2009) argue that, in order to be truly sustainable, mining should attempt to meet the disparate needs of stakeholders including host communities, governments, company shareholders, and employees as well as the environment in which it takes place.

1.4 Research Objectives

The study sought to gain an enhanced understanding into how the gold mining industry responds to the challenges of sustainability in South Africa. Specifically, the study aims to:

- Establish the strategic stances of South African gold mining companies on sustainability
- Identify key drivers and impediments to implementing sustainability strategies into the day-to-day decision making.
- Establish the maturity levels of the practices adopted by the companies
- Establish an approach that can be used to assist South Africa's gold mining companies embed sustainability in their strategies.

1.5 Research Scope

The construct of sustainability is broad and multifaceted. Similarly, the mining industry is very broad notion. In an effort to promote the relevance, the study focused on understanding the South African gold mining industry's response to sustainability challenges. For ease of access to company reports and records, only the top tier

Johannesburg Stock Exchange-listed gold mining companies were considered. The ability of the study to be generalised in terms of the wider South African mining industry is therefore limited. However, the method adopted in terms of this study can be replicated across the industry.

1.6 Summary

Understanding and adequately addressing the challenges of sustainability within the gold mining industry will aid companies in defining their roles within the larger South African society. This research is aimed at contributing to that outcome.

The next chapter looks at the relevant literature covering the concept.

Chapter 2: Theory and Literature Review

2.1 Introduction

In an attempt to comprehensively answer the questions posed by this study regarding the role of the gold mining industry in the achievement of sustainability in South Africa, a deeper understanding of the concept of sustainability and its key drivers is required. This chapter addresses these concepts as well as explores the South African perspective. Furthermore, the relationship between sustainable development and the mining industry is discussed further.

2.2 Definition of Sustainability

Sustainability is a broad and evolving construct that defies a universally agreed definition (Haugh & Talwar, 2010; Crews, 2010; Curran, 2010, Tovey, 2009). It has come to have many different meanings. A definition advocated in 1987 by the Report of the United Nations World Commission on Environment and Development - Our Common Future, informally known as the Brundtland Commission, captures many aspects of the topic; in which sustainable development was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Accordingly, the term was coined in reference to sustainable development, and the purpose was to encourage development; with a dual focus on poverty reduction and consideration of long-term ecological effects (Crews, 2010). Prior to this, business leaders used the word

"sustainability" to stand for a company that had steady growth in its earnings (Werbach, 2009).

A more intelligible definition laid down by Dow Jones views sustainability as "a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental, and social developments." (Dow Jones Sustainability Indexes, 1999)

At the heart of all the definitions there is a fundamental thread that speaks to parallel care and respect for the ecosystem and for the people within (International Institute for Sustainable Development, 2002).

2.3 Understanding the Mining Industry and Sustainable Development

There is not a definition of sustainability that has been universally adopted by the mining industry (Australian Government: Department of Resources, 2011). According to the Chamber of Mines, Sustainability Fact Base (2009), within the mining industry, sustainable development can be interpreted as having the aim of maximising the benefits of development, ensuring that they are spread equitably, while minimising or avoiding negative impacts on people and the environment. To articulate its understanding of the construct, the international mining industry has developed a range of sustainable development policy frameworks have that are now acting as drivers for improved practice. Some of the leading policy frameworks are discussed in the next paragraphs.

The International Council on Mining & Metals (ICMM) adopted a set of 10 Sustainable Development Principles in 2003 to harness the industry's commitment to sustainable development within a strategic framework (ICMM, 2011). The 10 principles – outlined in Table 1 - are based on the issues identified in the Mining, Minerals and Sustainable Development project and were benchmarked against leading international standards.

In 2004, the Minerals Council of Australia (MCA) developed Enduring Value: Australian Minerals Industry Framework for Sustainable Development in order to give practical and operational effect to the ICMM commitments (Australian Government: Department of Resources, Energy & Tourism, 2011). Enduring Value was designed to assist minerals sector managers to implement the sector's commitment in a practical and operational manner that is targeted at the site level.

The Global Mining Initiative's Mining, Minerals and Sustainable Development (MMSD) framework incorporates four spheres, namely; economic, governance, environmental and social. The three frameworks can be viewed in Table 1 below.

TABLE 1: GLOBAL SUSTAINABLE DEVELOPMENT FRAMEWORKS

mining framework	name	key principles
International Council on Mining and Metals (ICMM)	Sustainable Development Framework	**10 principles:** • Implement and maintain ethical business practices and sound systems of corporate governance. • Integrate sustainable development considerations within the corporate decision-making process. • Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.

TABLE 1: GLOBAL SUSTAINABLE DEVELOPMENT FRAMEWORKS		
mining framework	**name**	**key principles**
		• Implement risk management strategies based on valid data and sound science. • Seek continual improvement of our health and safety performance • Seek continual improvement of our environmental performance • Contribute to conservation of biodiversity and integrated approaches to land use planning • Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products • Contribute to the social, economic and institutional development of the communities in which we operate • Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders
Australian Industry Framework for Sustainable Development	Enduring Value	• Applying the highest standards of environmental management • Adopting and open, transparent and inclusive approach to development • Communicating regularly with all interested parties • Ensuring benefits are divided fairly • Ensuring optimum use of raw materials • Reducing energy use and waste generation • Recycling and developing new products form waste material • Early planning for mine closure
Global Mining Initiative (GMI)	Mining, Minerals and Sustainable Development (MMSD)	4 spheres of principles: economic, governance, environmental, social **Economic** • Maximise human wellbeing • Ensure efficient use of all resources, natural and otherwise, by maximising rents • Seek to identify and internalise environmental and social costs • Maintain and enhance the conditions for viable enterprise

TABLE 1: GLOBAL SUSTAINABLE DEVELOPMENT FRAMEWORKS		
mining framework	**name**	**key principles**
		Governance • Support representative democracy, including participatory decision-making • Encourage free enterprise within a system of clear and fair rules and incentives • Avoid excessive concentration of power through appropriate checks and balances • Ensure transparency through providing all stakeholders with access to relevant and accurate information • Ensure accountability for decisions and actions, which are based on comprehensive and reliable analysis • Encourage cooperation in order to build trust and shared goals and values • Ensure that decisions are made at the appropriate level, adhering to the principles of subsidiarity where possible
		Environmental • Promote responsible stewardship of natural resources and the environment, including remediation of past damage • Minimise waste and environmental damage along the whole of the supply chain • Exercise prudence when impacts are unknown or uncertain • Operate within ecological limits and protect critical natural capital
		Social • Ensure a fair distribution of the costs and benefits of development for all those alive today • Respect and reinforce the fundamental rights of human beings, including civil and political liberties, cultural autonomy, social and economic freedoms, and personal security • Seek to sustain improvements over time; ensure that depletion of natural resources will not deprive future generations through replacement with other forms of capital

Source: Chamber of Mines, 2009

Viewed together, these policy frameworks reflect a consolidated priority picture of the myriad of issues of importance to the mining sector. The Chamber of Mines' Mining Sustainability Fact Base (2009) summarised the issues into:

- Governance and the interplay between the mining houses and the regulatory authorities, as well as internal industry collusion
- Environmental pollution, especially water and air including the human and ecological effects thereof, with specific concern for toxicity, bioaccumulation and bioavailability
- Permanent land modification, including all legacy, habitat alteration, biodiversity and rehabilitation issues
- Health and safety of employees
- Local community development across economic, health and educational spheres

2.4 Mining and Sustainable Development

In South Africa, the understanding of sustainable development is captured in Chapter 2 (Bill of Rights) of the country's Constitution (Republic of South Africa, 1996). Furthermore, the country's response to the requirement of the Johannesburg Plan of Implementation, which arose from the World Summit on Sustainable Development in 2002, has been the development of the National Strategy on Sustainable Development (NSSD) (Chamber of Mines, 2009). By and large, the NSSD has informed the Department of Mineral Resources'

(DMR) Sustainable Development Programmes. Similarly the NSSD compliments the DMR's Broad-based Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry (The Mining Charter).

2.4.1 Drivers for embedding sustainability

2.4.1.1 The mining charter

This section is dedicated to discussing the Mining Charter as it is seen as being key to the sustainability of the mining industry.

"*In South Africa where investment in infrastructure and communal amenities can significantly improve the quality of living of ordinary people, there can be little resistance to the need to legislate social change and no surprise at the importance of the Mining Charter.*" (Badenhorst, 2011, p.1)

On 30th June 2010 stakeholders as represented by the Department of Mineral Resources (DMR), organised labour as well as organised business, convened to affirm their commitment towards attainment of sustainable growth and meaningful transformation of the industry. Commitment No. 4 of the declaration focuses on sustainable development and this speaks to the "...importance of balancing economic benefits with social and environmental concerns without compromising the ability of future generations to meet their needs..." (Stakeholders' Declaration on Strategy for Sustainable Growth and Meaningful Transformation of South Africa's Mining Industry, 2010, p.4).

The stakeholders' declaration is deeply rooted and closely tracks progress of the Minerals and Petroleum Resources Development Act, 2002 (MPRDA) and its provision: the Broad-based Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry (The Mining Charter). Badenhorst (2011) agrees with the DMR Minister that the objective of the act is very clear - to redress historical inequalities and to facilitate meaningful participation of Historically Disadvantaged South Africans (HDSAs) in the mining and minerals industry. The Mining Charter, on the other hand, is an instrument designed by government to effect sustainable growth and meaningful transformation of the industry. The Mining Charter seeks to achieve the following objectives (Department of Mineral Resources, 2010):

- To promote equitable access to the nation's mineral resources to all the people of South Africa
- To substantially and meaningfully expand opportunities for Historically Disadvantaged South Africans (HDSA) to enter the mining and minerals industry and to benefit from the exploitation of the nation's mineral resources;
- To utilise and expand the existing skills base for the empowerment of HDSA and to serve the community;
- To promote employment and to advance the social and economic welfare of mine communities and major labour sending areas;
- To promote beneficiation of South Africa's mineral commodities; and
- Promote sustainable development and growth of the mining industry.

The Mining Charter was amended in 2010 following a realisation that there were shortcomings in the manner in which industry had implemented some of the elements. Unlike its predecessor, the amended charter is more prescriptive (Badenhorst, 2011).

2.4.1.2 Sustainability and reporting

The last decade has seen a steady rise in public demand for businesses to be transparent about their environmental, social, and governance performance, including their contributions to local economies. Companies worldwide have met this trend with increasing uptake of what is now commonly called "sustainability reporting" (IFC, 2010).

Sustainability Reporting is a form of internal monitoring, management and external communication, which enables organisations of all sizes to meet the growing information needs of their various stakeholders, both internal and external (IFC, 2010). The Global Reporting Initiative (GRI) (2011) adds that, reporting also helps reinforce internal capacities to engage the full organisation in defining a corporate sustainability strategy, setting public targets, implementing plans, and reviewing results.

In response to the public demand, the GRI, a network-based organisation, developed a comprehensive sustainability reporting framework that has gained wide acceptance around the world (GRI, 2011). The Reporting Framework is developed through a consensus-seeking, multi-stakeholder process. Participants are drawn from global business, civil society, labour, academic and professional institutions.

Sustainability reports based on the GRI Framework can be used to demonstrate organisational commitment to sustainable development, to compare organisational performance over time, and to measure organisational performance with respect to laws, norms, standards and voluntary initiatives. Additionally, the IFC (2011) believes that there is a clear link between good sustainability performance and the ability of companies to be profitable and survive turbulent times.

The GRI has a global acceptance and has Global Strategic Partnerships synergies with the following organisations:

- International Organisation for Standardisation (ISO)
- The Earth Charter Initiative
- International Finance Corporation (IFC)
- The United Nations Conference ON Trade and Development (UNCTAD)
- Organisation for Economic Development (OECD)
- The United Nations Environment Programme (UNEP)
- The United Nations Global Compact (UNGC)

According to the GRI, The Reporting Framework is relevant to all organisations, regardless of their size or experience in preparing sustainability reports. The Reporting Framework is structured so that all organizations, from beginners to sophisticated reporters, can readily find a comfortable place along a continuum of options. These options range from adherence to a set of conditions for preparing a report "in accordance" with the Guidelines to an

incremental approach, that begins with partial adherence to the reporting principles and/or report content in the Guidelines and gradually moves to fuller adoption (GRI, 2011)

In South Africa the JSE launched the SRI index in 2004 as a tool for investors to identify companies that have incorporated sustainability practices into their business activities (Sonnenberg & Hamman, 2006). The index provides a tool for a broad holistic assessment of company policies and practices against globally aligned and locally relevant corporate responsibility standards; while contributing to the development of responsible business practice in South Africa and beyond (JSE, 2011)

To qualify for inclusion, companies must meet the required number of indicators as set out in each individual area of measurement. The areas of measurement are outlined in Table 2. The criteria identify the issues that companies must meet in order to show that they have integrated triple bottom line practices across their activities. The indicators are structured along the three broad categories of Environment, Society and Governance and related sustainability concerns, and from 2010, the specific category of climate change as an additional focused area of measurement (JSE, 2011).

Table 2: Areas of measurement	
Area	Criteria
Environment	Addressing all key issues Working towards environmental sustainability
Society	Training & Development Employee Relations Health & Safety Equal Opportunities Community Relations Stakeholder Engagement Black Economic Empowerment HIV / Aids
Governance & related sustainability concerns	Board Practice Ethics Indirect Impacts Business Value & Risk Management Broader Economic Issues
Climate change	Managing and reporting on efforts aimed at reducing carbon emissions to deal with the anticipated effects of climate change

Source: Adapted from JSE (2011)

More recently, the King Report on Governance for South Africa 2009 (King III) calls for organisations to prepare an integrated report, recognising that the impact of the organisation on the environment and society, and related reputational issues, are material issues that can affect the very existence of the organisation (IoDSA, 2011). Following the incorporation of King III into the Johannesburg Stock Exchange (JSE) Listings Requirements, listed companies are required to issue an integrated report for financial years starting on or after 1 March 2010, or to explain why they are not doing so.

According to Worthington-Smith and Freemantle (2010), this is clear sign that sustainability is moving into the mainstream. Instead of being an afterthought to be ticked on a reporting checklist, reports now need to be integrated in a way that shows how sustainability issues permeate the business, their implications for the business, and how the business is responding. For the mining industry, argues Reichardt (2010) it is about how responsibly the miners operate over the period of the project. It is about converting finite natural capital (the ore body) into other forms of capital in a way that generates more long-term benefit (not just profit) for society than the negative impacts it causes through social disruptions and environmental damage (Reichardt, 2010).

2.4.2 Recognising leadership in sustainability

Annually, a handful of awards and ratings give the practice of sustainability recognition and weight. By highlighting best practice and encouraging continuous improvement, these awards drive progress in the field (Trialogue, 2011). The most prominent awards are briefly discussed in Table 3

TABLE 3: Sustainability Awards in South Africa	
Award	Comment
ACCA SA Awards for Sustainability Reporting	The Association of Chartered Certified Accountants (ACCA) South Africa Awards for Sustainability Reporting were launched in 2003. This year's judging panel included representatives from Unisa, KPMG and several sustainability consulting firms.
Carbon Disclosure Project	The top 100 JSE companies are invited to respond Carbon Disclosure Project (CDP), with the results being analysed by Incite Sustainability on behalf of the National Business Initiative (NBI).
Excellence in SRI index **Sustainability Reporting**	Ernst & Young manage this survey, which determines the level and quality of sustainability reporting in South Africa. In 2010, Ernst & Young considered reports from 67 companies listed on the JSE's Socially Responsible Investment (SRI) index as well as the ten largest State-owned entities in South Africa. These companies are rated according to the level of their reported engagement in and disclosure of sustainability-related activities: excellent, good, adequate or perfunctory.
SRI index	The JSE SRI index is used by companies looking to benchmark corporate responsibility and increasingly by investors to select certified good corporate citizens.
Nedbank Capital Green **Mining Awards**	Presented in October every year since 2006, these awards aim to acknowledge the contribution that responsible mining and mineral beneficiation make to the sustainable economic development of Africa. The awards are adjudicated by SRK Consulting, along with three independent experts
Climate Change **Leadership Awards**	This relatively new award, in its second year in 2011, acknowledges businesses, communities, schools, youth groups and individuals who are implementing activities related to combating climate change.

Source: Adapted from Trialogue (2011)

Having explored some of the sustainability drivers and challenges facing the mining industry in South Africa, the following section explores how companies can start to define sustainability such that the concept is pragmatic.

2.5 Dimensions of Sustainability

There are several frameworks which have emerged in the past two decades that are aimed at providing more business sense to the concept of sustainability. However, there are two key models that have led the debate (Cagnin et al., 2005). The first one is the triple bottom-line approach. Building on Elkington's work, Cagnin et al. (2005) contend that this approach affirms that companies should reach a balance between economic, environmental and social bottom lines to be sustainable.

The second approach, named the five capitals model, views sustainability through the economic concepts of capital and income where the five main capitals are natural, human/intellectual, manufactured, social and financial (SIGMA, 2001; Porritt, 2007). The SIGMA Guiding Principles further build on and develop the concept of protecting and enhancing the five types of capital under an umbrella of organisational accountability (SIGMA, 2001). The two approaches – the triple bottom line and the five capitals model – can be viewed as being complementary and the relationship can be demonstrated as follows Cagnin et al. (2005):

- Environmental bottom line: environmental capital;
- Social bottom line: social capital and human/ intellectual capital;
- Economic bottom line: manufactured capital and financial capital.

