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PROPOSALS FOR THE REGULATION OF THE SOUTH AFRICAN PRECIOUS METALS INDUSTRIES IN THE LIGHT OF DOMESTIC AND GLOBAL DEVELOPMENTS

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A thesis submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Doctor of Philosophy.

Johannesburg, 2016

DECLARATION

I declare that this thesis is my own unaided work. It is being submitted in fulfilment of the requirements for the Degree of Doctor of Philosophy to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

SIGNATURE:

…….. day of ……..., ……...

ABSTRACT

The Precious Metals Industry in South Africa is highly-regulated compared with other mining and trading countries in the western world which have either deregulated their precious metals industries, have only partial controls or have never seen the need to regulate gold and platinum-group metals specifically. South Africa has a specific Act of parliament, the Precious Metals Act, 2005 (a modification of Chapter 16 of the Mining Rights Act, 1967), that regulates possession, trading and manufacture of precious metals. Apart from the Russian Federation, no other country in the world regulates gold and platinum-group metals possession, trading and fabrication to the extent still done in South Africa. The requirement for such stringent controls was based on the country's pre-eminence in the production of gold and platinum over the past fifty years, exchange controls (in the case of gold) and the contribution of gold and platinum-group metals to foreign exchange earnings and to the country's economy as a whole.

However, much has changed in South Africa, in the world and indeed in the precious metals industries domestically and globally and this work is the first attempt to discuss and analyse developments and proposals that are impacting on the regulation of the precious metals industries in South Africa. Of these, the World Gold Council's Conflict-Free Gold Standard provides a case for industry self-regulation to complement, or substitute for government regulation in future. The hypothesis at the Proposal Stage of this study was that the precious metals industry in South Africa is over-regulated and should be deregulated. In this study, this hypothesis is explored and debated.

The Resource Nationalism -motivated proposals, including Producer-Country Price for Platinum, OPEC-type trade bloc for platinum, precious metal exchange and single-channel marketing of platinum, were analysed in this study. It was concluded that these are wanting in terms of cost/benefit or problematic in terms of international agreements and trade and competition laws.

The Precious Metals Act, 2005 itself was also critically analysed with a view to evaluating what could be regulated better or deregulated in the light of recent developments and proposals. It was found, ironically, that the old problem of illegal mining and trading needs to be brought under control before deregulation of the precious metals industry can begin. Nevertheless, in the run-up to deregulation (in an estimated 10 to 15 years), industry self-regulation, co-regulation (with industry) hallmarking, and a re-examination of how beneficiation is promoted should be considered.

DEDICATION:

In memory of all mineworkers who lost their lives in gold and platinum mines since mining began in South Africa

ACKNOWLEDGEMENTS

The author is indebted to Thomson Reuters GFMS, the World Gold Council, Johnson Matthey and Virtual Metals whose data and/or information is used extensively in this study.

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LIST OF SYMBOLS AND ABBREVIATIONS

$	US dollar unless otherwise specified
R	South African Rand or Rands
BEE	Black Economic Empowerment
BRICS	Brazil, Russia, India, China and South Africa
CEO	Chief Executive Officer
CFO	Chief Financial Officer
DMR	Department of Mineral Resources
DPCI	Directorate for Priority Crimes Investigation
DTI	Department of Trade & Industry
EIA	Environmental Impact Assessment
EU	European Union
HDSA	Historically Disadvantaged South African
IMF	International Monetary Fund
Koz	Thousand troy ounces
LBMA	London Bullion Market Association
Moz	Million troy ounces
MPRDA	Mineral & Petroleum Resources Development Act, 2002
NGO	Non-governmental Organisation
OECD	Organisation for Economic Co-operation and Development
OPEC	Organisation of the Petroleum Exporting Countries
Pd	Palladium
PGM	Platinum-group metals
Pt	Platinum
SADPMR	South African Diamond & Precious Metals Regulator
SAPS	South African Police Service
SARS	South African Revenue Service
t	tons (metric)
UAE	United Arab Emirates
UK	United Kingdom
US	United States of America

USGS	United States Geological Survey
USA	United States of America
VAT	Value added tax
WGC	World Gold Council

CHAPTER ONE:

INTRODUCTION

OVERVIEW OF THE STUDY

Over the past few years, significant developments and influential proposals from high-ranking officials and organisations have impacted (or will impact if implemented, in the case of proposals) on the precious metals industries in South Africa and worldwide. Resurgence in resource nationalism (including calls for greater control over supply, trading and pricing of precious metals) and the push for greater beneficiation in African producer countries are amongst the most significant. A close third is a recent development – the World Gold Council's (WGC) Responsible Gold initiative and complementary Responsible Gold initiatives.

The Kimberley Process has given the diamond industry a clean, moral facelift[1], but can the same ever happen for the notoriously complex gold industry asks the Rand Refinery (2011), a South African member of the WGC implementing the Responsible Gold Standards in South Africa. In early 2011, the World Gold Council and its partners developed the "Conflict Minerals" and "Chain of Custody", standards that were being implemented by WGC members since 2012.

"Conflict Gold" is gold that contributes to or fuels conflicts in conflict zones including the DRC and its nine surrounding countries. While this issue is not a new one, it has been given legal force through the Dodd Frank Act in the USA – the home country of the US dollar – the currency in which gold is traded worldwide. As with the conflict diamond saga, the promulgation of the Dodd Frank Act by the USA and campaigning by NGO's carries with it the threat of stigmatising African gold in general (Horsley, 2011).