Cagnin et al (2005) argue that the five capitals model appears to be the most comprehensive model available to organisations.

2.5.1 Five Capitals Model

Porritt (2007) defines capital as a stock of anything that has the capacity to generate a flow of benefits which are valued by humans. This concept has been elaborated upon to arrive at a model of sustainable capitalism. The model entails five separate capitals: natural, human, social, manufactured and financial; and provides a simple way of understanding the full range of seemingly unrelated subjects.

Understanding the dependencies between the different capitals provides a good way to look at sustainability. Organisations can make use of the five types of capital to deliver its products or services (SIGMA, 2001; Cagnin *et al*, 2005 & Porritt, 2007). To do so, organisations have to maintain and, where possible, enhance these stocks of capital assets, rather than deplete or degrade them.

2.5.1.1 Natural capital

Natural capital (also sometimes referred to as environmental or ecological capital) refers to natural resources (energy and matter) and processes needed by organisations to produce their products and deliver their services. This includes *sinks* that absorb, neutralise or recycle wastes (forests, oceans); *resources*, both renewable (timber, grain, fish and water)

and fossil fuels; and *processes*, such as climate regulation and the carbon cycle, that enable life to continue in a balanced way (Porritt, 2007; Spitz & Trudinger, 2009).

Porritt (2007) building on the work of Robert et al. (1997) and SIGMA (2001) argued that all organisations rely on natural capital to some degree and have an environmental impact. Furthermore, all organisations consume energy and create waste. Organisations need to be aware of the limits of the natural environment, and operate within them.

2.5.1.2 Human capital

Human capital incorporates the health, knowledge, skills, intellectual outputs, motivation and capacity for relationships of the individual. According to SIGMA (2001) this capital needs be effectively managed as organisations depend on healthy, motivated and skilled individuals to function. Additionally, the intellectual capital and knowledge management possessed by these individuals is increasingly recognised as a key intangible creator of wealth. Therefore, damaging human capital by abuse of human or labour rights or compromising health and safety has direct, as well as reputational costs.

2.5.1.3 Social capital

Social capital is defined as any value added to the activities and economic outputs of an organisation by human relationships, partnerships and co-operation (SIGMA, 2001; Porritt, 2007; Spitz & Trudinger, 2009). Examples of social capital include; networks, communication channels, families, communities, businesses, trade unions, schools and voluntary organisations as well as social norms, values and trust.

Porritt (2007) makes the case that organisations rely on social relationships and interactions to achieve their objectives. From an internal perspective, social capital takes the form of shared values, trust, communications and shared cultural norms which enable people to work cohesively and so enable the organisation to operate effectively. Externally, social structures help create a climate of consent, or a licence to operate, in which trade and the wider functions of organisations are possible.

2.5.1.4 Manufactured capital

Manufactured capital is defined as material goods and infrastructure owned, leased or controlled by an organisation that contribute to production or service provision, but do not become part of its output (Porritt, 2007; Spitz & Trudinger, 2009). The main components include buildings, infrastructure and technologies.

Manufactured capital is important for a sustainable organisation in two ways. Firstly, the efficient use of manufactured capital enables an organisation to be flexible, innovative and increase the speed to market of its products and services. Secondly, manufactured capital and technology can be used to reduce resource use and enhance both efficiency and sustainability.

2.5.1.5 Financial capital

Financial capital according to Porritt (2007) is the traditional primary measure of business performance and success (the “single bottom line”) in terms of reporting performance to shareholders, investors, regulators and government. Sustainable organisations need a clear understanding of how financial value is created, in particular the dependence on other

forms of capital. For measures of financial capital to truly reflect the value of other forms of capital, organisations must understand the importance of a number of other factors and how to assign financial importance to them.

2.6 Reviewing the Business Case of Sustainability

In responding to sustainability challenges in South Africa, does the gold mining industry perceive a connection between sustainable practices and the bottom line?

Globally, there appears to be a growing acceptance among investors and company executives alike that there are links between non-financial considerations—such as the environment, society and sound governance—and businesses' ability to remain viable for the long-term (Economist Intelligence Unit, 2009). Nevertheless, very few executives perceive a connection between sustainability and the bottom line in the short term. Despite the fact that the Economist Intelligence Unit (2009) has found that, good performance on sustainability is accompanied by superior results elsewhere.

The idea of a business case for sustainable development was put forward by the World Business Council for Sustainable Development in the run-up to the 1992 Earth Summit in Rio de Janeiro (Porritt, 2007). At the time, emphasis was placed on reduced costs from eco-efficiency and better risk management. The business case has since progressed. This assertion is supported by Trialogue (2006); in summarising the business case for sustainability as follows:

TABLE 4 : THE BUSINESS CASE FOR CORPORATE SUSTAINABILITY

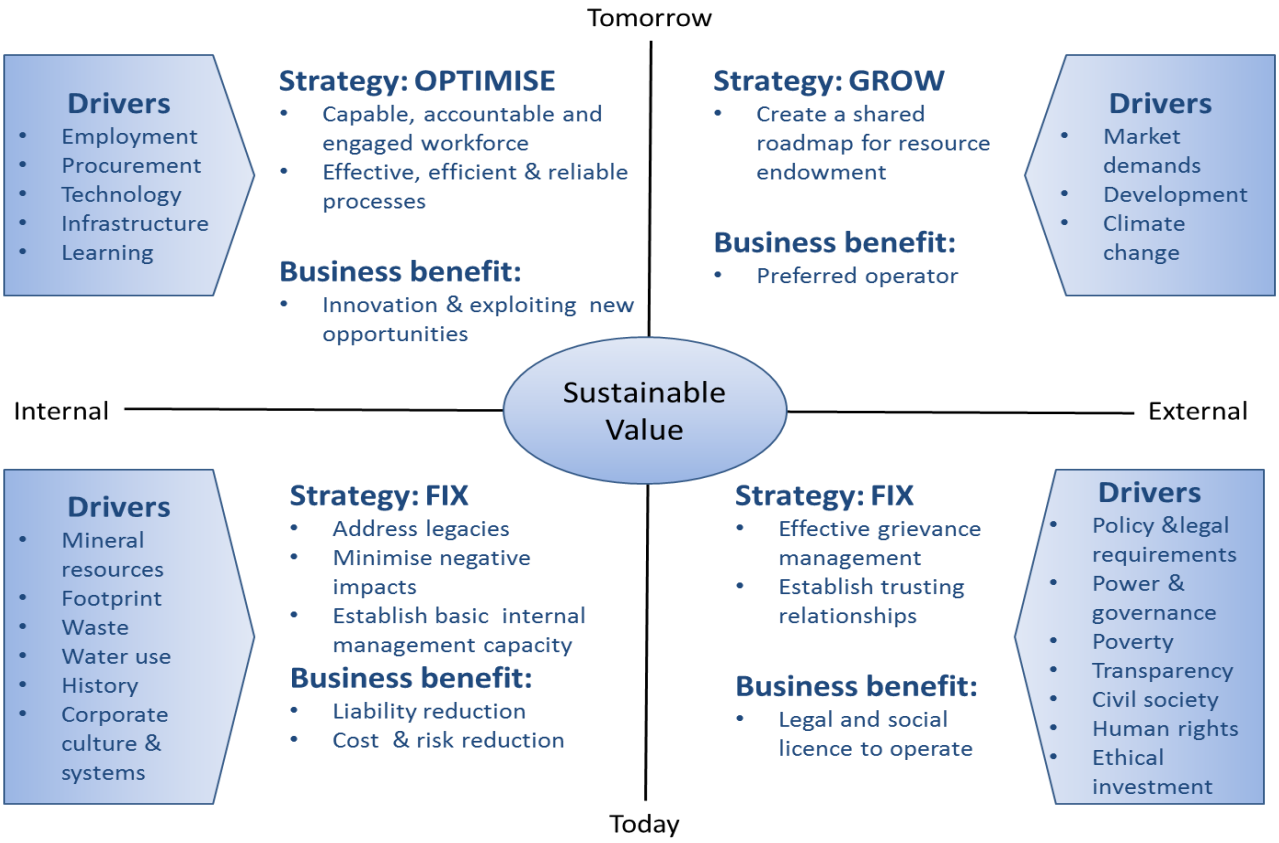
No.	Element	Comment
1.	Risk Management	Corporate governance best practice prescribes that companies identify, quantify and manage a broader spectrum of potential business risks.
2.	Compliance with laws and standards	Companies now face a range of laws, standards and codes of conduct across an increasing spectrum of triple-bottom line issues
3.	Management of licence to operate	Companies are frequently dependent on external parties (such as the state, licensing authorities, or administrative agencies) to approve or influence their operations. In a citizenship context, ensuring that these authorities perceive the company favourably is good for business. (particularly in South Africa, where licence to operate can depend on a company's social contribution in addition to its operational competence)
4.	Improve market penetration	Consumers are increasingly ethical and concerned about how products and services are manufactured, positioned, packaged, performed and distributed.
5.	Attraction and retention of quality employees	In a competitive market for skills, talented employees are highly mobile. Those considering their career and employer-of-choice increasingly look beyond the job function to companies' value systems and operational practices. The cost of acquiring and retaining staff is therefore substantial.
6.	Generate operating efficiencies	Small differences in operating efficiencies can impact profitability significantly. The growing emphasis on sustainability and good citizenship has significant implications for a company's operating practices.
7.	Reduce cost of capital	Companies pay a great deal of attention to investor relations by communicating effectively with the investment community. In so doing, they hope to portray a positive outlook for the business and enhance the company ratings. Ultimately, superior investor perceptions translate into lower cost of capital for the business.
8.	Manage reputation	Corporate reputation and goodwill are difficult to quantify, but can represent substantial value to the business. Product and service quality, advertising campaigns and corporate value system all contribute to this reputation.

Source: Trialogue, 2006

Organisations that have successfully assessed sustainable business models have drawn on the ability to demonstrate convergence between shareholder interests and increased social and environmental responsibility (Porritt, 2007). Additionally, Hart and Milstein (2003), 'elements of shareholder value' model provides a coherent underpinning of the business case assessment.

In an effort to assist companies in assessing their business case for sustainability, Hart and Milstein (2003), developed the shareholder value model. Hart (2005) argues that the model provides clarity and enables companies to cluster related sustainability buzzwords and practices. Additionally, the model assists in organising the parameters that are important to company performance and the creation of shareholder value. This view is supported by Porritt (2007) who believes that the model offers an applied 'how to/how not' primer for companies intending to move the sustainability agenda forward.

Figure 2: Shareholder Value Model



Source: Hart & Milstein (2003)

Hart (2005) views the vertical axis as capturing the tension created by the need to realise short-term results while also fulfilling expectations for future growth. The horizontal axis reflects the company's need to nurture and protect international organisational skill, technologies, and capabilities while simultaneously infusing the company with new perspectives and knowledge from outside stakeholders.

Hart and Milstein's (2003) assertion is that companies must perform well in all four quadrants of the model if they are to continuously generate shareholder value over time

and that performing within only one or two quadrants is prescription for suboptimal performance and even failure.

The model is considered relevant to this research as it provides a basis for companies to understand and assess their business cases for sustainable development. Each of the models quadrants are discussed below.

Cost and Risk Reduction (lower-left quadrant)

According to Hart and Milstein (2003), the focus of this quadrant is on those dimensions of performance that are primarily internal and near-term in nature. By and large, these would be cost and risk reduction. The argument here is that, unless a company can operate efficiently and reduce its risk commensurate with returns, shareholder value will be eroded.

Reputation and Legitimacy (lower-right quadrant)

Here, the focus is also on performance aspects that are near term in nature but includes salient stakeholders external to the company. These could be suppliers, customers, regulators, communities, Non-governmental organisations and the media. Again, Hart and Milstein (2003), assert that a company that uses creativity to include stakeholder interest can differentiate itself, enhance reputation, and establish legitimacy it needs to preserve and increase shareholder value.

Innovation and Repositioning (upper-left quadrant)

A company must only perform efficiently in today's business, but it should be constantly mindful of generating the products and services for the future (Hart & Milstein, 2003). This

could mean developing or acquiring the skills, competencies, and the technologies that reposition the company for the future. Hart and Milstein (2003) warn that without such focus on innovation, the company will find it difficult to create new products or services required to ensure future prosperity and long term shareholder value.

Growth Path Trajectory (upper-right quadrant)

This quadrant focuses on identifying the needs that will define the growth markets of the future. According to Hart and Milstein (2003), the company needs a convincing articulation of how and where it plans to grow in the future in order to generate shareholder value

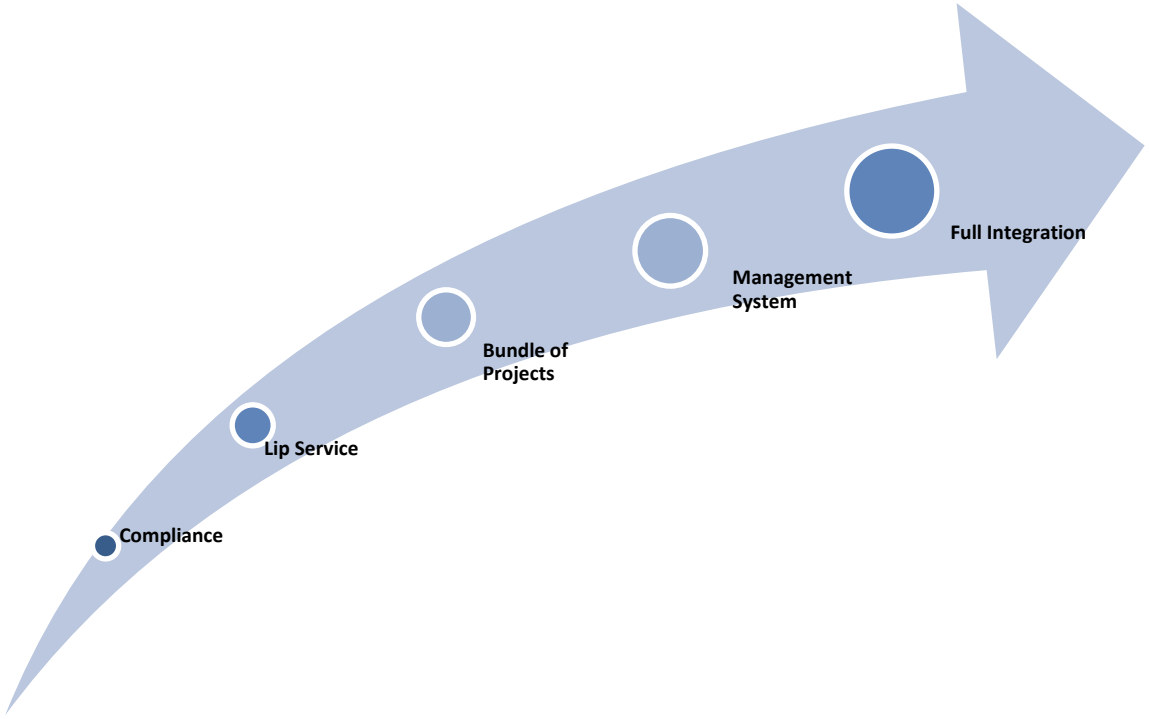
2.7 Maturity Model

The sustainability maturity model, developed by Gareth Kane from Terra Infirma Consultants in the United Kingdom (Kane, 2006), states that a business experiences five steps on the path to reaching sustainability maturity as per Figure 3. The model is aimed at establishing the state of maturity in sustainable development practices

- compliance with legislation (at a basic level)
- lip service (PR inspired projects; lack of strategic or engagement)
- project bundles(where individual projects maybe sustainable but there is still no overall strategy)
- management systems (where an overall strategy is in place and short term targets are defined, however sustainability is still parked in a silo)

- full integration(where the business reaches sustainability maturity, there is buy in across the company and long term goals are in place as part of the company's overall strategy)

Figure 3: Maturity Model



Source: Terra Infirma Consultants (2006)

2.8 Summary of the literature Review

The mining industry suffers from a poor public image in terms of economic, social and environmental impact on the regions and communities in which they operate (Centre for Sustainability in Mining and Industry, 2004). Over and above that, the regulatory and practices landscape governing economic, socio-political, ecological and governance spheres has changed fundamentally in the last few decades.

As a key contributor to the economic development of the country, there is an expectation from to do more than that. Badenhorst (2011, p.1) articulates this expectation more succinctly: "...in a country with deep mining roots and a need for significant social upliftment, eyes turn to the mining industry to breach the gap and to bring about an immediate improvement..."

With all these challenges, how should the gold mining industry respond to the sustainability imperative?

As a start, the five capitals model provides a simple way of understanding the dimensions of sustainability. The research will assess whether the capital stocks are managed effectively by gold mining industry.

Additionally, the researcher aims to interrogate the use of the sustainability capability model, to assess capabilities and maturity in the sustainability domain.

Chapter 3: Research Questions

3.1 Introduction

Chapter 3 details the three research questions that form the basis of this explorative study. The questions are guided by the literature review and directly address the key objectives of the research.

Each of the three questions seeks to explore various components of the research which includes understanding the view on sustainability by the gold mining industry, establishing key drivers and impediments to implementing sustainability strategies.

3.2 Research Question 1

Sustainability is a broad and evolving construct that defies a universally agreed definition (Haugh & Talwar, 2010; Crews, 2010; Curran, 2010, Tovey, 2009). This assertion is equally true for the mining industry (Australian Government: Department of Resources, 2011). However, according to the Chamber of Mines, Sustainability Fact Base (2009), within the mining industry, sustainable development can be interpreted as having the aim of maximising the benefits of development, ensuring that they are spread equitably, while minimising or avoiding negative impacts on people and the environment. Is this view shared by all in the gold mining industry? The first research question aimed to establish whether:

Is there a common understanding of the term sustainability within the gold mining industry?

3.3 Research Question 2

In order to articulate its understanding of the concept of sustainability, the international mining industry has developed a range of sustainable development policy frameworks that are now acting as drivers for improved practice.

Additionally, as a result of steady rise in public demand for businesses to be transparent about their sustainability performance, companies have had to produce annual sustainability reports. Sustainability reports can be used to demonstrate organisational commitment to sustainable development, to compare organisational performance over time, and to measure organisational performance with respect to laws, norms, standards and voluntary initiatives.

Finally, in South Africa, the mining industry has to respond to the requirements of the MPDRA and the Mining Charter. The researcher wished to establish;

What are the key drivers informing choice of sustainability strategies?

3.4 Research Question 3

Whilst many mining houses have a much-improved record regarding environmental management and social responsibility, South Africa's history is littered with examples of abusive practices, disregard for the environment and abandoned operations that took no account of the environmental or social consequences (The Sustainable Business Handbook, 2008). Furthermore, an issue of significant concern is the disjoint between intent, as reflected in policy coverage of issues; and implementation, reflected in actual performance (Chamber of Mines Mining Sustainability Fact Base, 2009). The study aimed to determine;

What the key impediments to embedding sustainability thinking in overall business strategies?

Chapter 4: Research Methodology

4.1 Introduction

The primary objective of the research is to gain a better understanding into how the gold mining industry is responding to the challenges of sustainability in South Africa. The methodology used intended to integrate the theoretical perspective from industry experts with the practical perspective of companies.

4.2 Proposed Research Methods

4.2.1 Phase One – Industry expert and company interviews

For the first phase of the study, an exploratory qualitative approach was adopted in an effort to achieve the objectives of the study. Blumberg *et al*., (2008) note that exploratory studies are particularly useful when the researcher lacks a clear idea of the problems they will face during the study. Using exploration, researchers develop concepts more clearly, establish priorities and develop operational definitions. Furthermore, Pratt (2009) appreciates qualitative research as a tool for addressing "how" questions— for understanding the world from the perspective of those studied (informants); and for examining and articulating processes.

To truly understand the key sustainability issues and the response by the gold mining industry; and explore the key drivers and impediments to implementing sustainability, in-depth semi-structured, open-ended interviews with firstly, industry experts and then company representatives were conducted.

4.2.1.1 Population

According to Blumberg *et al*., (2008), a population is the total collection of elements about which we wish to make some inferences. For the first phase of the research the population was defined as all individuals that were considered experts in the field of sustainability in South Africa. These experts are reputable individuals whose opinions around issues of sustainability are considered to plausible and trustworthy. These experts have also been active in the sustainability environment in varying capacities in different sectors including academic, private consulting, government, non-governmental organisations and organised labour.

4.2.1.2 Unit of analysis

For the first part of phase one, the unit of analysis was the opinions and judgments of the experts in what they considered to pertinent in the response to sustainability challenges, based on their knowledge and interactions with the gold mining industry in South Africa.

For second part, the unit of analysis was the views, perceptions and opinions of individuals that were responsible for sustainability within the organisations.

4.2.1.2 Sample size and sample method

Industry experts

For this phase of the study, a non-probability purposive sampling technique was adopted. The sampling technique involved selecting certain units based on a specific purpose rather than random selection. The rationale for selecting the individuals units was to address

specific purposes related to the research questions, thus respondents were chosen for the contribution that they could make towards the objectives of the study. Experts were also identified through the judgment based snow ball method (Blumberg et al., 2008). The researcher and the supervisor had initially identified potential experts and the researcher contacted them to establish their willingness to be part of the research and also enquired about other experts in the field.

A limitation of such non-probability sampling is that it created a sample selection error as the entire population of experts on sustainability in South Africa did not form part of the study.

Sampling was limited to individuals who met the following sample criteria:

- Contribution to academic literature on sustainability within the mining industry
- Contribution as experienced consultants advising the mining industry on sustainability challenges.
- Contribution as sustainability advisor to the Chamber of Mines
- Contribution as sustainability advisor to Organised Labour

The sample attained was composed of a wide spectrum of experts with extensive experience from theory and practical bases.

TABLE 5: Industry Expert details				
Coding name	Interview date	Name	Title	Organisation
Expert 1	22/08/2011	Mr Franz Stehring	Divisional Manager Mineral Resources	UASA
Expert 2	22/08/2011	Mr Paul Kapelus	Director	Synergy Consulting
Expert 3	24/08/2011	Mr Gavin Hertford	Executive Director	The Esop Shop
Expert 4	25/08/2011	Mr X	Senior Vice President: Sustainable Development	Company A (respondent had some personal views that were not representative of the company)
Expert 5	31/08/2011	Mr Thomas Ketsise	Acting Head: Policy & Research	NUM
Expert 6	01/09/2011	Mr Sietse van der Woude	Safety and Sustainable Development Adviser	Chamber of Mines of South Africa
Expert 7	01/09/2011	Ms Julie Stacey	Managing Member/ Programme Manager: Sustainable Development and Risk	Envalution/Centre for Sustainability in Mining and Industry (CSMI)
Expert 8	27/09/2011	Professor May Hermanus	Director	CSMI

The following experts could not be interviewed to due to time constraints created by involvement in conferences and travelling abroad.

- Associate Professor Ralph Hamann – GSB: University of Cape Town
- Dr. Markus Reichardt - MD, Sustainability South Africa at PE International

Companies

Purposive sampling was used to select the companies that made up the second part of the study. A primary consideration in specifying the population was the ease of access to information such as annual and sustainability reports. To this end, the study was limited to JSE-listed top tier gold mining companies. The sample identified by this criterion included three gold mining companies with South Africa-based and internationally-based operations. For the purposes of confidentiality the identity of the companies is not disclosed in the research findings. The companies are identified as Company A, B and C. Therefore, the ability of the study to be generalised in terms of the wider South African mining industry is limited.

The company representatives interviewed are all at executive level and have sustainable development as their primary responsibility within the companies.

Table 6: Company interviewees

Company	Position held by interviewee
A	Senior Vice President
B	Executive Manager
C	Senior Vice President

Representatives from Companies B and C could not be interviewed personally as they had to cancel scheduled appointments on several occasions. However, they agreed to answer the questions sent via e-mail.

4.2.2 Phase Two – Secondary Data

The second phase of the research involved the use of secondary data. "Secondary data is information or data that has already been collected and recorded by someone else, usually for other purposes" (Blumberg *et al.*, 2008, p. 315). In a study of this nature policy documents, key legislation, annual reports, sustainability reports and other company information that was available in the public domain assisted in understanding the pertinent issues within the various companies especially due to time and resource constraints. The secondary data specifically provided insight in understanding some of the key priorities and strategies of a company as well the reasons behind such choices.

4.3 Instrumentation

The study was accomplished through using an in-depth, qualitative approach. Delattre et al. (2009) noted that the main objective of qualitative research is to create a methodology for approaching, understanding, analysing and explaining management phenomena at a social or company level. Unlike purely quantitative research, qualitative methods therefore centre their attention on exploring the type and the origin of opinions or positions (Delattre et al., 2009).

4.3.1 Industry experts

Semi-structured, open-ended questions was used for the industry experts. The questions were based on literature review in chapter 2 and were aimed at o providing depth and multiple perspectives to the study. The questionnaire can be viewed in Appendix 2.

4.3.2 Companies

Semi-structured, open-ended questions was used for the companies. The questionnaire can be viewed in Appendix 3.

4.4 Data Collection

The following steps were taken set up and conduct the interviews:

- Two sets of questionnaires were developed for the two selected groups namely: Industry experts and Companies (Appendix 2 and 3 respectively)
- The objectives of the study were e-mailed to Industry experts and Companies and with a request to partake in the study.
- When the potential interviewees agreed to the interview, they were asked to set suitable time as to when the interview could be conducted.
- On the day of the interview, interviewees were asked to sign a consent form (Appendix 4) before commencement of the interview.
- Permission to record the interview was sought from the interviewee. Additionally, written notes were also taken down.

Data was gathered through semi structured interviews with experts and company representatives. Of the twelve interviews planned, a total of ten interviews were conducted as part of the research. Seven personal interviews were conducted with experts in the field of sustainability. Three personal interviews were conducted with company representatives.

The experts that were interviewed are active in the field of sustainability within the mining industry. Three consultants, two academics, two organised labour advisors and one advisor from the Chamber of Mines formed the sample group for this part of the research.

Similarly, for the companies, data was gathered through semi structured interviews with the companies' sustainability executives.

Interviews were approximately one hour and were recorded. For the experts, the focus of the interviews was to obtain their views on the definition of sustainability. Furthermore, data was gathered on the key drivers and impediments to embedding sustainability within every day decision making. The experts' views were further considered in the analysis and discussion chapter of the research to highlight similarities and discrepancies between experts, the theory and the individuals interviewed from the companies.

The focus of the company interviews was on understanding the companies' response to sustainability challenges in South Africa and linking it to the theory and perspectives from industry experts.

4.5 Method of Analysis

All interviews from Industry experts and Companies were transcribed. This was followed by an in-depth content analysis. Content analysis is the process of identifying, coding, and categorising the primary patterns of data (Messer, Steckler, & Dignan, 2008). This means analysing the content of the interviews and observations. Understanding of sustainability issues by industry experts was compared and contrasted with the theory and the response

from the gold mining companies. Furthermore, the responses were plotted on the shareholder value and capability maturity models to evaluate the companies' capabilities and maturity in their response to the sustainability imperative.

4.6 Limitations of the Study

The study focused on the South African gold mining industry with only the top tier Johannesburg Stock Exchange-listed gold mining companies being considered. The ability of the study to be generalised in terms of the wider South African mining industry and mining in general is therefore limited.

Another limitation of the non-probability sampling used in the selection of experts is that a sample selection error is created as the entire population of experts on sustainability in South Africa did not form part of the study.

Furthermore, the study lends itself to significant respondent bias as companies may wish to portray themselves positively from a sustainability perspective. Similarly, companies may withhold data that is perceived to be sensitive, particularly with regards to utilising sustainability as a competitive advantage.

Additionally, the researcher may be biased in the presentation of the results due to subjective interpretation of the data obtained.

4.7 Conclusion

A survey by KPMG in 2010 found that sustainability has moved up the corporate agenda in the past three years with 62 percent of companies surveyed having a strategy for corporate sustainability (KPMG International, 2010). This is up from just over half in February 2008; and a further 11 percent are currently developing one; just five percent are not planning to have such strategies, while the rest will create one at some point.

There is a school of thought that argues that the challenges presented above are the kinds of issues governments and nation states should be dealing with whilst letting business get on with the business of staying in business (Trialogue, 2006). This is partially true. Alone, corporates will not succeed in addressing the developmental needs of society and the serious environmental challenges that we face. A co-ordinated response between the corporate world, government and other institutions is required. Only a sufficient convergence between these actors will enable us to find the ways of a common good becoming global and to reorient our development model in an ethical and political perspective that will give it back its legitimacy and its acceptable *raison d'être* (de Woot, 2008).Despite declining production volumes, the gold mining sector remains a key contributor to the South African economy and indeed in the sustainable growth of the industry. More so than many other industries, the gold mines have some overt environmental and social challenges and consequences (Reichardt, 2010). So, how should the gold mining sector be responding to this imperative? Are there explicit sustainability strategies within the sector? If so, what are reasons behind such strategies? If not, why not? Furthermore, what sustainability practices have been or should be adopted?

Chapter 5: Research Results

5.1 Introduction

This chapter contains the research results based on the research questions outlined in chapter three. The chapter will begin by presenting the results of the research sample and proceed to present results on how industry experts understand the gold mining sector's response to sustainability challenges. Finally, the chapter will present results from company representatives and secondary data obtained from public sources. Each set of results will be discussed under the research question posed in chapter three.

5.2 Industry Expert Responses

This section will discuss the results from the expert interviews within the sustainability arena. The interviewees were asked questions which were based on the theoretical base built in chapter two and the research questions outlined in chapter three.

5.2.1 Research Question 1

Is there a common understanding of the term sustainability within the gold mining industry?

Respondents were asked to discuss what their understanding of the term sustainability was and if there was a common understanding in the gold mining industry. The responses that were provided varied significantly. The terms sustainability and sustainable development were used interchangeably.

Expert 1 (2011) argued that sustainability is about extending the life of mine and creating the right environment for investors.

“Sustainability is about, on the one hand, decoupling economic growth and resource use; and on the other hand, it is about the reduction in inequality as the economy grows.” (Expert 6, 2011)

“It is about managing our businesses today in such a way that we make positive contribution to the world and not undermine the ability for society to sustain its livelihoods, activities, economies or natural environments. Through doing this, the business should remain economically viable.” (Expert 2, 2011)

Expert 2’s definition was the only definition that closely tracked the elements of the Brundtland Commission.

The following responses largely defined sustainability using the five capitals framework.

“Sustainable development is about dependencies and relationships between the different types of capital. If you think about the five capital model and how it is constructed; you have natural capital which supports social and human capitals; who create manufactured and financial capitals.” (Expert 6, 2011)

“It is about different components: economic, people, environment, governance” (Expert 3, 2011)

"It is about how one translates natural capital into other forms of capital while preserving the underlying ecological base of our planet." (Expert 8, 2011)

There were respondents who strongly believed that sustainability is a concept that has to be defined within a certain context. This is what they defined the term:

"It is a societal concept and not a business concept. Whichever society or country you are in, that drives the sustainability agenda. In South Africa and the Philippines for example, the concept is community driven. In Australia or in Finland, the concept of sustainability is very much green driven. It is the countries that decide what the sustainability agenda is." (Expert 4, 2011)

Expert 2/Company A continued to add: "The greatest contribution to sustainable development in the country is by being sustainable and growing. The taxes that we pay, employment that we create, the procurement spend that we have, ends up being in billions of rands. As long as we can get going in the country, there's a lot of people out there, 50 000 employees and their families that benefit from us."

"It is about what is contained in the social and labour plan. It is not only about the industry's sustainability, it is also about sustaining the country's economy" (Expert 5, 2011). This was in reference to the MPRDA's requirement that stipulates that applications for a mining or production right or conversion of old order mining or production right in terms of the Act must be accompanied by a Social and Labour Plan contemplated in regulation 46. The Plan requires applicants to develop and implement comprehensive Human Resources Development Programmes including Employment Equity Plans, Local Economic

Development Programmes and processes to save jobs and manage downscaling and/or closure.

Expert 6 concluded that sustainable development was s fundamentally about human wellbeing. She argued that saving the earth would be a fruitless exercise if all human kind was left to die.

The varied responses to the question confirm the broadness of sustainability and the different interpretations of the concept. This links to the assertion in chapter two that sustainability is an evolving construct but at the heart of all the definitions there is a fundamental thread that speaks to parallel care and respect for the ecosystem and for the people within.

Having defined what they understood as sustainability broadly, the respondents were asked whether there was a common understanding by the gold mining industry and what the practical implications were.

The findings seem to suggest that the understanding of the sustainability challenges facing the gold mining industry is not uniform.

“Companies have to ask themselves what it means to be economically viable in the wake of all the challenges – regulatory issues, environmental considerations, societal expectations, ethics and values” (Expert 2, 2011)

Expert 3 believes that mining companies need to understand the concept of competitiveness. He says: “They need to compete on how work is organised. Not on how

they deal with sustainability issues. Sustainability cannot be used as a tool for gaining competitive advantage."

According to Expert 8 the gold mining industry needs to start looking at the whole. She argues that there is a tendency to focus on indicators. She suggests that companies should be asking the following questions: "Are people better off for working in the gold mining industry from wellness and public health perspectives? And, what are the impacts of the interventions or initiatives? She asserts that the industry should try and link their responses to the issues raised in the National Planning Commission.

Expert 7 comments: "Sustainable development as your strategy is the only one that is going to help you succeed no matter what business you are in. Obviously mining has to follow weak sustainability model – we can use up natural capital as long as we transform it into other types of capital.

She continues to argue that instead of being mining companies, focus should becoming provider of minerals. She explains a provider of minerals as the ability to think about what is above the ground already and how that can be recycled and taken back to provide minerals in a way that is different from mining. This view did not come up in the literature review and will be discussed further in Chapter 6.

Expert 1 brought in the topical debate on nationalisation of mines. He believes that the industry needs to respond decisively to the issue of nationalisation as it has the potential to derail the sustainability of the industry.