[1] *NB: "Clean, moral facelift" because Conflict Diamonds have been reduced from 4% of market in 2000 to less than 0.5% in 2015 & threats of consumer boycott of the industry have subsided since - in fact virtually non-existent at present. Moreover, the UN continues to back the initiative each year.*

The World Gold Council's scheme covers the chain from mine to refinery, while the Responsible Jewellery Council (RJC) and the Electronics Industry Citizenship Coalition (EICC) have initiatives to manage the chain downstream from the refinery to the end consumer. These have also been implemented since the second half of 2012.

The issue of sustainability and materiality has also become a topical issue recently. The negative impact of mining on local communities both socially and environmentally, receives much media coverage. Sustainability becomes a materiality issue for mining companies when there is a significant risk to water, energy and other resources; and where climate shifts can disrupt the availability of raw materials and threaten the well-being of employees and customers (Makower, 2012). Materiality has also become topical of late in the context of integrated reporting for companies, including mining and mineral processing companies. In this study, the question of whether regulation of sustainability and materiality is necessary in the South African context is looked into.

The upward trend in the precious metal prices from 2002 to 2012 has also had an impact, inter alia prompting new frontiers to be to be explored, viz., Urban Mining and the Ocean. Urban mining is essentially the process of reclaiming compounds and elements from products, buildings and waste. It is a new global industry which encompasses any metal or material that is recyclable. E-waste (electronics waste material) recycling is relevant to this study, as it involves the recovery of precious metals contained in consumer electronics and electrical contacts in buildings. This study looks at the current status of urban mining and new policies and technologies that are making it viable and concludes on whether additional regulation is required.

As the gold grades of the larger land deposits mined for many years continue to decline to low levels, the seas have also become the object of exploration and research into gold reserves. In 2006, Nautilus Minerals Inc. became the first company to commercially exploit the ocean floor for gold and copper sulphide in waters off Papua New Guinea. In this study, gold exploration in the oceans is

reviewed and analysed and an assessment is made as to whether current regulation in South Africa suffices.

In the period, prior to the start of this study there were also calls from prominent politicians in the United States, during the run-up to elections in that country, for a gold-backed currency in the light of the US debt crisis. Such a proposal and its potential impact on the precious metals industry are analysed in this study.

Although the focus in this study is on the recent developments, the old problem of illegal mining and theft of gold from refineries is still a major consideration in this study as far its impact on regulation, deregulation, self-regulation or co-regulation of the precious metals industries are concerned.

The Precious Metals Act, 2005 (Act 37 of 2005) and associated legislation are analysed in detail in this study with a view to proposing and rationalising what can be deregulated, better regulated or regulated differently. Most industry participants view the legislation as draconian and not fitting with the 21st century. Many have expressed the opinion that through the Act, the precious metals industries in South Africa are over-regulated. This view is tested in this study.

HYPOTHESIS AND OBJECTIVES OF THE STUDY

The hypothesis at the Proposal Stage of this study was that the precious metals industry in South Africa is over-regulated and should be deregulated. In the central chapters to follow this hypothesis is debated. One of the research questions in this regard was: can deregulation of the precious metal industry, which was the trend in most major mining and trading countries over the past 60 years, begin now in South Africa? If so, would hallmarking on its own, be an adequate replacement for the Precious Metals Act, 2005. Or, would nascent self-regulation initiatives such as the World Gold Councils' Conflict-Free Gold Standard and Responsible Gold initiatives, either substitute for or complement statutory controls. The major objective, from the investigation of this hypothesis and these research questions is to at the end propose when deregulation of the precious metals industry can begin and why. The

study also delves into the “how”, but is cognizant of the fact that deregulation is a process, which in some respects must go in reverse before it can go forward with momentum.

Another research question of importance was: do the Precious Metals Act, 2005 and the Mineral & Petroleum Resources Development Act, 2002 prevent or deter illegal mining and trade of precious metals in South Africa? Can these pieces of legislation be improved to tackle this problem, or are they through capacity constraints, poor drafting and ineffective implementation be worsening the problem in certain respects?

The second most important objective of this study was to analyse the various resource nationalism –related proposals by looking at the pros and cons of each with a view to proposing if any are worthy of pursuing, and if so, how will this impact on regulation of the precious metal industry in South Africa. An important recent global development, viz., calls for a gold-backed currency especially in certain States in the US (during the run-up to recent elections) is also debated with the same objective: if it materialises, how will this affect regulation of precious metals in South Africa and globally. Another global development, the opening up of new frontiers, in particular Urban Mining and Mining the Sea are also analysed with the objective of proposing how this will affect regulation of the precious metals industry in South Africa, if at all.

METHODOLOGY

The author, who is employed as the Precious Metals & Beneficiation Manager at the South African Diamond & Precious Metals Regulator made use of his knowledge, experience and contacts in industry and relevant organisations during the course of the study. Due to the unique nature of the study, there was not much in the literature on certain aspects of this study, and therefore views of experts and industry players and the author’s own knowledge and analysis form a major part of this study.

Not all organisations and industry experts approached agreed to interviews, but a significant number of the relevant organisations and individuals did. These included

the Rand Refinery, Metal Concentrators, Johnson Matthey (Africa), AngloGold Ashanti, Mintek, Department of Mineral Resources, South African Police Services (SAPS), Directorate Priority Crime Investigations (the Hawks) and the South African Revenue Services (SARS).

The Table below gives more detail on the methodology used in the study for the different chapters.

Table 1.1: Methodology used in this study by chapter

CHAPTER	METHODS AND TECHNIQUES	RESOURCE
Chapter 1: Introduction	Literature survey: Extensive use was made of data and information from Thomson Reuters GFMS, the World Gold Council, Johnson Matthey, Department of Mineral Resources and Virtual Metals.	Internet and hard copy publications
Chapter 2: World Gold Council's Conflict-free Gold Standard	Use was made of literature from the World Gold Council and other organisations. Various organisations including World Gold Council, Rand Refinery, AngloGold Ashanti, were also interviewed.	Survey Questionnaires Internet publications Literature: journals and papers
Chapter 3: Resource Nationalism in the context of the South African Precious Metals Industry	Use is made of literature relevant to resource nationalism in general and South Africa and precious metals in particular. Organisations and individuals including platinum and gold mining companies; refining companies, precious metal fabricators, jeweller's permit holders, diamond cutters, Department of Mineral Resources; Jewellery Council; Johnson Matthey, Mineral Resources Parliamentary Portfolio Committee members and JSE representatives were interviewed and/or surveyed.	Survey Questionnaires Internet publications Literature: Books, journals and papers

CHAPTER	METHODS AND TECHNIQUES	RESOURCE
Chapter 4: Analysis of the Precious Metals Act, 2005 and comparison to Hallmarking legislation	The author makes use of his knowledge and experience as Precious Metals Manager to analyse the Precious Metals Act, 2005. Industry participants such as Rand Refinery, AngloGold Ashanti, other refiners, the SABS and the Jewellery Council were interviewed.	Survey Questionnaires Internet publications Legislation: including the Precious Metals Act, 2005, Mineral & Petroleum Resources Development Act, 2002, Exchange Control Regulations and Consumer Protection Act, 2009
Chapter 5: Sustainability and Materiality	Various organisations including: NGOs (such as Global Witness), relevant mining companies and certain African government department representatives were interviewed. Use was made of literature covering various aspects such as King III, sustainability, materiality and corporate social responsibility	Survey Questionnaires Internet publications Literature: Books, journals and papers
Chapter 6: Calls for a gold-backed currency	Use was made extensively of literature on the subject. Newspaper and Internet reports of relevant developments in certain States in the USA were also used. Certain economists and financial gurus were also interviewed.	Survey Questionnaire Internet publications Books, journals and papers
Chapter 7: New mining frontiers: Urban Mining & Mining the Sea	Use was made of the literature. A few exploration companies such as De Beers Marine and Debmar were also interviewed.	Survey Questionnaire Internet publications Literature: Books, journals and papers
Chapter 8 (Conclusions)	The main findings and lessons of the previous six chapters were used to compile this chapter	-

LIMITATIONS

The biggest limitation this study suffers is the fact that there is no real literature on regulation of precious metal industries in South Africa and globally. This is both a limitation, as there was nothing to build on in this area, but also a good reason for

the study in the first place. It should also be noted that Regulatory Impact Assessments (RIAs) were not, and are still not, conducted in South Africa. Hence, in this study impact of legislation relies on comments from industry players and the author's own cost/benefit analysis which includes estimates.

While there is substantial information on resource nationalism in the literature; the areas discussed in the study are specific to platinum and gold in South Africa and hence this study relies on views of industry players and relevant organisations and analysis by the author of the pros and cons of the resource nationalism -related proposals.

Much of the work on the Precious Metals Act, 2005 draws on the knowledge and analysis by the author, with only some views from other organisations and individuals. The discussion of the use of gold as money is superficial at best and heavily reliant on internet-based reports (some of them biased) due to the lack of information in the literature.

In addition, while there is precious mineral -related legislation in some countries like Botswana, Ghana, Kenya, Zimbabwe and the Russian Federation, this is either not dedicated to platinum and gold as in South Africa, not as comprehensive as South African legislation, or not discussed in the public domain and in the literature.

Lastly but most importantly, since most of the resource-based proposals made by individuals and organisations discussed in this study were dismissed in this study, the recommendations made are limited to explaining why they are not worth pursuing. In this regard, there is room for future work, which is suggested at the end of the study.

INTRODUCTION TO PRECIOUS METALS AND HOW THE GLOBAL PRECIOUS METALS MARKETS WORK

Before one can discuss regulation of the precious metals industries in South Africa and globally, one has to understand precious metals, the market for precious metals and how global trading of precious metals works. This will set the context for the discussions to follow on South Africa's ranking as a gold and platinum-group producer, the Gold Standard, hallmarking, pricing of precious metals, trading platforms for precious metals, the size of the precious metals markets, precious metals trading products (bullion); precious metals investment products (coin, bars, ETFs etc.), precious metals consumer products (jewellery, decorative products etc.), and precious metal industrial products (autocatalysts, chemicals; alloys etc.).

So, what follows are the facts and an explanation of the above-mentioned technical issues relating to precious metals. Their relevance to the study is mentioned, although there are a few short sections included for completeness and reference.