According to Expert 5, there needs to be recognition that gold is getting deeper and that jobs may be lost. Companies should be looking at giving those leaving their employ skills to thrive in secondary industries. Additionally, there should be focus on truly advancing the careers of those who are still employed. These sentiments are echoed by Expert 6 when he says: “Investment in skills development towards non-mining jobs is crucial. Additionally, the industry should at grandfathering all the workers.”

The researcher found that the responses varied from very high level conceptual thinking to detailed issue specific conversations.

5.2.2 Research Question 2

What are the key drivers informing choice of sustainability strategies?

While research question 1 was aimed at establishing the understanding of sustainability across the gold mining industry players and attempted to establish the practical implications for the industry, research question 2 is aimed at understanding what the respondents view as key drivers behind the move to sustainability.

The respondents were asked to describe what they viewed as key drivers behind sustainability in the gold mining industry and the following were some of the responses:

“I think South African mining has a very particular environmental and social context for us, so we would look at what that model tells us about mining in South Africa is that we work in a social context of enormous social inequality, and social marginalisation. We also live in a

country where we have limited arable land and water resources" (Expert 8, 2011). The context argument is again brought to the fore.

One response that did not follow the general themes was; "Shareholder interest – that is the long and short of it" (Expert 1, 2011)

There was a group of responses that spoke to the regulatory frameworks in South Africa:

"The mining charter is the key driver – the five pillars and its meaning" (Expert 1, 2011)

"Mining regulations especially the Mine Health & Safety Act, is one of the key drivers to implementing sustainability strategies." (Expert 5, 2011)

A few of the respondents stressed the factors of production as being the key driver:

"Rising labour cost & rising operational cost" (Expert 1, 2011)

"Price of gold, rand/dollar exchange rate and input costs" (Expert 3, 2011)

Expert 6 believes the key to be technology and the employment challenge in the country.

Experts 4 had more comprehensive views on what constitutes key drivers of sustainability in the gold mining industry:

Expert 4 had a systematic view and said: "I think the most important thing is you have to look at it from the inside out. So, employee safety and health; then the community, being responsible in terms of providing employment for them and meeting their expectations in

terms of the health and environment. After that it is about moving out to the broader environment and meeting expectations of the government."

The following statement by Expert 2 captured the essence of the responses: "Cost of production, political & regulatory regime, access to infrastructure, access to energy, access to skills, access to capital, access to land, access to labour, access to technology. Others are international bodies like the Equator Principles and the UNEP Principles for Responsible Investment. Additionally, stock exchange requirements have become more and more stringent."

Respondents were asked assess the industry's response to the identified drivers, the following were some of the responses:

The findings seem to suggest that while some *progress* has been made, the industry still needed to show **significant improvements** in the response to the sustainability challenges.

"There are *pockets of excellence*. The industry is starting to develop a vision 2030 for the mining industry based on sustainable development principles" (Expert 6, 2011). However, Expert 6 is also concerned that there is still a significant number of players that understand sustainable development in the **here and now**. "So they understand that we need to have fewer injuries, diseases, less pollution in the environment and less impact on the community **today**."

Expert 5 believes that: "The understanding of issues is getting *more aligned*. Legislation has improved and enforcement also getting there. There is a move to have a one stop shop in

government to deal with all mining issues". His major **concern** is what gets reported in the annual company **sustainability reports**. Expert 5 says: "Corporate Social Responsibility is a myth. What is contained in Sustainable Reports is not happening on the ground."

Expert 1 seemed very optimistic when said: "We are *making progress* in the Mining Industry Growth, Development and Employment Task Team (MIGDETT) – a partnership between the relevant government departments, trade unions and industry associations. The project seeks to explore a broad range of issues aimed at promoting sustainable growth and meaningful transformation."

Furthermore, Expert 1 was excited about the fact that some mining houses are looking into mechanisation. He believes that this really talks to the sustainability of the industry. He also argues that, at our depths, the South African *gold mining industry is a leader in the world*. He **cautions that the talk of nationalisation** has the potential to make the industry unsustainable.

Expert 2 believes that the *gold mining industry has created some big towns and created a significant number of jobs*. Another good response to the sustainability challenges is that the industry is slowly moving away from single sex hostels. Expert 2's main concerns are captured in the following quote:

"There seems to be **short term thinking** – linked to life of mine. No long term thinking. Companies are concerned with quarterly and annual reporting. Additionally, there is also a focus on **reporting sustainability issues**. Very few investors look at sustainability

performance, most are satisfied that company is reporting in a transparent, accurate and accountable manner"

Expert 2 added: "**Leadership:** where is the statesmanship in the gold industry?"

Expert 7 is also cautiously optimistic: "There companies that are *starting to look at product stewardship*." She also believes that the mining industry is certainly way ahead in reporting on issues of sustainability. However, she is not impressed by the fact that industry continues to **perceive sustainable development as separate from strategy**. According to her, sustainable development is profoundly not integrated into strategy issues across the industry.

Expert 3 has very strong views on the industry's response:

"There **is massive duplication of efforts**. Everyone is doing their own thing. We are **not using the economies of scale** that we have created. Even within companies, the five areas/capitals are treated as silos. Additionally, post 1994, the discourse has been dominated by transformational issues and the scorecards, leading to **tick box mentality**"

Finally, Expert 8 believes that until the industry openly admits to wrongdoing, the move towards sustainability will be significantly hampered.

5.2.3 Research Question 3

What are the key impediments to embedding sustainability thinking in overall business strategies?

Whilst many mining houses have a much-improved record regarding environmental management and social responsibility, South Africa's history is littered with examples of abusive practices, disregard for the environment and abandoned operations that took no account of the environmental or social consequences (The Sustainable Business Handbook, 2008).

The respondents were asked to describe what they viewed as impediments to implementing sustainability strategies within the gold mining industry. Again, the responses were varied and these are presented in the following section.

"I think it is purely policy issues. There is a huge *disconnect between government and the industry*. Lack of competencies in government departments" (Expert 8, 2011).

"The gold mining industry is a *sunset industry.* This impedes the willingness to engage in looking for innovative ways to mine more sustainably" (Expert 3, 2011)

Expert 2 was more elaborate: "The fact that the gold mining industry is a *sunset industry* is not helping. Economically viable gold is running out. It is becoming harder, deeper and more dangerous to exploit. From an environmental point of view, it is about who is liable for legacy issues. Is it the government for not enforcing the laws or are existing companies supposed to bear the brunt. From a people perspective, the complexities of the migrant

labour system cannot be ignored. The tension between the use of technology and job security is another impediment. And, finally the uncertainty about the nationalisation of the mines is a significant hurdle."

A few respondents raised to issues of cost and skills shortage as impediments to implementing sustainability strategies.

Expert 1 and 2 listed the following issues:

- Skills shortage.
- Rising labour costs
- Rising operational costs
- High cost of production

Expert 6 said: "Skills challenge based on our poor education system. The second issue is that we are a divided society. To deal with some of the sustainability challenges, we need a lot of collaboration. There is going to be a lot of difficult issues. If we are coming from such different paradigms and living in such different worlds, it is very difficult to deal with the challenges."

Other comments, which focused mainly on *misalignment, trust and an inefficient government*, were:

From Expert 5: "Narrow minded versus broad minded labour unions (disconnect between myopic regional/local structures and strategic head office), arrogant employers (you cannot

tell us how to run our business mentality). From a government perspective, there is no clear policy to attract foreign investment. The *lack of capacity within government departments* is worrisome. Furthermore, there seems to be *misalignment between the leadership* of all the stakeholder groups and the people implementing the decisions. There is no trust and alignment between the different stakeholders

The fact that the gold mining industry is a sunset industry came up several times in the responses. Lack of alignment between the different stakeholders was also identified as a key impediment. This is linked with the lack of trust amongst the different role players leading to poor collaborative efforts. Most of the respondents are convinced that at the heart of all these impediments, is the issue of leadership, or lack thereof.

The migrant labour system remarked on by several respondents. There seems to be a clear message that, until the industry can deal decisively with the effects of the migrant labour system, efforts to move towards sustainability will be futile.

To further gain insight into the reasons behind the perceived lack of progress in implementing sustainability strategies, the respondents were asked to describe what they viewed as the "missing link". The following were some of the responses:

"We need to lay the nationalisation debate to rest. We need to improve the way we beneficiate our minerals. We must show how we have improved the lives of people in the labour sending areas. We must just improve the political landscape. Look at the Royal Bafokeng example. We need more collaboration. Learn from other successful projects

around the entire mining industry. There needs to be *more collaboration* between the different companies and with the government" (Expert 1, 2011).

Agreeing to a degree with Expert 1, Expert 3 said: "It boils down to *leadership* from all stakeholders. We need to ask, what are the big levers we can pull to fix all five capitals? It is all about systems thinking. Migrant labour system is not unique to South Africa. It exists in Australia, Siberia and in Canada. We need creative thinking around the reducing or shortening the leave cycles. This could assist in efforts to reverse the ills associated with migrancy in South Africa."

Expert 7 stuck to her argument around dependencies: "We need to understand dependencies. We cannot continue being *short term driven*. Additionally, we will remain in huge *credibility and trust deficit* and we going have to put in so much effort to overcome that deficit, until the industry admits to all wrong doing. The industry needs to start measuring success according to the 5 capitals and not in financial terms only. Finally, we do not plan with closure in mind and that is at an environmental and social economic level.

Expert 8 raised some tough questions: "What I would like to see mining do is to show how it has a positive impact on wellbeing of their people. If we follow the basic principles in public health, people who are employed should be better off economically and health wise than people who are not. On a different matter, we *cannot to look at sustainability issues in isolation or in silos.*

The issue of leadership surfaces again when Expert 6 summarises his missing links: "I think in terms of the *longer term* I can't say I have seen any company who's come to grips with what it means. There is the *not- in- my-lifetime syndrome*. I'm a bit concerned from a *leadership perspective* that people are not able to see beyond their lifetime. More collaboration is needed. There is absolutely no question that *we lack leadership* in the industry."

Finally, the respondents were asked to comment on the gold mining industry's performance and link it to the shareholder value model. Additionally, respondents were requested assess the South African gold mining industry according the maturity model discussed in Chapter 2.

Most of the respondents agreed that very few gold mining companies look into the future. It appears that an average company is largely concerned with risk and cost reduction. This is supported by the following statements:

"Most gold mining companies are very strong in the left lower quadrant (LLQ) and left upper quadrant (LUQ). They are *very weak in outside engagemen*t. All the things that the companies are doing and reporting on is just passing gas against the volcano" (Expert 2, 2011)

Expert 3 commented: "Industry is concerned about the now. So, efforts focused on the LLQ and RLQ. They are *not thinking about future* – obviously there are exceptions."

"*Very few companies are looking into the future - both internally and externally*" (Expert 5, 2011).

"We are firmly in the LLQ. We are moving into right lower quadrant (RLQ)" (Expert 8, 2011)

There was one divergent view:

"We are far better off than most people would admit. The companies are doing a lot in most of the quadrants. We just need to improve investment in the labour sending areas. We need to sort out the housing issues and we have to improve beneficiation" (Expert 1, 2011)

In terms of industry maturity, the responses were spread right across the continuum. All of the respondents agree that no gold mining company has achieved full integration where the business reaches sustainability maturity with buy in across the company and long term goals that are in place as part of the company's overall strategy.

The responses ranged from placing the gold mining industry between compliance to legislation and regulatory frameworks; to implementation of management systems where an overall strategy is in place and short term targets are defined, however sustainability is still parked in a silo.

The following were some of the responses:

"I would say it is all about compliance and lip service. And this is why investors think that there is no future here" (Expert 3, 2011)

Expert 7 commented: "They are still compliance driven; trying to get it right legally and I think implementing management systems in order to get that compliance."

"The industry is somewhere lip service and a bundle of projects. I doubt whether full integration can occur in the gold industry because our mines were not designed with sustainability in mind" (Expert 2, 2011).

5.3 Company Interview/Responses and Secondary Data Analysis

This section will discuss the results from the company interviews and the secondary data analysis. As with the industry experts, the interviewees were asked questions which were based on the theoretical base built in chapter two and the research questions outlined in chapter three.

5.3.1 Research Question 1

Is there a common understanding of the term sustainability within the gold mining industry?

The companies are in different stages of the sustainability strategy development. Company C is currently reviewing its strategy with a key objective of achieving a fundamental shift in the nature of the company's engagement with communities.

Company A has over the last two years consolidated the group's sustainability development systems and structures and have integrated them into a single, universal sustainable development framework. Additionally Company A has developed new vision and values that assist with the roll-out of the group's sustainable development framework.

Company A seems to be the only one of the three companies that has the word "sustainability" in its vision statement. This could signify the attempt to embed

sustainability thinking across the company. The company still does however have a separate sustainability report. There is recognition that business success is the approach of integrating sustainability into all aspects of decision- making.

Company B emphasises a "dynamic strategy" that evolves with changing conditions. The company sees profitability as being the common thread between shareholders and stakeholders. The chairman of the sustainability committee argues that without profits the company cannot make sustainable investments in the communities or society at large. Without sustainable development the company will not retain the operations that generate returns of the investors. Of the three companies under review, Company B was the only one to produce an integrated report. It must be borne in mind their year-end is in June and with King III coming into effect in March 2010, the company had more than 12 months to comply with the requirements.

The company representatives were asked to describe their approach to sustainability or sustainable development.

By and large the top three mining companies appear to be focussing on the same sustainability challenges. These can be clustered into the following areas of measurement:

- Environment
- Society
- Governance and related sustainability
- Climate change

Whilst the focus is almost similar, the definition of sustainability is different across three companies. Company A and B place a huge emphasis on the fact that sustainability is an evolving concept and is dependent on societal needs and expectations.

The response from Company A was: "It is a societal concept and not a business concept. Whichever community we are in, that drives the sustainability agenda. If I sit in Australia or Finland which are first world countries, the concept of sustainable development will be what is environmentally driven. If I am sitting in the Philippines or SA the priorities of sustainable development are poverty and community driven."

This is in line with the definition given in the sustainable development section of the company's annual report where sustainable development is defined as "a working concept that **evolves with societal needs and expectations** and our approach to sustainable development is thus informed by continuous stakeholder engagement." (Company A, 2010)

Company B produced an integrated report for the first time in June 2011. The company's view on sustainability is captured in the following reply from its representative: "Our understanding is ensuring that our business is able to meet its needs whilst still ensuring social, environmental and economic resource protection. It involves being a responsible organisation, showing stewardship for the environment, development of economic wellbeing now and into the future and ensuring the empowerment of the communities in which we operate. It is about leaving a positive legacy for future generations."

The sustainable development report puts slightly different. The Chairman of the sustainable development committee writes; "At Company B, our commitment to sustainable development is real and increasingly measurable because we understand that corporate citizenship goes beyond securing a social licence to operate – **it is a moral responsibility**."

For 2010, Company C produced a separate sustainability report. No reason was provided for not producing an integrated report. The sustainability focus is on **communities** and this is captured in the CEO's letter; "We will only achieve our vision if we can prove our ability to operate sensitively to and with our communities, to partner with them to create enduring value." Again, the approach was slightly different from the company representative wrote about the company's understanding of the concept. According to him: "The concept of sustainability in simple terms means that every generation should do things in such a manner that these do not have negative impacts on the next generations but contribute positively into the future."

5.3.2 Research Question 2

What are the key drivers informing choice of sustainability strategies?

Companies were asked to elaborate on the key drivers and their focus areas and the following were the responses:

Company A said: "I think the most important thing is you have to look at it from the inside out. So, *employee safety and health*; then the *community,* being responsible in terms of providing employment for them, expectations in terms of the health and environment of the community. After that is about moving out to the broader environment and meeting *expectations of the government."*

"The greatest contribution to sustainable development in the country is by being sustainable and growing. The taxes that we pay, employment that we create, the procurement spend that we have, ends up being in billions of rands. We have 50 000 employees that benefit from us, multiply by the communities, so that is significant. So first that has been a huge contributor in the remote areas that we operate in , so sustainable development is by being successful , getting all answers, keeping our growth profile, keeping our employment profile, keeping our procurement spend ,and making sure we put into the fiscus" (Company A, 2011)

Company A's sustainable development section of the annual report confirms that over the past two years, the company has seen a consolidation of the sustainable development

systems and structures, which are now integrated into a single, universal sustainable development framework. This incorporates best practice policies that have been consolidated into eight pillars of sustainable development, and refined to meet the operational needs. These include:

- Occupational health and safety;
- Human rights;
- Ethics and corporate governance;
- Risk management;
- Environment;
- Material stewardship and supply chain management;
- Community and indigenous people; and
- Stakeholder engagement.

Company B's response was as follows: "We are driven by *corporate responsibility, legal compliance and moral obligations, investment imperatives*." From the sustainable development report, the most material issues were identified as:

- Governance and economic sustainability
- Social performance including safety, occupational health and wellbeing, labour practices, community

- Environment covering water management, land use and legal compliance
- Mining Charter compliance

Company C's representative had a totally different view to what the company reports say. He expressed some frustration when he said: "The company is currently been driven by legislative and community requirements and pressures as well as global UN requirements instead of its stated values."