PRECIOUS METALS: DEFINITION AND DESCRIPTION

The term "precious metal" refers to the metals gold, silver, platinum and the other platinum-group metals (PGMs), namely: palladium, rhodium, iridium, ruthenium and osmium. They are noble metals, in that they resist attack by acids and other reagents and do not corrode easily (although silver does tarnish).

It is important to note that although silver is a precious metal; it has been excluded from the definition of "precious metals" in the *Precious Metals Act, 2005*, which is the principal legislation governing the precious metals industry in South Africa. The deletion of silver from the definition of "precious metal" in the Precious Metals Act is a legislative way of deregulating silver. .For the purposes of this study, it is important to note that discussions will focus on platinum, gold and palladium in particular due to the size and importance of these metals' markets and relevance to the South African situation.

The word “precious” derives from the Latin *pretium*, meaning price, through French word “précieux” (O’Connell, 2005). The term “precious” implies that they are by definition, high unit-value and rare. They tend to be attractive, durable and workable (malleable and ductile) metals.

Precious metals (except for the PGMs: rhodium, iridium, ruthenium and osmium) are best known for their use in jewellery. In 2014, about 9 000 tons of gold, platinum, palladium and silver valued at an estimated $98 billion were used in this application (see Table 1.1 below). This Table is an important backdrop to the discussion on the promotion of beneficiation by regulation in Chapter 3.

Table 1.2: Use of gold and PGMs in jewellery

PRECIOUS METAL	USE IN JEWELLERY MASS (tons) (% OF TOTAL FABRICATION)	USE IN JEWELLERY VALUE[e] ($ billion)	TOTAL FABRICATION (tons)
Gold	2 213.0 (53)	$89.90	4 158
Platinum	79.9 (35)	$3.56	227
Silver	6 693.0 (20)	4.11	33 178
Palladium	15.0 (5)	$0.38	298
TOTAL	**9 001 (24)**	**$98.15**	**37 860**

Sources: *Gold Survey 2015*, GFMS Ltd.
Platinum & Palladium Survey 2015, GFMS Ltd.

PRECIOUS METALS VALUE CHAIN

To understand the production and supply, trading and fabrication of precious metals one needs to understand the value chain. The precious metals value chain (see Figure 1.1) refers to the successive processes of metallurgical processing or value addition from mining through to the retail of the final product.

This includes ore beneficiation (discussed later), the manufacture of bullion bars, bullion trading, fabrication of semis (semi-fabricated precious metal products), fabrication of final products (like jewellery, coins and industrial goods), distribution/wholesale of final products and finally the retail of manufactured articles. In this study, the value chain is referred to in Chapter 3 mainly but it also has relevance to the discussions in Chapter 4, 6, 7 and 8.

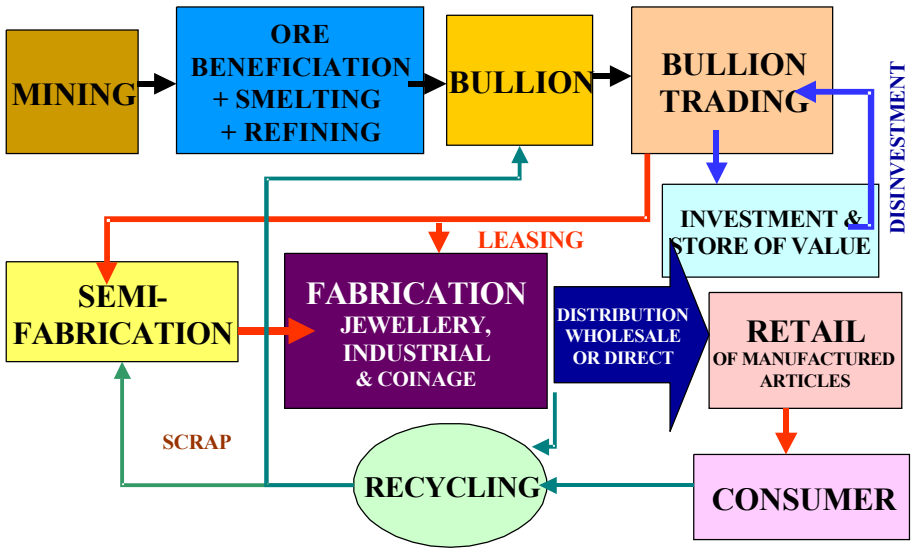


Figure 1.1: Schematic representation of the generic precious metals value chain

NATURE OF THE PRODUCT: GOLD

For this study, it is important to be reminded of the appeal gold has and why. Gold is a unique precious metal. Its rich yellow – "golden" colour and its mental-imagery association with the Sun is an integral part of its beauty and mystique. Possessing a density of 19.3g/cm^3, it is one of the densest metals known to man. As the World Gold Council (WGC) illustrates: if the estimated 183 600 tons of gold mined over history were melted into an equilateral cube, the length of a side of that cube would be a mere 21 metres (WGC, 2003).

Gold is, for all practical purposes, virtually indestructible. At 1 064°C, its melting point is also notably high. It does not corrode (except when treated with aqua regia), and besides some minimal industrial and other losses, almost all the gold that has ever been mined is still in existence in some form or other (World Gold Council, 2010). It is ranked third behind silver and copper in terms of its electrical conductivity, and amongst the metals it is the most resistant to tarnishing (World Gold Council, 2010). Gold is the most malleable metal (it can be hammered into very thin sheets without structural damage).

GOLD'S INCORPOREAL CHARACTERISTICS

For the discussions that follow on trading and fabrication of precious metals, it is important to bear the incorporeal characteristics of gold in mind. Gold ─

(i) is a monetary asset (can be monetised);

(ii) is a store of value (a hedge against inflation).

(iii) is a commodity and a fungible[2] one at that (interchangeable, exchangeable and standardised).

(iv) displays counter-cyclical behaviour (zero correlated with stock markets and negatively correlated with the most powerful financial instrument, the US dollar).

GOLD MINE PRODUCTION

For the discussion on pricing and trading of gold in Chapter 3 and other resource nationalism –related proposals in that Chapter, it is important to note the history of gold mining, South Africa's historical and current role and other African countries' roles. It is believed that the Egyptians mined gold, as long ago as pre-2000 BC. As stated above, over history some 183 600 tons of gold have been mined. Currently, World production of gold is around 3 000 tons and as supply is moderately price elastic fluctuates somewhat with average annual prices. Gold is mined in over 70 countries, the largest producing countries in 2014, according to *Gold Survey 2015* compiled by GFMS Ltd., are given in the chart below.

[2] Allocated gold is regarded as non-fungible

Gold mining grades are generally very low. In South Africa, gold grades range between 4 and 10 grams per ton, i.e., gold occurs in a concentration of 4 to 10 parts per million. At a grade of 4 grams per ton, it would take about 8 tons of ore to produce one ounce of gold.

In South Africa, gold grades have been declining as the richer gold reefs of the Witwatersrand gold deposit have been mined out over the past 120 years. It is argued in Chapter 7, that declining gold grades in the older deposits prompted exploration in the sea.

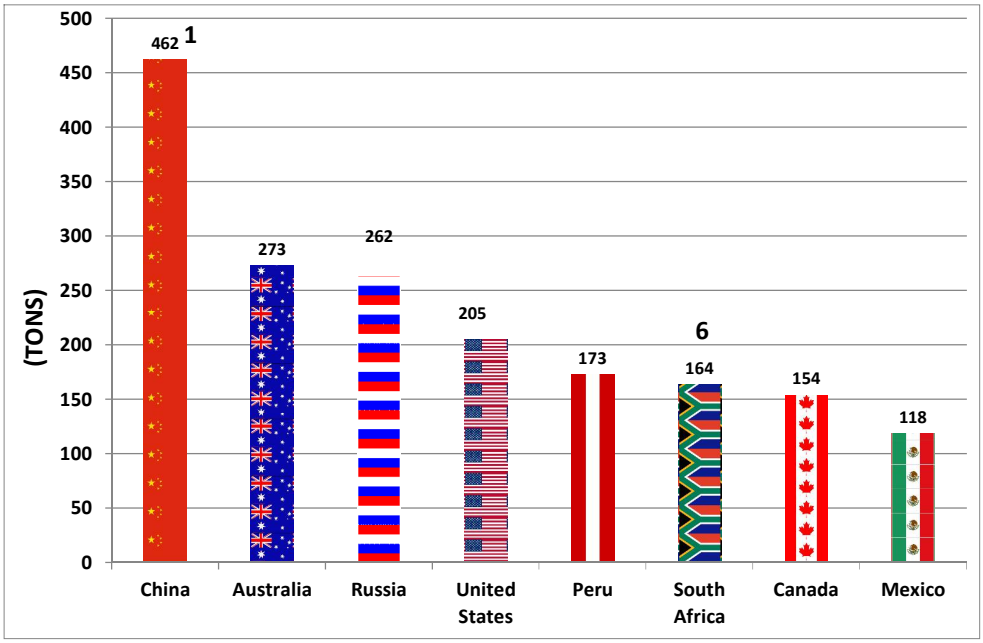


Figure 1.2: Top 10 gold producing countries, 2014
(Source: *Gold Survey 2015*, GFMS Ltd.)

GOLD ORE BENEFICIATION[3] AND THE PROCESSES OF SMELTING AND REFINING

Processing of gold ore, smelting and refining must be understood as a background to the discussion on the Precious Metals Act, 2005 in Chapter 4. The processes are described below.

After gold-bearing ore has been extracted from surface or underground operations it undergoes beneficiation. Beneficiation involves the following processes in sequence:

1. Crushing and milling (Comminuition),
2. Concentration of crushed ore by gravity techniques and flotation,
3. Extraction of gold from the ore concentrates.

After beneficiation of the ore, the processes of smelting and refining follow:

4. Smelting to a gold-rich doré (containing typically about 60-70% gold, and silver),
5. Casting of bars, and
6. Refining of doré into gold bars containing 99.5% gold or more.

[3] **Ore Beneficiation** means the various processes that involve upgrading, improvement, processing or treatment of a primary ore by the removal or separation of impurities from the economic mineral/s or metal/s. Strictly speaking, beneficiation means the treatment of ore to improve physical and chemical properties in preparation for further processing, especially smelting.