The company's sustainability report states that Company C is developing a sustainability strategy that not only addresses priority areas of concern but also seeks to achieve competitive advantage through excellence and innovation in sustainability practice. A key objective of the strategy is to achieve a fundamental shift in the nature of the company's engagement with communities.

The company has identified six focus areas that are common to all operating regions while recognising the fact that these issues manifest themselves in different ways in each region and require responses appropriate to local circumstances.

The six focus areas for the 2010 reporting year were:

- Improving operational safety;
- Managing health impacts that arise at operations and in our communities;
- Operating with respect for human rights;
- Relationships with the communities which host the operations;

- Exploration and closure, recognising and reporting explicitly on these critical areas in the life cycle of our operations; and
- Effective stewardship of the environment and of the natural resources, primarily land, water and energy.

5.2.3 Research Question 3

What are the key impediments to embedding sustainability thinking in overall business strategies?

The companies were asked to describe the key challenges in their move towards sustainability. The responses are presented in the next section.

According to Company A, legacy issues remain a significant challenge to embedding sustainability strategies. The company comments in the sustainable development report: "…careful consideration of sustainable development is critical for the global mining sector, as, historically, the mining industry's social and environmental legacy has not always been a positive one."

Additionally, the company's geographic spread presents a considerable challenge as captured in the following statement: "As a company that mines in four countries on three continents, from 4,000 meters below the surface of the earth to 4,000 meters above sea level, and an exploration or project development presence in 12 countries across all continents, each of our operations has to deal with unique operational, economic, social and environmental challenges.

Company A's representative added that the impediments were: "all the intangible issues that add value to an organisation. It is around innovation and our ability to innovate ourselves to be sustainable, because we are in the business of being sustainable for development. It's our ability to attract and retain talent and having traction."

Company B's aim is to continue to build a sustainable company that benefits the widest group of stakeholders. The company acknowledges that the move towards sustainability is a journey but believes that it is moving in the right direction.

The representative said the following on impediments: "Bureaucracy especially on the regulatory front, over-regulation, inhibitory regulation, political agendas, lack of partnerships in implementing initiatives and individual independent indicatives as opposed regional initiatives with pooled resources."

Company B lists the following as the issues that could have an impact on its sustainability:

- The strength of the rand – always a factor for a business that earns revenue in rands based on the US dollar conversion rate – and the gold price. To counter these factors, the company uses conservative projections in our near-term and long-term planning.
- In South Africa, the administered price of electricity will rise by 25% again next year. Power delivered by Eskom currently accounts for over 15% of the company's operating costs and alternative sources are impractical. The focus is on using power efficiently and economically.
- The company has to become more productive to compensate for higher wage bills. Although there is a significant degree of cooperation between the company and its

unions, the company is concentrating on improving the understanding that the best interests of the company generally match the best interests of all its stakeholders.

Company C, from the sustainable development report, chose a more global outlook and commented on the impediments as follows:

- Lack of defined resources identified through exploration activities – in part due to financial limitations and constraints on land access.
- Limited developed inventories in the form of operating mines that can extract the resources due to market and associated financial constraints (including low prices), and
- Limited downstream processing capacities, also a function of market and financial constraints.

However, the representative thought that, in South Africa, the issues were around short term profit thinking aimed at to pleasing the short term investors. He believed this to be the biggest stumbling block.

To further gain insight into how the companies were responding to the sustainability challenges, the representatives were asked to comment specifically on global sustainability frameworks, the importance of sustainability reporting and the industry's maturity in embedding sustainability strategies. The following statements represent the companies' views:

Company A

"We are guided by the sustainability framework of the International Council on Mining and Metals (ICMM). We also subscribe to the United Nations Global Compact." As far as reporting is concerned, the representative said: "Our sustainability policy has been informed by the GRI's Sustainable Reporting Framework."

Commenting on the industry's maturity, this what he said: "I think the mining industry is at crossroads at the moment. There is a lot of emphasis on CSI than there is about making an impact. As businesses, mining companies can have limited impact unless they start to collaborate."

Company B

"We developed our policies in accordance with the principles of ICMM."

In response to the question on sustainability reporting, the representative wrote: "You cannot manage what you do not measure. It is critical to measures the correct indicators and the appropriate parameters, especially in light of the company driving continuous improvement. It is vital to set targets for progressive performance improvement and measure and adapt accordingly."

The representative believed that her company has management systems to manage sustainable development issues. However, she also argued that the model used by the researcher was too simplistic and added: "I would certainly not use this curve – it is far too

simplistic – but in the main, I think businesses need to integrate SD into the business processes echoing this as the way we do business. King makes this very clear."

Company C

Responding to the question on sustainability frameworks, the representative wrote: "This seems to be much driven from corporate office without the business units fully understanding the requirements and implications of global reporting."

However, in terms of sustainability reporting, he was aligned with the company's view: "Sustainability reporting is taken very seriously and does impact positively on the sustainability thinking within the company."

Commenting on the company's maturity, he said: "The company needs to have a coherent strategy if it is to deal with the challenges it faces in a matured fashion. Sustainability thinking needs to be embedded in the entire values and the thinking of leadership to avoid the knee jerk retain to challenges companies face**."**

5.4 Summary

A summary of the company sustainability reports is presented in tabular format and can be viewed in Table 7

Table 7: Summary of Company Results

Area of measurement	Company A	Company B	Company C
Key drivers	(GRI, ICMM, UN Global Compact, Mining Charter, King III)	(GRI, King III, Mining Charter)	(ICMM, UN Global Compact, EITI, VPSHR,WGC,RJC, King III, Mining Charter)
Definition focus	Societal needs and expectations	Shareholder & Stakeholder needs and expectations	Community engagement
Environment (Natural capital)	Water management Acid mine drainage	Responsible use of resources. Product responsibility. Cyanide. Acid mine drainage. Closure and rehabilitation	Water management, land access, hazardous materials and air quality
Society (Social & Human capitals)	Occupational health and safety. Attraction and retention of right talent. Stakeholder engagement and social development. Community and indigenous people Human Rights	Safety. Occupational health and employee well-being. Labour practices and human rights Working with communities	Partnering with communities for mutual benefit, human rights, occupational & community health, safety, engaged workforce
Governance	Commitment to sound	Establishment and	Governance structures

and related sustainability concerns (Manufactured & Financial)	corporate governance standards. Well-developed enterprise-wide risk management (EWRM) process. Supply chain management and material stewardship	maintenance of board and management structures. Implementing good practice in governance and reporting. Integrity and ethics. Compliance with legislation Risk management and mitigation	and code of ethics
Climate change	Ranked fifth overall on the Carbon Disclosure Leadership Index. First gold mining company in the world to utilise Certified Emissions Reductions. Electricity consumption decline by five per cent (around 30 MW) to below 600 MW and seeking continual improvement	Ranked 17th on the Carbon Disclosure Leadership Index. No mention made of developments in the carbon credit markets. Carbon emissions reduced by 18% against a 15% target.	Building on a study completed in 2009 to improve understanding of the potential impact of climate change.
JSE SRI Ranking	One of 2010 SRI Index Consistent Best Performers (2007 – 2010)	Does not make Best Performer list	One of 2010 SRI Index Consistent Best Performers (2007-2010)

Chapter 6: Discussion of Results

6.1 Introduction

The study sought to gain an enhanced understanding into how the gold mining industry responds to the challenges of sustainability in South Africa. This chapter discusses the findings as presented in Chapter 5 and draws linkages with the literature review done in Chapter 2. The first level of analysis – research question one - looks into establishing whether there is a common understanding amongst industry experts and the gold mining industry on the term sustainability within the industry. The second level of analysis – research question two – is aimed at establishing the key drivers informing choice of sustainability strategies. Finally, the third level – research question three – looks at the key impediments to embedding sustainability thinking in overall business strategies.

6.2 Research Question 1

Is there a common understanding of the term sustainability within the gold mining industry?

Theme: Dimensions of sustainability

Sustainability is a broad and evolving construct that defies a universally agreed definition (Haugh & Talwar, 2010; Crews, 2010; Curran, 2010, Tovey, 2009). It has come to have many different meanings. Within the mining industry, sustainable development can be interpreted as having the aim of maximising the benefits of development, ensuring that they are spread equitably, while minimising or avoiding negative impacts on people and the environment.

There are several frameworks which have emerged in the past two decades that are aimed at providing more business sense to the concept of sustainability. However, there are two key models that have led the debate (Cagnin et al., 2005). The first one is the triple bottom-line approach. The second approach, named the five capitals model, views sustainability through the economic concepts of capital and income where the five main capitals are natural, human/intellectual, manufactured, social and financial (SIGMA, 2001; Porritt, 2007). A sustainable organisation will maintain and where possible enhance these stocks of capital assets, rather than deplete or degrade them. The model allows business to broaden its understanding of financial sustainability by allowing business to consider how wider environmental and social issues can affect long-term profitability.

The results of the study showed that only two respondents made direct reference to the five capitals model. The two respondents, coming from an academic background, believe that sustainability is about understanding the dependencies and relationships between the different types of capital. Relating it to the mining industry, the respondents argue that sustainability is about how one translates natural capital into other forms of capital while preserving the underlying ecological base of our planet.

There was another view that strongly linked sustainability to the context within which the companies operate. For instance, a few of the respondents defined sustainability as working concept that evolves with societal needs and expectations. In South Africa, a key driver of sustainable development is the Mining Charter (DMR, 2010). This view is supported by Badenhorst (2011, p.1) when he comments: “In South Africa where investment in infrastructure and communal amenities can significantly improve the quality of living of

ordinary people, there can be little resistance to the need to legislate social change and no surprise at the importance of the Mining Charter." This view of sustainability places emphasis on societal needs and it raises questions about the use of the five capitals model and its applicability to the South African context.

None of the gold mining companies interviewed referred directly to the five capital model. However, the information obtained from the sustainability reports suggests that although the companies do not directly refer to the five capitals as an approach, their sustainability practices can be packaged into model. One of the respondents agreed with this assertion and comments that there is not a single issue that does not fall into one of the capitals.

In the following section, each of the five capitals is discussed in conjunction with the responses from the interviewees and the companies. A table is provided for each company which tells the story of how the company has responded to each of the capitals. Reichardt (2010) warns that while some mining industry leaders regularly produce highly credible, balanced and data-rich reporting on their performance, sustainability reporting in the mining sector can also be problematic. He suggests that at times, it is often the public relations staff – and not technical specialists assisted by public relations – who write the reports.

6.2.1 Natural Capital

Porritt (2007) building on the work of Robert et al. (1997) and SIGMA (2001) argues that all organisations rely on natural capital to some degree and have an environmental impact. He suggests ways for companies to maintain or enhance natural capital by doing the following:

- Substitute naturally scarce materials with those that are more abundant
- The responses from the interviews suggest that this is currently not happening and that the industry is not even remotely thinking about material substitution. Only one respondent raised the issue of substitution and suggested that mining companies should be looking to become providers of minerals by looking at what is above the ground already and how it can be recycled and take back to provide minerals in a way that is different from mining.
- Instead of material substitution, gold mining companies are investing in technologies to go deeper in search of more ore bodies. The argument brought forth is that the demand for gold – for its physical qualities and its historical use as a broad based currency – has remained relatively high over the last 150 years (Company C, 2011). Additionally, gold's uniqueness and physical qualities makes it very rare in its occurrence in the crust of the earth. Therefore, companies have to go where the gold is. In the South African, new gold bearing ore bodies are at depths greater than three kilometres.
- Ensure that all mined materials are used efficiently within cyclic systems and systematically reduce dependence on fossil fuels - use renewable resources instead.
- Gold mining is a very energy intensive industry and with the rising costs and climate change high on the global agenda, companies are forced to manage their energy consumption wisely. In South Africa, the gold mining industry's carbon footprint is dictated by the use of coal fired energy purchased from South Africa's energy utility,

Eskom. Review of the companies' sustainability reports shows that all three companies have energy management as one of the key focus areas.

- For Company A, energy saving is a key component in the company's integrated carbon management strategy, providing a framework for the inclusion of carbon and climate change-related issues into business planning models and decision-making processes throughout the organisation. According to Company A's sustainability report, the company is already recognised as a leader in the South African mining industry in dealing with carbon-related issues. For the fourth year in a row Company A submitted a disclosure report to the National Business Initiative's Carbon Disclosure Project (CDP) and the company was ranked fifth overall on the Carbon Disclosure Leadership Index: JSE 100 for 2009, similar to the ranking in 2008. Additionally, Company A became the first gold mining company in the world to utilise Certified Emissions Reductions - the financial securities used to trade reduced carbon emissions.

Company B claims that it is focused on reducing the use of fossil fuels and developing initiatives to mitigate and absorb greenhouse gases to reduce its carbon footprint. Accordingly, the company's policy dictates that all greenfields and brownfields projects consider the impact of climate change in their design and planning. As with Company A, Company B submitted to the CDP for the fourth year in a row. The company scored 74% to rank 17th on the Carbon Disclosure Leadership Index: JSE 100 for 2010. Company B will review its strategy to adjust objectives and targets against 2013 benchmarks.

Company C's response is very frank in that the company recognises that while there is a medium-term target to improve energy efficiency by 15% and long-term target to improve

greenhouse gas emissions intensity by 30%, progress towards achievement of these targets is elusive. The company sees the following as critical next steps in its energy consumption management:

- Implement country energy security strategies; and
- Where feasible, adopt the latest technologies to minimise fuel consumption at new and existing assets

Company A seems to be ahead of the other two when it comes to looking into reduction of dependence on fossil fuels. The question remains, are the companies really looking hard into opportunities around renewable energy sources and the carbon credit market? The researcher thinks that more could be done in this space. Some of the suggestion will be discussed in Chapter 7.

Eliminate waste, re-use or recycle where possible

The gold mining industry generates significant amounts of waste rock and tailings as result of mining and mineral processing operations. Additionally, the management and disposal of potentially hazardous materials used in or generated as a result of gold production requires special attention. All three companies claim to have policies that address the management of risks arising from the use of hazardous materials and these cover topics including waste avoidance, reduction, reuse, recycling, treatment and disposal.

While claiming to have focus on waste management, the industry continues to create legacy issues. The tailing dams of yesteryear can be seen across the Witwatersrand basin and more continue to be developed.

6.2.2 Social Capital

According to Porritt (2007), organisations rely on social relationships and interactions to achieve their objectives. This assertion is supported, do different degrees, by all three companies reviewed. Ways an organisation can enhance social capital include (Porritt, 2007):

Provide safe, supportive living and working conditions, including family friendly policies.

Historically, a large proportion of the industry's workforce has been recruited from rural areas of South Africa and neighbouring states and accommodated in single sex hostels, with large numbers of employees in each dormitory-type room. In the apartheid years, influx control laws left mineworkers with little choice on where they could reside other than in employer-provided mine hostels (Company C, 2008).

The migrant labour system used in the gold mining industry was raised by a number of the respondents. The views ranged from how the system destroyed the family unit and the rural social fabric to acknowledgement of past wrongdoing by the industry. Some feel that this issue is root cause of most the ills that are attributed to the gold mining industry. These include high prevalence of HIV, tuberculosis, silicosis and other occupational lung diseases (Expert 2, 2011).

Company A's response has been to implement the ***24 Hours in the Life of a Company A Employees programme*** includes components to ensure that employees are well housed, have access to recreational activities and enjoy a healthy lifestyle. The company continues

to roll out our R550 million employee housing project, launched in South Africa in 2009, and handed over 192 homes to employees and their families during the 2010.

Company B identified this challenge and termed its response: ***Hostel de-densification process***. According to the company's sustainability report, the housing strategy has a dual thrust: promoting home ownership and integrating mining communities into local structures. Core to this is upgrading hostels into single occupancy or family units. As at June 2011, 25% of Company B's employees had moved from hostels to single or family accommodation. In addition, five old hostels are being converted to create 1 700 family units by 2014.

The key driver to Company C's response has been the requirements of the Mining Charter. In the 2008 sustainability report, Company C stated that upgrading of hostels had for several years been a priority for the company and government as a way of remedying the industry's migrant labour historical legacy.

Company C's management has publicly acknowledged the system was unacceptable and unsustainable, but went on to admit that there were no quick and simple ways to fix the legacy. As such, the company devised a gradualist approach involves a combination of initiatives:

- giving workers greater accommodation choices including through a living out allowance;
- reducing room densities;
- increasing the availability of temporary or permanent family accommodation; and

- democratising hostel management.

Progress on the initiatives was not reported on in the 2010 sustainability report.

Support the development of the community in which the organisation operates, including economic opportunities).

Company A's response to community development issues is informed by Social and Labour Plans (SLPs), which are approved by the DMR. During the 2010, the company invested about R42 million in community development and skills training projects. In line with the requirements of the SLPs, these projects are located in the areas around the company's mines, as well as in labour sending areas.

Company B declares: "Identifying and implementing sustainable socioeconomic development initiatives such as enterprise and community skills development in line with our business philosophy, and our commitments under social and labour plans." The company's corporate social responsibility (CSR) and local economic development (LED) activities span four key areas – education; socio-economic development; sports, arts and culture; and black economic empowerment (BEE) support in its labour-sending communities. In 2010, the company spent R23 million and R58 million in CSR and LED projects respectively.