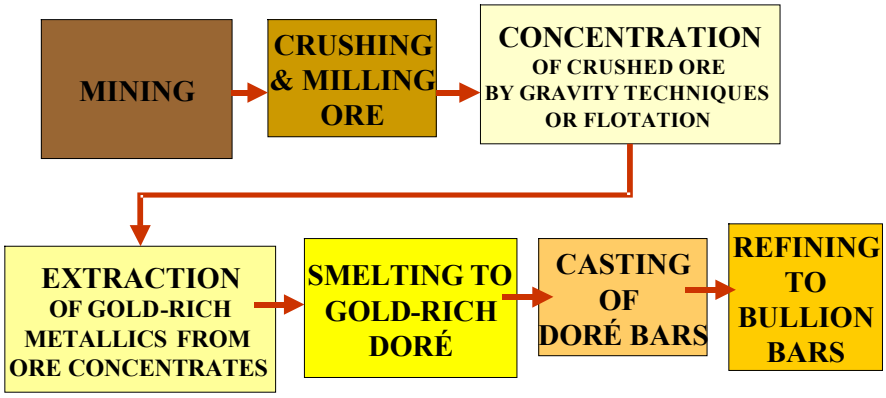


Figure 1.3: Gold ore beneficiation processes

GOLD VALUE CHAIN

These refined bars or bullion[4] bars are then usually sold to bullion dealers, although direct marketing by mining companies does occur. The bullion dealers trade with jewellery or electronics manufacturers, who fabricate[5] final consumer goods. In some countries, bullion dealers will also lease gold out to manufacturers. As mentioned above, the Gold Value Chain is of relevance to the discussions in Chapters 2, 3, 4, 6 especially.

CONSUMPTION OF GOLD

The demand for gold is obviously what drives the market. As far as the study is concerned, the jewellery demand sector is worth noting for the discussion in Chapter 3 especially. The physical demand for gold (*Gold Survey 2015)* is made up of three main sectors, namely:

1. Jewellery (about 2 213 tons or 60%),
2. Industrial (about 400 tons or 11%) and
3. Investment (about 1 079 tons or 29 %).

[4] Bullion refers to gold, silver and platinum in bulk trading form, e.g., bars, ingots & plate, rather than in grain or sponge
[5] Fabrication refers to the manufacturing of semi-finished or final products

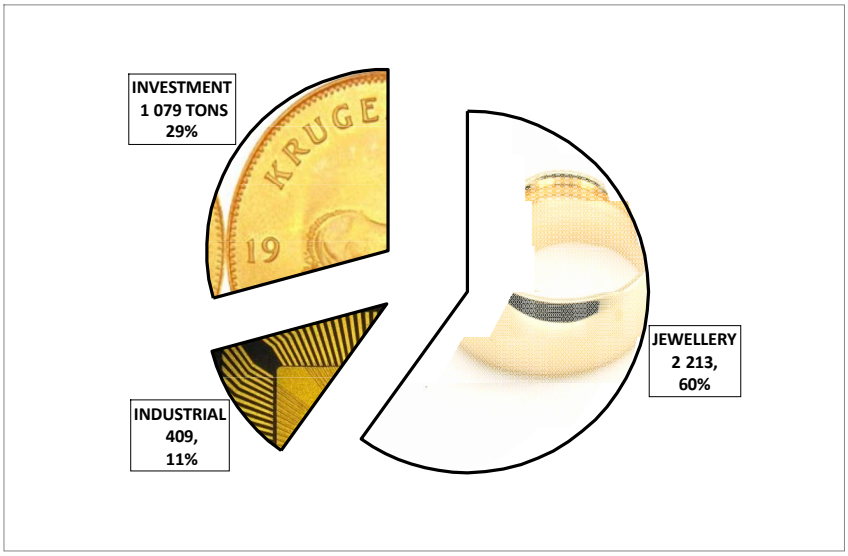


Figure 1.4: Gold: three main demand/fabrication sectors, 2014

Jewellery Sector

Gold jewellery fabrication demand is dominated by India (771 tons or 27%), China (732 tons or 26%), Turkey (156 tons or 5.4%), United States (150 or 5.2%) and Italy (96 tons or 3.4%).

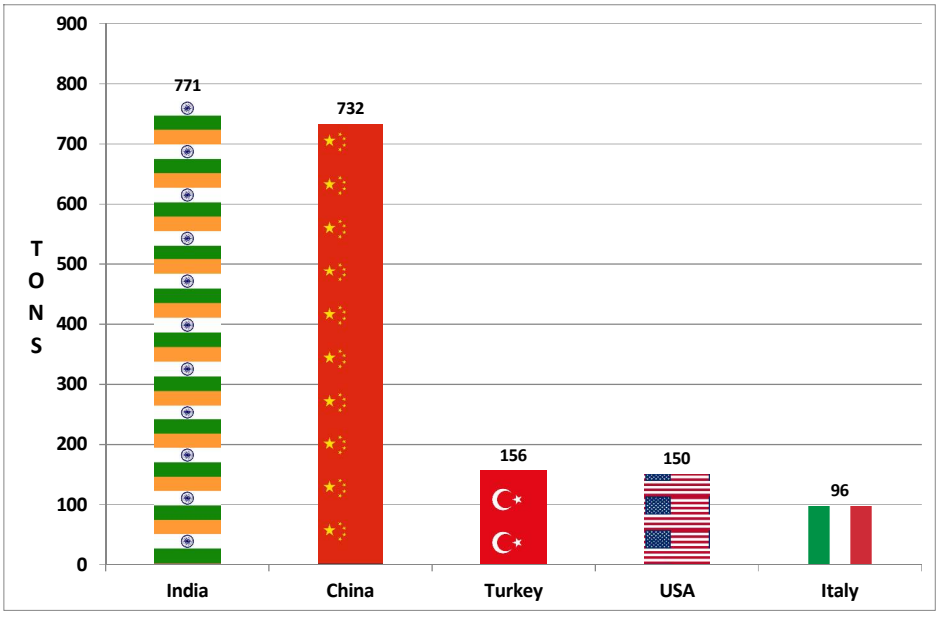


Figure 1.5: Top jewellery fabricating countries, 2014
(Source: *Gold Survey 2015*, GFMS Ltd.)

The largest gold jewellery consuming countries in 2014 were: India (662 tons), China (633 tons), United States (131 tons) Russia (71 tons) and Turkey (68 tons).

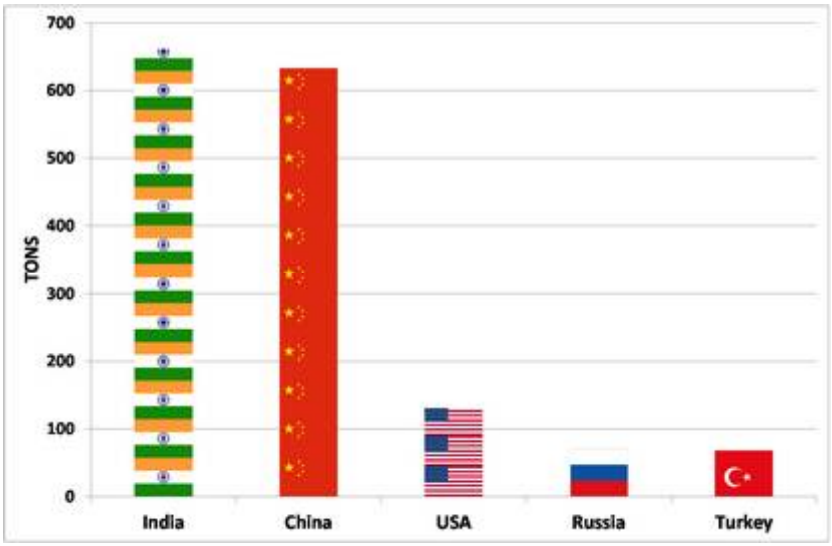


Figure 1.6: Top jewellery consuming countries, 2014
(Source: *Gold Survey 2015*, GFMS Ltd.)

It is interesting to note for this study that most of the major jewellery fabricating countries are also the major jewellery consuming countries, with the exception of Italy which country's jewellery consumption has dropped in recent years – a sign of a weakening economy. It can be deduced from this that domestic demand drives beneficiation. This is important to note for those involved with promoting beneficiation in South Africa. Growing the domestic market for fine jewellery is key to expanding beneficiation in South Africa. Currently domestic demand for fine jewellery is between 0.5 to 1 ton (Jewellery Council, 2012). This is discussed further in Chapter 3 and 8.

Industrial Sector

The industrial uses of gold (GFMS Ltd., 2015) are accounted for by Electronics (279 tons or 69.5%), Dentistry (34 tons or 8.5%) and Other Industrial uses (87 tons or 22%). Gold's physical and chemical properties, including high electrical conductivity, high thermal conductivity and resistance to corrosion, make it indispensable in industrial applications. Gold can be found in computer keyboard circuits, electrical

contacts and mobile phones. Catalytic applications are also attracting increasing interest. Gold's non-allergenic properties see it being used widely in dentistry. In medical applications, its biocompatibility is becoming increasingly important.

Retail physical investment

Retail physical investment is made up of demand for coins, bars, gold ETFs (exchange traded funds) and to a lesser extent, medallions. In most countries (including to a certain extent, South Africa) this represents an avenue for private individuals to buy gold (Chapter 3 and 4 elaborate on this further). In 2014, investment amounted to 1 079 tons worth $44 billion, down from the record $63 billion recorded in 2010.

GOLD AS A FORM OF MONEY

Chapter 6 of this study discusses the gold as a form of money concept in detail. The information that follows sets the backdrop for that chapter.

Gold is unique in that it is both a monetary asset and a commodity. As a commodity it is also fungible, i.e., it is exchangeable, interchangeable, standardised and with a unit price set by the market.

Central Bank reserve asset

Central banks have been substantial holders of gold for more than a century and are still expected to maintain significant stocks in the foreseeable future. They account for about 20% of aboveground stocks (WGC, 2003).

Over the last decade, the rebalancing of reserve portfolios and diversification has led to a reduction in the amount of gold held by some central banks. This trend is expected to continue for many years, but central banks have indicated that gold will remain an important reserve asset.

Central banks began building up their stocks of gold from the 1880s, during the era of the Gold Standard. Under this monetary system, in countries on the Gold Standard, the amount of money in circulation was linked to the country's gold stock,

and paper money was convertible into gold at a fixed price (see Chapter 6 for a detailed discussion). This is different from the modern Fiat Money (such as the Rand), which is inconvertible paper money established by government fiat (authorisation).