According to Company C's sustainability report, the company invests substantially in host communities and labour sending areas. The community investment programme is a significant part the effort. The company defines community investment as the investment

of resources, including funds and in-kind contributions, in the community where the beneficiaries are external. In South

The researcher's observation is that companies do have different initiatives in response to the sustainability challenges. However, as highlighted in Chapter 5, there seems to be no or little collaboration between the companies. Additionally, according to Expert 8 the gold mining industry needs to start looking at the whole. She argues that there is a tendency to focus on indicators and money spent. She suggests that companies should be asking the following questions: Are people better off for working in the gold mining industry from wellbeing and public health perspectives? And, what are the impacts of the interventions?

6.2.3 Human Capital

Companies depend on individuals to function – they need a healthy, motivated and skilled workforce (Porritt, 2007 & SIGMA, 2001). Intellectual capital and knowledge management is increasingly recognised as a key intangible creator of wealth. Damaging human capital by abuse of human or labour rights or compromising health and safety has direct, as well as reputational costs. Porritt (2007) further suggests ways for organisations to enhance human capital and these were used by the researcher to assess the responses of the companies under review.

- Give employees access to training, development and lifelong learning and capture and sharing knowledge
- Respect human rights throughout its operations and geographical regions

- Ensure adequate health and safety arrangements, incorporating physical and mental wellbeing
- Provide a reasonable living wage and fair remuneration for employees and business partners
- Allow for and enhance recreation time and support individuals' active involvement in society.

All three companies report extensively on the above-mentioned issues. However, there appears to be concerns from some of the experts around the industry's inability to demonstrate that by working in the mining industry, the quality of life of an average mine-worker is much better than an average individual not working in the mines.

6.2.4 Manufactured Capital

The efficient use of manufactured capital enables companies to be flexible, innovative and increase the speed to market of products or services (Porritt, 2007). Additionally, manufactured capital and technology can be used to reduce resource use and enhance both efficiency and sustainability.

Some of the suggested ways to enhance manufactured capital include:

- Industrial ecology – looking at synergistic production systems where one organisation's waste streams are another's resources
- Bio mimicry – mimicking nature and natural processes in industrial processes and industrial systems design.

- Improvements in product systems (eco-efficiency and eco-innovation

The companies recognise the importance of manufactured capital. However, none of them prioritised it as one of the key focus areas. It would seem that from the research findings, manufactured capital is not fully enhanced by the gold mining companies.

6.2.5 Financial Capital

Sustainable organisations need a clear understanding of how financial value is created, in particular the dependence on other forms of capital (Porritt, 2007). Expert 8 doubts whether the gold mining industry can accurately assess the wider economic impacts of the its activities, products and services on society such as in creating wealth in the communities in which the organisation operates.

6.3 Research Question 2

What are the key drivers informing choice of sustainability strategies?

6.3.1 The role of global sustainability frameworks

Research findings suggest that global sustainability frameworks such as the ICMM's Sustainable Development Framework provide guidance to the gold mining industry in the implementation of sustainability strategies. Two of the three companies interviewed admitted are members of the ICMM and have committed implementing the ICMM's sustainability framework which includes adherence to its ten principles of sustainability and the commitment of member companies to transparent public reporting, comprehensive risk

management, sound corporate governance and independent, external assurance (ICMM, 2011).

Company B is not a member of the ICMM but asserts that: "We developed our policies in accordance with the principles of ICMM." Research further revealed that the Company A and C were also signatories and had membership to the Responsible Jewellery Council (RJC), an international not-for-profit organisation bringing together companies across the jewellery supply chain. The RJC members are committed to promoting responsible ethical, social and environmental practices in a transparent and accountable manner throughout the industry from mines to jewellery shops. Furthermore, Company A and C subscribe to the United Nations Global Compact and seek to align their operations and strategies with its ten principles in the areas of human rights, labour, environment and anti-corruption.

Results from experts' interviews revealed that other international bodies influencing the move to sustainability within the gold mining industry from investors' perspective include the Equator Principles, the United Nations Environment Programme and the IFC.

Overall, research supports the view that global sustainability frameworks are a key driver to implementing sustainability strategies within the gold mining industry.

6.3.2 Sustainability reporting and sustainability awards

As highlighted earlier in the report, all of the companies interviewed have chosen to produce a sustainability report as part of the suit of annual reports. Company B is the only company to produce an integrated in line with the requirements of King III. All three

companies interviewed subscribe to the Global Reporting Initiative's (GRI) Sustainable Reporting Framework. Additionally, all three companies are part of the SRI index.

The companies viewed sustainability reporting as a key driver as supported by the following statements:

"You cannot manage what you do not measure. It is critical to measures the correct indicators and the appropriate parameters, especially in light of the company driving continuous improvement. It is vital to set targets for progressive performance improvement and measure and adapt accordingly" (Company B).

"Sustainability reporting is taken very seriously and does impact positively on the sustainability thinking within the company" (Company C).

However, comments from the experts seem to suggest that evidence of reporting conventions prompting implementation of sustainability strategies within the gold mining industry was not strong. Instead, adherence to these conventions is as a result of choice and effort to improve the companies' reputation. This appears to go against the assertion that sustainability reports based on the GRI Framework can be used to demonstrate organisational commitment to sustainable development, to compare organisational performance over time, and to measure organisational performance with respect to laws, norms, standards and voluntary initiatives (GRI, 2011).

The findings support the concern that many companies tend to jump straight to the GRI's table of 79 indicators and attempt to tick them off one by one, with hastily prepared

policies, gift registers, whistleblowing hotlines and more, just to appear to be 'complying with' this new red tape (Freemantle, 2010).

Research findings further suggests that sustainability awards, while highly regarded by the gold mining companies, do not guide or influence implementation of sustainability strategies within the industry. This view is ably captured by Expert 8 who believes that the sustainability awards are used by companies in an attempt to enhance reputation rather than as a tool to highlight best practice and encourage continuous improvement in the move towards sustainability (Trialogue, 2011). Expert 5 commented: "CSR is a myth. What is contained in Sustainable Reports is not happening on the ground."

6.3.3 The Mining Charter

Research shows that the Mining Charter is central to the gold mining industry's response to the sustainability challenges facing South Africa. The **majority** of the experts believe that South Africa needs to redress historical inequalities and to facilitate meaningful participation of Historically Disadvantaged South Africans (HDSAs) in the mining and minerals industry (DMR, 2010). Therefore, the Mining Charter is viewed as a key driver to implementing sustainability strategies within the gold mining industry.

All the companies interviewed have new-order mining rights in terms of the Mining Charter and all three have social and labour plans (SLPs) with targets which have been developed with employees, communities and the DMR. An observation which is shared by one of the experts is that there seems to be a bigger emphasis on complying with the requirements of

the Mining Charter and as such opportunities to use it as a tool to help embed sustainability thinking into day to day decision making are not fully explored (Expert 3, 2011).

6.3.4 The Shareholder Value Model

Research findings suggest that the gold mining industry is by and large driven by factors that are focussed on managing today's business. Several experts used the example of the fascination with quarterly and annual results to support this contention. One of the experts used the term is the *"not- in- my-lifetime syndrome"* to highlight the approach to sustainability by the gold mining industry. There does not seem to be enough focus on the drivers that talks to building tomorrow's opportunities such as technology, learning and future market demands. This assertion is supported by the following statements:

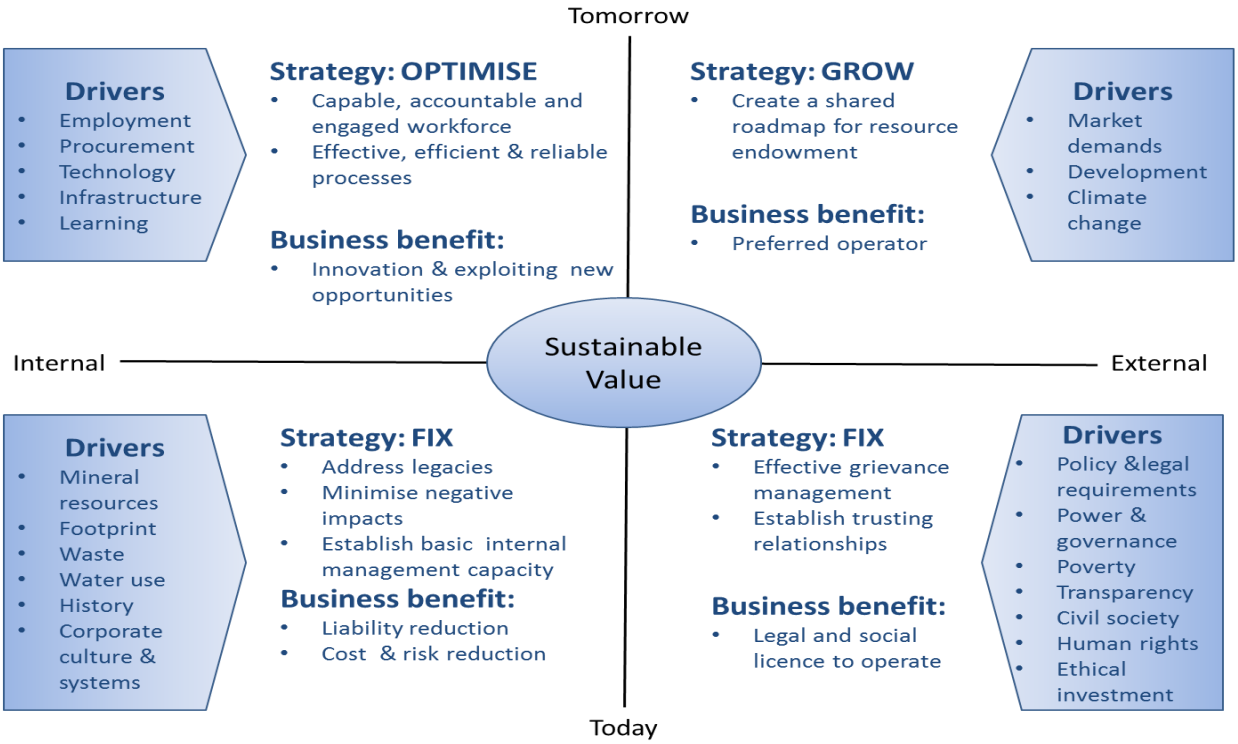
"Most gold mining companies are very strong in the left lower quadrant (LLQ) and left upper quadrant (LUQ). They are very weak in outside engagement. All the things that the companies are doing and reporting on is just passing gas against the volcano" (Expert 2, 2011)

Expert 3 commented: "Industry is concerned about the now. So, efforts focused on the LLQ and RLQ. They are not thinking about future – obviously there are exceptions."

"Very few companies are looking into the future - both internally and externally" (Expert 5, 2011).

"We are firmly in the LLQ. We are moving into right lower quadrant (RLQ)" (Expert 8, 2011)

Figure 2: Shareholder Value Model



On the hand, the companies interviewed believe that their approaches to sustainability contribute towards shareholder value creation. This appears to be in contradiction with the assertion that companies must perform well in all four quadrants of the shareholder value model if they are to create shareholder value **over time** (Hart & Milstein, 2003).

6.3.5 Industry maturity

The results of the research seem to suggest that the gold mining industry has not fully integrated sustainability thinking into day to day decision making. Although the responses varied in terms of plotting the industry on the maturity model (Kane, 2006), there appears to be a general view that the industry is somewhere between compliance to legislation and regulations and management systems - where an overall strategy is in place and short term targets are defined, however sustainability is still parked in a silo.

The following were some of the responses:

"I would say it is all about compliance and lip service. And this is why investors think that there is no future here" (Expert 3, 2011)

Expert 7 commented: "They are still compliance driven; trying to get it right legally and I think implementing management systems in order to get that compliance."

"The industry is somewhere lip service and a bundle of projects. I doubt whether full integration can occur in the gold industry because our mines were not designed with sustainability in mind" (Expert 2, 2011).

"We are basically between bundle of projects and management systems" (Expert 1, 2011)

"They are still compliance driven they trying to get it right legally and I think implementing management systems in order to get that compliance, plus then a whole bunch of projects that are not integrated into the management system" (Expert 7, 2011)

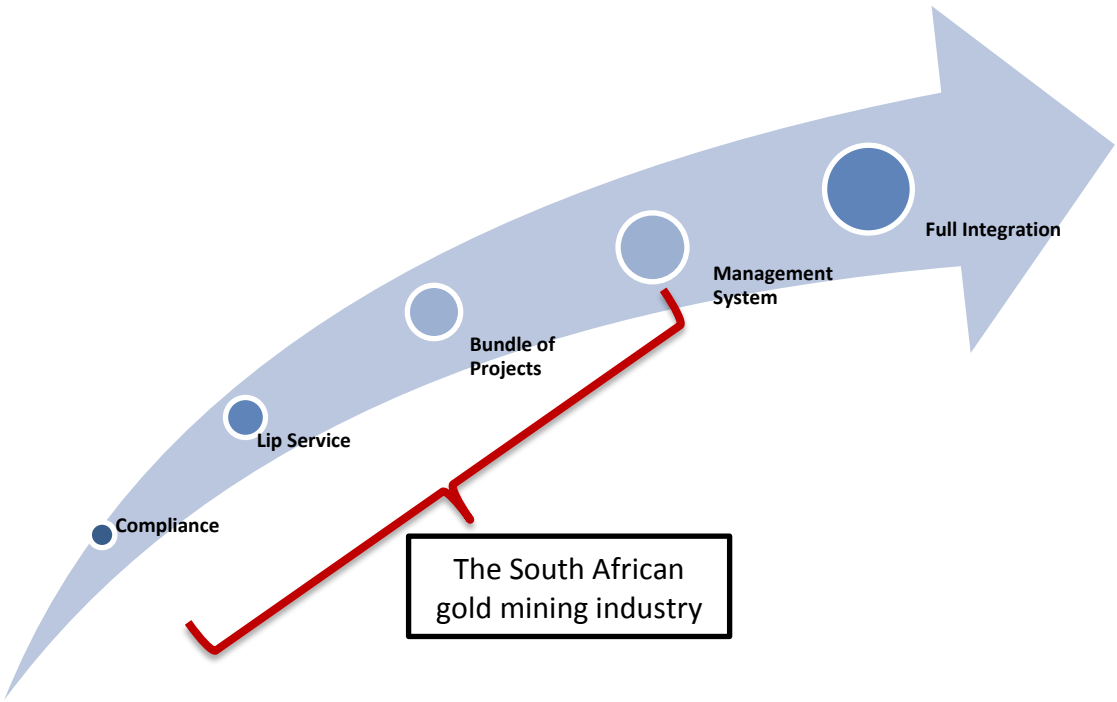
From the companies' perspective, the following statements capture the views on sustainability maturity:

"I think the mining industry is at crossroads at the moment. There is a lot of emphasis on CSI than there is about making an impact. As businesses, mining companies can have limited impact unless they start to collaborate." (Company A)

"The company needs to have a coherent strategy if it is to deal with the challenges it faces in a matured fashion. Sustainability thinking needs to be embedded in the entire values and the thinking of leadership to avoid the knee jerk retain to challenges companies face" (Company C).

Company B said: "Management system. However, I would certainly not use this curve – it is far too simplistic."

Figure 3: Maturity Model



Source: Terra Infirma Consultants (2006)

Another view that on the maturity of the gold mining industry is that gold mining companies operate in silos when responding to the sustainability challenges. This seems to have led to many duplicative efforts that have failed exploit the economies of scale created by the mining industry. This assertion is supported by another prevalent opinion that suggests that the industry lacks visionary leadership. This will be discussed in the next section.

6.4 Research Question 3

What are the key impediments to embedding sustainability thinking in overall business strategies?

The literature review was largely focussed on defining the concept of sustainability; describing the different approaches to implementing sustainability strategies; and exploring some of the key drivers informing choice of strategy. The research findings highlight the following as themes in the responses on key impediments to embedding sustainability thinking in overall business strategies.

6.4.1 Leadership

One of the key findings from the interviews with the experts was the perceived lack of leadership in the gold mining industry. The general view was that all stakeholder groups; the mining companies, the relevant government departments, the labour unions, the Chamber of Mines and civil society; do not have the leadership capabilities to ensure that sustainability is embedded across the whole industry. This assertion was supported by responses from the companies who believed that leadership was the key to unlocking the

innovative thinking to mining sustainability. The following statements capture the views of the respondents:

"Sustainability thinking needs to be embedded in the entire values and the ***thinking of leadership*** to avoid the knee jerk retain to challenges companies face." (Company C)

"I am a bit concerned from a ***leadership perspective*** that people are not able to see beyond their lifetime" (Expert 6, 2011).

"It boils down to ***leadership*** from all stakeholders" (Expert 3, 2011).

"There seems to misalignment between the ***leadership*** of all the stakeholder groups and the people implementing the decisions" (Expert 5, 2011).

"***Leadership***: where is the statesmanship in the gold industry" (Expert 2, 2011).

"There is absolutely no question that we lack ***leadership*** in the industry" (Expert 6, 2011).

6.4.2 Collaboration and trust

Another key finding of the research is a view that the companies in the gold mining industry have failed to fully explore the opportunities provided by the economies of scale that they have created. The assertion is that gold mining companies are very competitive to an extent where they compete on issues that they ought to collaborate on. This view is expressed by several experts in the following statements:

"We cannot look at sustainability issues in ***isolation or in silos***" (Expert 8, 2011).

"There is ***massive duplication of efforts***. Everyone is doing their own thing. We are not using the ***economies of scale*** that we have created" (Expert 3, 2011).

"More ***collaboration is needed*** amongst the companies" (Expert 6, 2011).

"To deal with some of the sustainability challenges, ***we need a lot of collaboration'*** (Expert 2, 2011)

"Look at the Royal Bafokeng example. We need ***more collaboration***" (Expert 1, 2011)

"We need to ***exploit synergies, improve collaboration***. We need to set aside egos. We cannot compete against each when it comes to sustainability" (Expert 5, 2011)

"Bureaucracy especially on the regulatory front, over-regulation, inhibitory regulation, political agendas, ***lack of partnerships*** in implementing initiatives and individual independent indicatives as opposed regional initiatives with ***pooled resources***" (Company B)

6.5 Conclusion

The study sought to gain an enhanced understanding into how the gold mining industry responds to the challenges of sustainability in South Africa. Three of the four objectives were achieved.

Establish the strategic stances of South African gold mining companies on sustainability:

The results of the study showed that only two respondents made direct reference to the five capitals model. The two respondents, coming from an academic background, believe that sustainability is about understanding the dependencies and relationships between the different types of capital. Relating it to the mining industry, the respondents argue that sustainability is about how one translates natural capital into other forms of capital while preserving the underlying ecological base of our planet.

Furthermore, the findings seem to suggest that while the South African old mining companies do not have a common view of sustainability, their approaches and practices could be presented using the five capitals model. None of the gold mining companies interviewed referred directly to the five capital model. However, the information obtained from the sustainability reports suggests that although the companies do not directly refer to the five capitals as an approach, their sustainability practices can be packaged into model. One of the respondents agreed with this assertion and comments that there is not a single issue that does not fall into one of the capitals.

Identify key drivers and impediments to implementing sustainability strategies into the day-to-day decision making.

It appears that global sustainability frameworks and the Mining Charter are key drivers in the implementation of sustainability strategies in the gold mining industry. Whilst showing improved transparency by embracing sustainability reporting, there remains doubt about the real value of the sustainability reports in demonstrating organisational commitment to

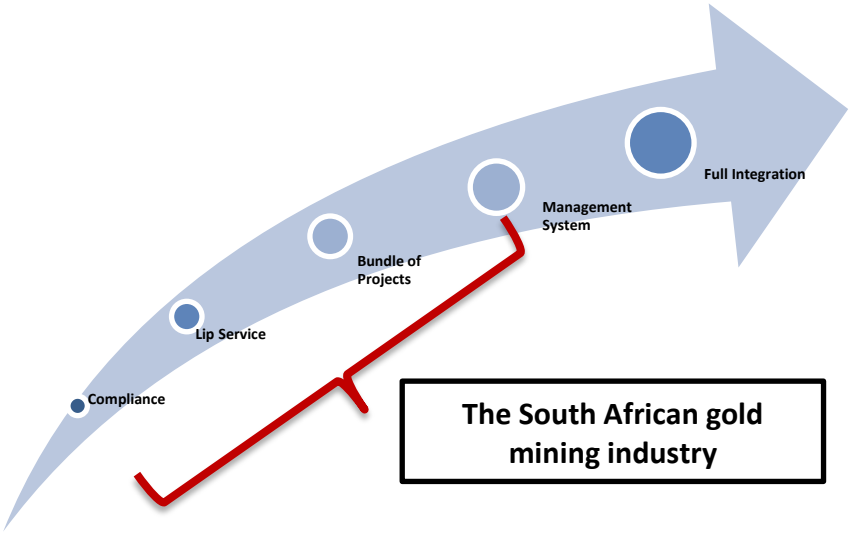
sustainable development. It would seem that adherence to reporting conventions are as a result of choice and effort to improve the companies' reputation.

Although not covered in the literature review, the findings around key impediments to implementing sustainability strategies were universal. It appears that without a visionary leadership that builds trust and encourages multi stakeholder collaboration, the move towards a truly sustainable gold mining industry will be impeded.

Establish the maturity levels of the practices adopted by the companies

There appears to be concerns about the maturity of the gold mining industry in implementing sustainability strategies. Respondents believe that the industry will need a concerted effort to fully integrate sustainability into day to day decision making.

Figure 3: Maturity Model



Establish an approach that can be used to assist South Africa's gold mining companies embed sustainability in their strategies.

This objective is discussed in chapter seven.

Chapter 7: Conclusion

7.1 Introduction

The previous chapter provided an analysis of the research findings. This chapter will conclude the research through: summarising the key findings, providing recommendations based on the findings and highlighting potential areas for future research.

The study sought to gain an enhanced understanding into how the gold mining industry responds to the challenges of sustainability in South Africa. Specifically, the study aimed to:

- Establish the strategic stances of South African gold mining companies on sustainability
- Identify key drivers and impediments to implementing sustainability strategies into the day-to-day decision making.
- Establish the maturity levels of the practices adopted by the companies
- Establish an approach that can be used to assist South Africa's gold mining companies embed sustainability in their strategies.

7.2 Summary of the key findings and recommendations

7.2.1 Approach to sustainability

The South African gold mining industry is a sunset industry in that until 2007, the country was the world's largest gold producer. Since then, South Africa's share of global gold output has consistently decreased; with China, Australia and the United States becoming the top

three respectively. However, the gold mining industry remains a key contributor to economic development in South Africa.

So, in a country with deep mining roots and a need for significant social upliftment, it does not come as a surprise that eyes turn to the mining industry to breach the gap and to bring about an immediate improvement (Badenhorst, 2011).

By and large, the South African gold mining industry recognises its responsibilities towards society and the ecosystem. However, the industry does not have a common view on how to respond to sustainability challenges in the country. The varied responses to the question on the definition of sustainability confirm the broadness of the concept. This links to the assertion in chapter two that sustainability is an evolving construct but at the heart of all the definitions there is a fundamental thread that speaks to parallel care and respect for the ecosystem and for the people within.

The gold companies interviewed had different views and approaches to sustainability. Currently, sustainability is still viewed in the short term with the focus being on liability, cost and risk reduction. There is an urgency to address legacy issues and minimise the negative impacts of the industry on society and the ecosystem. Additionally, the gold mining industry is pre-occupied with legal compliance and that has led to questions about the industry commitment to sustainable development.

Some companies are beginning to look outwards in their strategies as there is a recognition that establishing trusting relationships with the stakeholders is key to obtaining and retaining the social licence to operate. However, the nature of the engagement has been questioned. There are concerns that the stakeholder engagement by the gold mining industry is not entirely altruistic; speaking to the credibility and trust deficit built up over the last century.

With a few exceptions, it appears that the gold mining industry is not thinking about building tomorrow's opportunities. As highlighted throughout the report, there seems to be "life-of-mine" thinking in the industry. This speaks to the assertion that sustainability planning and implementation is tied to the current life of mine. The industry is not exploiting new opportunities fully. Furthermore, there is a sense that innovation and anticipation of future market demands within the industry could improve.

Overall, the South African gold mining industry's response to sustainability challenges is largely focussed on short term liability, risk and cost reduction. There is also a significant concern with legal compliance. Whilst there is a move to more meaningful stakeholder engagement, the industry faces a significant credibility and trust deficit. A key question that the mining industry has to answer is whether implications from mining activities are net positive for human society and the ecosystem.

7.2.2 Key drivers

Global sustainability frameworks

The global sustainability frameworks play a significant role in the gold mining companies' response to sustainability challenges. The ICMM's Sustainable Development Framework has particularly guided the industry's approach to sustainable development.

The Mining Charter

There is a general recognition within the gold mining industry that South Africa needs to redress historical inequalities and to facilitate meaningful participation of Historically Disadvantaged South Africans (HDSAs). Therefore, the Mining Charter is viewed as a key driver to implementing sustainability strategies within the industry. However, there are concerns that more emphasis is placed on complying with the requirements of the Mining Charter and as such opportunities to use it as a tool to help embed sustainability thinking into day to day decision making are not fully explored.

Sustainability Reporting

Sustainability reporting does not appear to be a key driver to embedding sustainability strategies. While the aim of reporting is to demonstrate organisational commitment to sustainable development, to compare organisational performance over time, and to measure organisational performance with respect to laws, norms, standards and voluntary initiatives; it seems that the companies' adherence to the reporting conventions is as a result of choice and effort to improve reputation.

7.2.3 Key impediments

Leadership

A key impediment to embedding sustainability strategies across the gold mining industry seems to be absence of responsible leadership from all stakeholder groups. With a few exceptions, it would appear that the industry suffers from short term thinking and not-in-my-life-time mentality.

Credibility and trust deficit

Whilst many mining houses have a much-improved record regarding environmental management and social responsibility, South Africa's history is littered with examples of abusive practices, disregard for the environment and abandoned operations that took no account of the environmental or social consequences (The Sustainable Business Handbook, 2008).

Furthermore, the social credibility and legitimacy of the industry has been based almost entirely on the financial and job contribution to the country. Findings point to the fact that that legitimacy is being rapidly eroded by perceptions of shortcomings in social and environmental performance, as well as inequitable distribution of costs and benefits between sectors of society (Chamber of Mines, 2009). It would seem that until the industry can emerge from the shadow of this legacy, efforts to move towards a sustainable future will be met with suspicion.

Lack of collaboration

As highlighted earlier in the report, the gold mining industry's response to the sustainability challenges is hampered by silo mentality. The fragmented approach with which the industry has approached sustainable development issues is mirrored to some extent in civil society, government and labour (Chamber of Mines, 2009). The industry's collective failure to leverage the benefits of scale in a coherent, coordinated and collaborative manner have created misalignment of expectations, skewed policy responses, and a poor reputation for the industry.

7.3 Recommendations on how to approach sustainability

7.3.1 Responsible leadership

The gold mining industry needs visionary leadership to guide it through the sustainable development journey. It needs responsible leadership. Unlike traditional leadership, which understands the leader–follower relationship as an unequal relationship with the leader being in charge; responsible leadership is about building and sustaining good relationships to all relevant stakeholders (Maak & Pless, 2006). Building on the work done by Salovey and Mayer (1990), Maak and Pless (2006) argue that responsible leaders need to have relational intelligence; a combination of emotional intelligence and ethical intelligence. Both help leaders relate and interact with their stakeholders in an interpersonally and mature way with care, empathy and foresight.

A responsible leader understands the dependencies between the different types of capital and is a visionary, a citizen, a steward and a servant (Maak & Pless, 2006).

Furthermore, the industry needs to pursue value-creating activities related to sustainability and integrating the organisational elements—mission and values, systems and processes, internal and external leadership, and organisational design—that support such initiatives. The fragmented, reactive approach—launching ad hoc initiatives to enhance credentials, to comply with regulations, or to deal with emergencies—rather than treating sustainability as an issue with a direct impact on business results, is no longer enough.

7.3.2 Re-establish credibility and trust

The gold mining industry cannot move into a position of social credit until it has addressed the environmental and social deficits that were created in the name of economic growth, in a politically illegitimate climate (Chamber of Mines, 2009).

There is a perception that the industry is presenting a defensive wall, from behind which it challenges facts that are publicly known. The need is for the industry to display leadership that will openly and transparently disclose the issues for honest examination and discussion.

7.3.3 Collective effort needed

The gold mining industry has to act in unison in its approach to sustainability. There is a need to have one national vision towards which all stakeholders will aim. The industry is encouraged to form cooperative relationships and partnerships at both local and international levels.

At the local level, the tripartite partnership between government, employers and labour needs to be reviewed. Each partner will have to undertake specific actions towards attainment of the national vision on sustainable. Furthermore, the industry needs to exploit the economies of scale already created and involve other players in civil society such as non-governmental organisations, academic institutions and other industries.

Internationally, the industry needs to continue engagement with organisations like the ICMM, UNGC, RJC, GRI, WGC, VPSHR and the EITI.

7.3.4 Revisit the annual report

King III requires companies to break the traditional mould by integrating sustainability report into the annual report. The gold mining industry needs to take advantage of this and not merely include a sustainability section in the annual report. Worthington-Smith and Freemantle (2010) argue that the integrated report is aimed at forcing sustainability onto the same strategic footing as financial issues. Reports need to be integrated in a way that shows how sustainability issues permeate the business, their implications for the business, and how the business is responding. Furthermore, the integrated report should be able to answer the following questions (Worthington-Smith and Freemantle, 2010):

“Are all the forms of capital being employed by the company to make profits now, not jeopardising its ability to make a profit in the future?”

“How is the company responding to all its risks and opportunities so that it improves its ability to make a profit in the future?”

7.4 Opportunities for further research

7.4.1 Does sustainability performance really matter to investors?

The reputation of the gold mining industry is so tarnished by history. Poor health and safety performance, environmental pollution, perceptions of human rights abuses and antagonistic community relationships anchor the industry in the past (Chamber of Mines, 2009).

The Chamber of Mines (2009) argues that the gold mining industry cannot be measured by different yardsticks when determining "progress" in the financial capital and other forms of capital. Efforts and energy spent on "improving" financial returns is not rewarded; financial results and outcomes are. The Chamber of Mines is concerned about the fact that progress in measures of sustainable development is acknowledged by the level of effort, money and energy expended; which does necessarily equate to actual performance.

Against this background, does sustainability performance really matter in the eyes of investors? Or are they satisfied with knowing that the companies are spending money and effort dealing with sustainability challenges?

7.4.2 Responsible leadership: how do we bring it to practice?

Maak and Pless (2006) question the relevance of the traditional view of leadership in this era of challenges:

- The ethics challenge - how to recognise, assess and deal with a multitude of stakeholder interests, based on different world views and values, how to cope with ethical dilemmas;

- The diversity challenge - how to lead diverse people across distance, businesses, countries and cultures; how to create a multicultural and inclusive environment;
- The business in society challenge - how to earn the licence to operate; how to make the business case for responsibility; how to become a good corporate citizen); and,
- The stakeholder challenge – how to create sustainable and trustful relationships with different stakeholders

The authors advocate the concept of responsible leadership and provide what they view as the qualities of such a leader. Further research is required to gain insights into how to practically breed responsible leaders as this was identified as key to sustainable development efforts in the mining industry.

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Appendix 1: Consistency Matrix

CONSISTENCY MATRIX			
Research Questions	**Literature Review**	**Data Collection**	**Analysis**
❖ **Research Question 1: Is there a common understanding of the term sustainability within the gold mining industry?**	Hart, 2005 Maak & Pless, 2009 Werbach, 2009 Freemantle, 2010 Crews, 2010.	**In-depth semi-structured interviews with industry experts and company representatives.**	• **Transcription** • **Content analysis**
❖ **Research Question 2: What are the key drivers informing choice of sustainability strategies?**	Maak & Pless, 2006 Mirvis *et al*, 2010	**In-depth semi-structured interviews with industry experts and company representatives.**	• **Transcription** • **Content analysis** •
❖ **Research Question 3: What the key impediments to embedding sustainability thinking in overall business strategies?**	Porritt, 2007 Spitz & Trudinger, 2009 International Institute for Sustainable Development, 2002. Economist Intelligence Unit, 2009 Cagnin *et al*, 2005	**In-depth semi-structured interviews with industry experts and company representative.**	• **Transcription** • **Content analysis**

Appendix 2: Industry Expert Interview Questionnaire

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Expert interview guideline

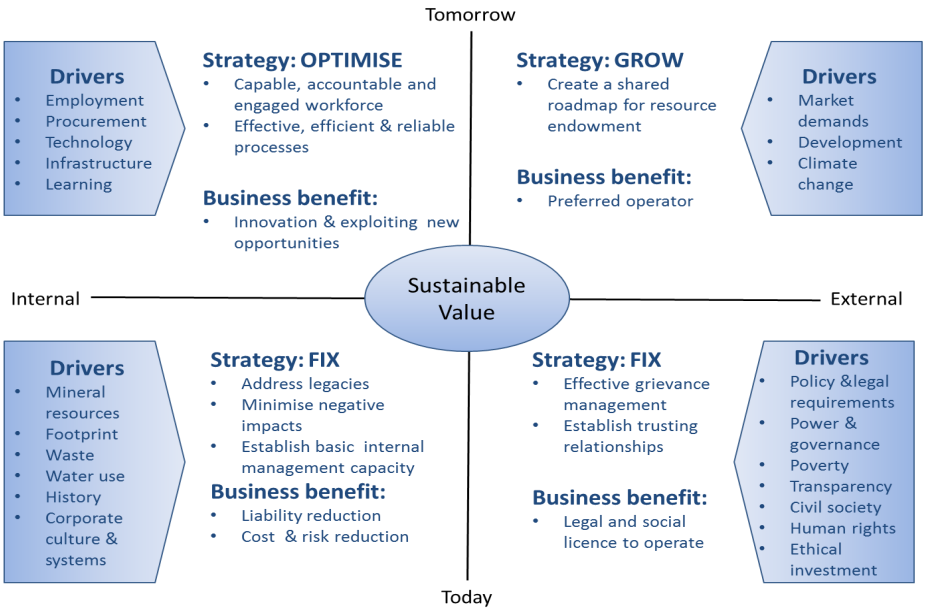
1. Sustainability is a broad and evolving construct that defies a universally agreed definition. It has come to have many different meanings. What is your understanding of the construct?
2. What do you think the gold mining companies understand about sustainability?
3. In your view, what are key drivers of sustainability within the mining industry?
4. Similarly, what are the impediments to implementing sustainability strategies into the day-to-day decision making?
5. A review of literature reveals a growing support for the five capitals model/framework and its application to sustainability within companies. Accordingly, a sustainable organisation will maintain and, where possible, enhance these stocks of capital assets, rather than deplete or degrade them. How would assess the mining industry's understanding of these five capitals? Please give examples.
    - **Natural (ecological) capital -** Natural capital (also sometimes referred to as environmental or ecological capital) is the natural resources (energy and matter) and processes needed by organisations to produce their products and deliver their services. This includes *sinks* that absorb, neutralise or recycle wastes (forests, oceans); *resources*, some of which are renewable (timber, grain, fish and water), whilst others are not (fossil fuels); and *processes*, such as climate regulation and the carbon cycle, that enable life to continue in a balanced way
    - **Human capital -** incorporates the health, knowledge, skills, intellectual outputs, motivation as well as the individual's emotional and spiritual capacities.
    - **Manufactured capital -** material goods and infrastructure owned, leased or controlled by an organisation that contribute to production or service provision, but do not become part of its output. The main components include buildings, infrastructure and technologies
    - **Social capital -** any value added to the activities and economic outputs of an organisation by human relationships, partnerships and co-operation. From an internal perspective, social capital takes the form of shared values, trust, communications and shared cultural norms which enable people to work

cohesively and so enable the organisation to operate effectively. Externally, social structures help create a climate of consent, or a licence to operate, in which trade and the wider functions of organisations are possible.

- **Financial capital –** this is the traditional primary measure of business performance and success (the "single bottom line") in terms of reporting performance to shareholders, investors, regulators and government. Sustainable organisations need a clear understanding of how financial value is created, in particular the dependence on other forms of capital

6. Over the years, academics, consultants and companies have grappled with the business case for sustainability. In your view, is there a business case for sustainability?

7. Hart and Milstein (2003) developed a model (below) that links all the aspects of global sustainability challenges to the creation of shareholder by companies. According to the authors, applying the model can assist companies to identify strategies and practices that contribute to a more sustainable world while simultaneously driving shareholder value. Companies must perform well in all four quadrants of the model if they are to generate shareholder value over time. How would assess the industry's performance in the four quadrants?

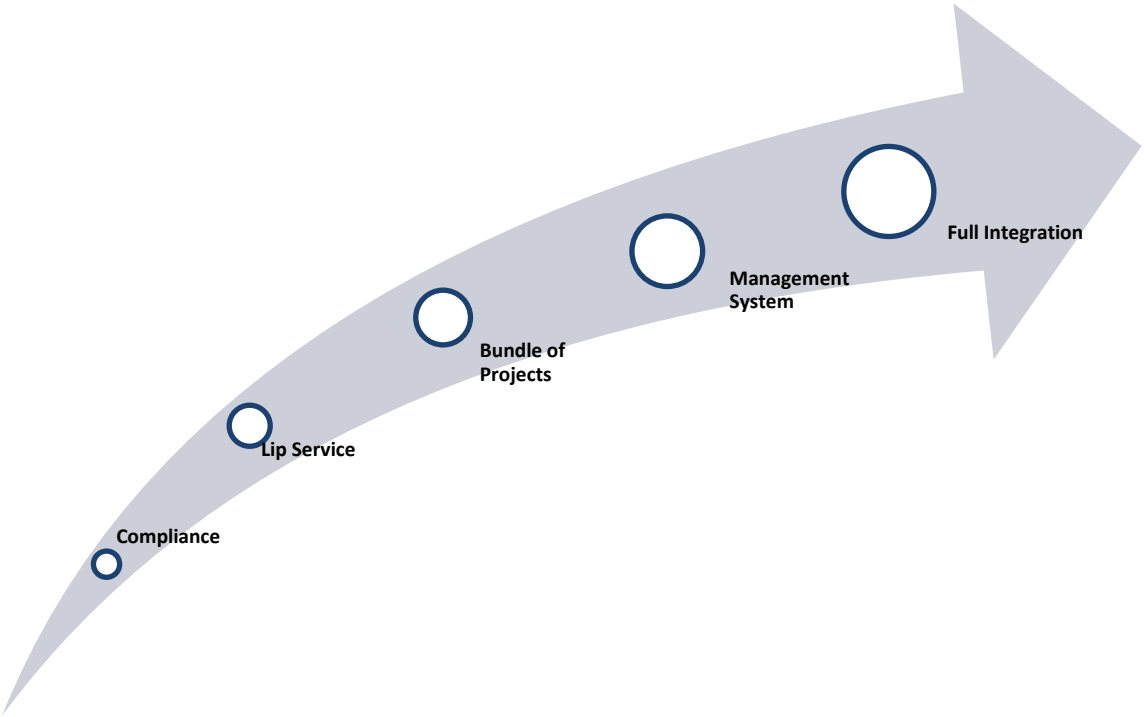


Notes:

- The lower-left quadrant focuses on those aspects of performance that are primarily internal; and near-term in nature: cost and risk reduction. Unless companies can operate efficiently and reduce risk commensurate with returns, shareholder value will be eroded.

- The lower-right quadrant looks at performance dimensions that are near-term in nature but includes salient stakeholders external to the company: regulators, communities, NGO's, suppliers, customers and the media. Companies' right to operate may be called into question unless stakeholder interests are respected.
- In the upper- left quadrant of the model, companies must not only perform in today's business, but should also be constantly mindful of generating products and services for the future. This means developing or acquiring the skills, competencies, and the technologies that reposition the company for future growth.
- The upper- right quadrant focuses on identifying the needs that will define the growth markets of the future. Growth the company to either offer new to existing customers or tap into previously unserved markets.

8. In terms of sustainability maturity, where would you place the gold mining industry?



Source: Terra Infirma (2006)

9. What do you think companies should do to reach the full integration stage of sustainability maturity?
10. Is there anything else that you would like to add that may be relevant to this research?

Appendix 3: Company Interview Questionnaire

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OF BUSINESS SCIENCE
University of Pretoria

Company interview guideline

1. Sustainability is a broad and evolving construct that defies a universally agreed definition. It has come to have many different meanings. What is your company's understanding of the construct?

2. What do you think the other gold mining companies understand about sustainability?

3. In your view, what are key drivers of sustainability within the mining industry?

4. Similarly, what are the impediments to implementing sustainability strategies into the day-to-day decision making?

5. A review of literature reveals a growing support for the five capitals model/framework and its application to sustainability within companies. Accordingly, a sustainable organisation will maintain and, where possible, enhance these stocks of capital assets, rather than deplete or degrade them. How would assess your company's performance in the five areas? Please give examples.

   - **Natural (ecological) capital -** Natural capital (also sometimes referred to as environmental or ecological capital) is the natural resources (energy and matter) and processes needed by organisations to produce their products and deliver their services. This includes *sinks* that absorb, neutralise or recycle wastes (forests, oceans); *resources*, some of which are renewable (timber, grain, fish and water), whilst others are not (fossil fuels); and *processes*, such as climate regulation and the carbon cycle, that enable life to continue in a balanced way
   - **Human capital -** incorporates the health, knowledge, skills, intellectual outputs, motivation as well as the individual's emotional and spiritual capacities.

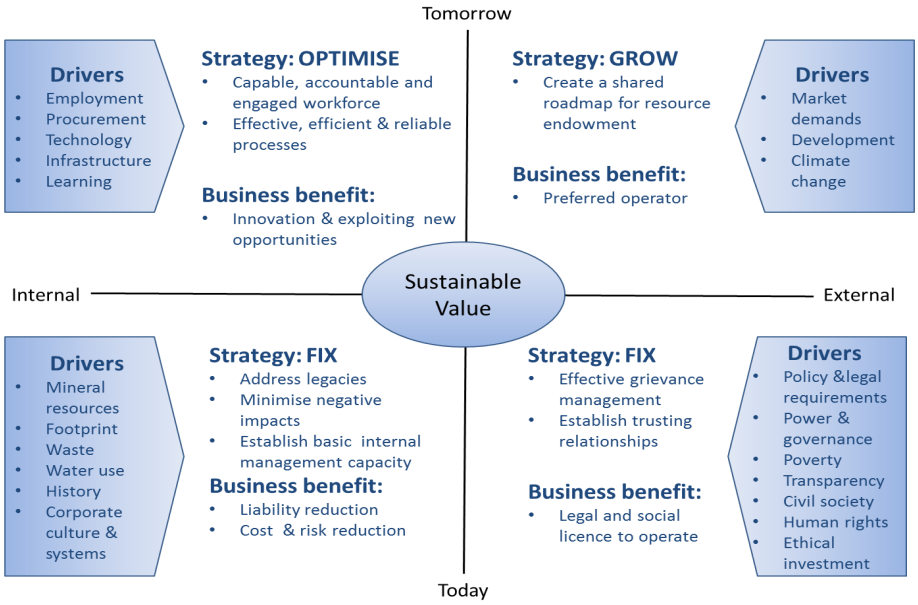
- **Manufactured capital -** material goods and infrastructure owned, leased or controlled by an organisation that contribute to production or service provision, but do not become part of its output. The main components include buildings, infrastructure and technologies

- **Social capital -** any value added to the activities and economic outputs of an organisation by human relationships, partnerships and co-operation. From an internal perspective, social capital takes the form of shared values, trust, communications and shared cultural norms which enable people to work cohesively and so enable the organisation to operate effectively. Externally, social structures help create a climate of consent, or a licence to operate, in which trade and the wider functions of organisations are possible.

- **Financial capital –** this is the traditional primary measure of business performance and success (the "single bottom line") in terms of reporting performance to shareholders, investors, regulators and government. Sustainable organisations need a clear understanding of how financial value is created, in particular the dependence on other forms of capital

6. Over the years, academics, consultants and companies have grappled with the business case for sustainability. In your view, is there a business case for sustainability? Please elaborate.

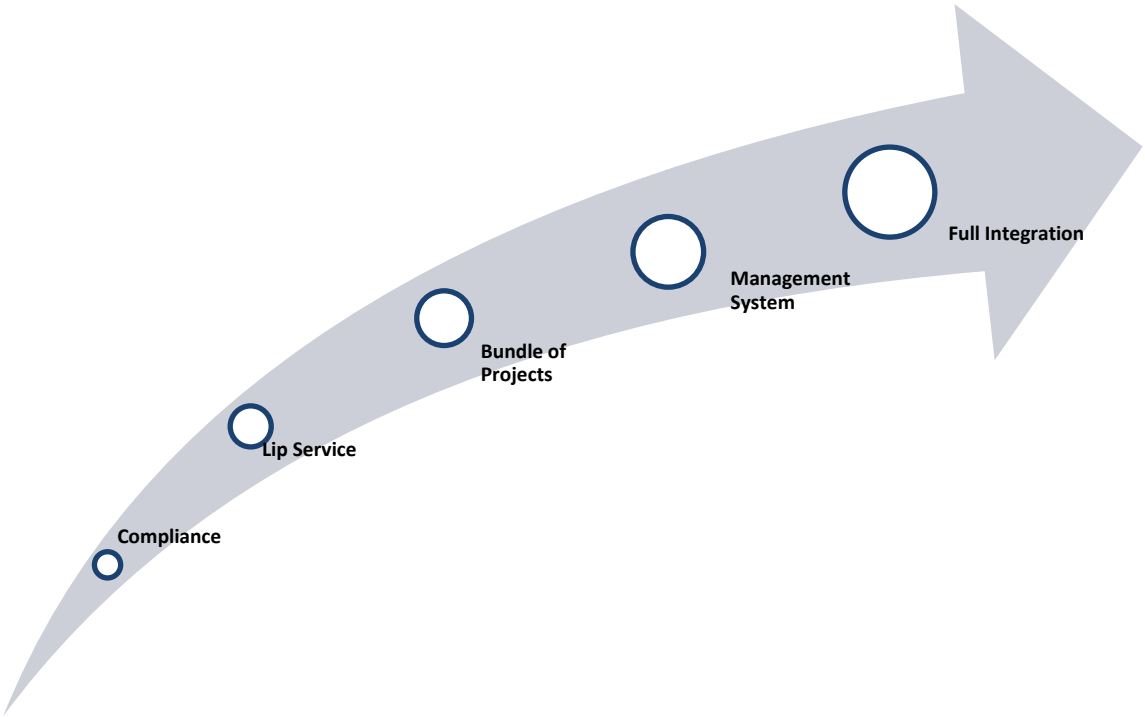
7. Hart and Milstein (2003) developed a model (below) that links all the aspects of global sustainability challenges to the creation of shareholder by companies. According to the authors, applying the model can assist companies to identify strategies and practices that contribute to a more sustainable world while simultaneously driving shareholder value. Companies must perform well in all four quadrants of the model if they are to generate shareholder value over time. How would assess company's performance in the four quadrants?



Source: Hart & Milstein (2003)
Notes:

- The lower-left quadrant focuses on those aspects of performance that are primarily internal; and near-term in nature: cost and risk reduction. Unless companies can operate efficiently and reduce risk commensurate with returns, shareholder value will be eroded.
- The lower-right quadrant looks at performance dimensions that are near-term in nature but includes salient stakeholders external to the company: regulators, communities, NGO's, suppliers, customers and the media. Companies' right to operate may be called into question unless stakeholder interests are respected.
- In the upper- left quadrant of the model, companies must not only perform in today's business, but should also be constantly mindful of generating products and services for the future. This means developing or acquiring the skills, competencies, and the technologies that reposition the company for future growth.
- The upper- right quadrant focuses on identifying the needs that will define the growth markets of the future. Growth the company to either offer new to existing customers or tap into previously unserved markets.

8. In terms of sustainability maturity, where would you place your company?



Source: Terra Infirma (2006)

9. What do you think your companies should do to reach the full integration stage of sustainability maturity?
10. Is there anything else that you would like to add that may be relevant to this research?

Appendix 4: Consent Form

Informed Consent

I am conducting research as part of an MBA with GIBS. The research is aimed at gaining a better understanding into how the gold mining industry is responding to the challenges of sustainability in South Africa. Specifically, the study aims to:

- Establish the strategic stance of South African gold mining companies on sustainability and responsible leadership,
- Identify key drivers and impediments to implementing sustainability strategies into the day-to-day decision making.
- Identify practices adopted by the gold mining houses in pursuing sustainability
- Identify qualitative and quantitative benefits and costs associated with adopting these practices
- Establish an approach that can be used to assist South Africa's gold mining companies embed sustainability in their strategies

Data collection will be in the form of semi-structured, open-ended interviews. The interviews will be recorded and later analysed. The information provided will be treated as confidential and the company's particulars will not be disclosed. It is anticipated the interview will last one hour to one hour and half.
Your participation is voluntary and can be withdrawn anytime. Should you need further clarification please do not hesitate to contact me or my supervisor. Our details are provided below:

Researcher: Brian Mathibe
E-mail: brmathibe@anglogoldashanti.com
Mobile: +27 82 818 6375

Research Supervisor: Colleen Magner
E-mail : magner@reospartners.com
Tel: +27 82 337 7729

Signature of participant:_____ Date: _____
Signature of researcher: _____ Date: _____

Appendix 5: Research Schedule

No.	Task	From	To
1.	1st meeting with Supervisor	28 March	
2.	Deadline 1st draft	8 April	
3.	Workshop: Research Proposal	21 April @17h30	
4.	**20 page proposal**	27 April @ 08h00	
5.	Feedback from Supervisor	Monday, 3 May 2011	
6.	Strategic Finance Value Creation Elective	Thursday, 12 May	Sunday, 15 May
7.	MBA/ PDBA Family Day	Sunday, 15 May	
8.	Chapter 1-4 1st draft and sign off	Friday, 20 May	Friday, 27 May
9.	**Ethical clearance**	Tuesday, 26 July	
10.	Economics of Organisational Strategy Elective	Monday, 20 June	Thursday, 23 June
11.	**Interviews with Industry Experts and Analysis**	August	End September
12.	**Interviews with company representatives and analysis**	August	End September
13.	Sustainability in the Environment Elective	Thursday, 7 July	Sunday, 10 July
14.	Workshop – Chapters 1-4	Monday, 11 July @ 17h30	
15.	**Analysis of results**	August	End September
16.	Managing in Frontier Emerging Markets Elective	Thursday, 7 August	Sunday, 14 August
17.	Workshop – Chapters 4&5	Monday, 22 August	

		@ 17h30	
18.	Strategy Execution and Culture: Getting them right together Elective	Monday, 5 September	Thursday, 8 September
19.	Workshop – Chapters 5,6,7	Monday, 26 September	
20.	**Conclusion write-up**	Monday, 2 October	Sunday, 6 November
21.	Global Business Strategy	Saturday, 1 October	Sunday, 2 October
22.	Global Elective	Wednesday, 5 October	Thursday, 20 October
23.	**FINAL SUBMISSION DEADLINE!!!**	Wednesday, 9 November	