The World Gold Council (2003) outlined the following main reasons as to why central banks still hold gold (at least on their books):

- **Economic security**: The value of currencies held in reserve, depend on the economic policies of the issuing government. Gold does not suffer from defects in policy in centres where it is held as a reserve.
- **Physical security**: If gold is located appropriately, it is much less vulnerable to exchange controls affecting free transfer of currencies or total asset freezes.
- **Unexpected needs**: Gold provides a form of insurance against some unexpected events such as war, surge in inflation, trade blocks and international isolation.
- **Confidence:** Gold affords some measure of comfort because it is an indestructible, “hard” asset. It is something solid and valuable, although now not directly convertible, that underlies the paper money used for everyday transactions.
- **Diversification:** The fact that returns on gold tend to be negatively correlated with other financial assets provides gold-containing portfolios with significant benefits.
- **Income:** Gold lending allows central banks to earn a return on gold.
- **Store of value**: Historically, gold has maintained its purchasing power in real terms.
- **Reserve mobilisation:** Gold plays a role in central bank reserve mobilisation in times of need, usually by lending and swapping. It is estimated that about 2 000 tonnes was out on loan in 2014. Gold is often used as collateral for external borrowing. Central Banks conduct many of their gold transactions discreetly and even secretly.

THE GOLD STANDARD

The Gold Standard is a monetary system in which a country's government allows its currency unit to be freely converted into fixed amounts of gold and *vice versa* (Investopedia, 2012). The exchange rate under the gold standard monetary system is determined by the economic difference for an ounce of gold between two currencies. The gold standard was mainly used from 1875 to 1914.

The use of the gold standard marked the first use of formalized exchange rates in history. However, the system was flawed because countries needed to hold large gold reserves in order to keep up with the volatile nature of supply and demand for currency (Investopedia, 2012).. After World War II, a modified version of the gold standard monetary system, the Bretton Woods monetary system was created as its successor. This system was initially successful, but because it also depended heavily on gold reserves, it was abandoned in 1971 when US President Nixon "closed the gold window."

The benefit of a gold standard is that money is backed by a fixed asset. This provides a self-regulating and stabilizing effect on the economy. The government can only print as much money as its country has in gold. This discourages inflation, which is too much money chasing too few goods. It also discourages government budget deficits and debt, which can't exceed the supply of gold. In addition, more productive nations are directly rewarded. As they export more goods, they can accumulate more gold. They can then print more money, which can be used for investing in and increasing these profitable businesses.

One disadvantage of a gold standard is that the size and health of a country's economy is dependent upon its supply of gold, not the resourcefulness of its people and businesses. Countries without any gold are at a competitive disadvantage. However, this is an advantage to South Africa which is a significant gold producer.

There have been calls recently by politicians, some economists and other commentators for a return to the Gold Standard. This study examines the rationale

for those calls and an assessment is made of its viability in the modern day (Chapter 6).

GOLD TRADING AND HOW THE MARKET WORKS

Mine production of gold currently amounts to about 3 130 tons per year (GFMS Ltd., 2015). At an average price of $1 266/ozt in 2014, primary refined production was valued at $127 billion. This makes gold the second largest physical (primary) metal market after copper ($150 billion). If recycled scrap is added, then conventional gold supply was worth some $173 billion in 2014.

The global trade in gold consists of over the counter (OTC) trades, which are direct, principal-to-principal transactions in spot, forward, options and other derivative products, and exchange-traded futures and options (defined and discussed below). The OTC market is flexible in contrast to the rigidity of exchange transactions, hence OTC trading accounts for a much greater share of the global trade in gold.

Over the Counter (OTC)

The OTC market operates 24 hours a day around the World. The main centres for OTC dealings are London, New York, and Zurich. Generally, mining companies and central banks tend to transact their business through London and New York. The New York market also services fabricators of jewellery and industrial products, and investment and speculative business. Zurich specialises in supplying physical gold to fabricators of jewellery and industrial products. However, bullion dealers tend to have offices around the World. The major bullion dealers around the World are members of the London Bullion Market Association (LBMA).

Most of the OTC trades are cleared through London, although the physical market itself is distributed worldwide. “Loco London”, a term often used, refers to gold physically held in London. The LBMA makes stringent specification for “good delivery” bars, especially in terms of mass, fineness (gold content in parts per 1000) and mark (stamp of the official melter or assayer). The gold spot price always refers to the price of a London Good Delivery bar.

Price discovery: the London Fix[6]

The price of gold is 'fixed' twice daily at 10.30 am and 3.00 pm (BST) in London. As of 5 May 2004, the morning and afternoon gold price fixing no longer takes place at the office of NM Rothschild & Sons Ltd., and is now conducted over the telephone[5]. The current members of the fix are Deutsche Bank AG, Barclay's Capital, HSBC, Sociėtė Gėnėrale Corporate & Investment Banking and ScotiaMocatta which now head the gold price-fixing committee. Any other market participant wishing to trade must do so through one of these five dealers. The fix is based on the original 1919 principle: *"The principle to be maintained with regard to the sale of gold in the free market in London is that everyone attending the gold fixing is entitled to buy or sell gold on equal terms with everyone else present… It is also agreed that only one price shall be quoted and shall represent the price at which all supplies can be absorbed"* (Goldfixing.com, 2006).

Clients place orders with their counter-parties, who are either the fixing members, or another bullion dealer who will be in touch with a fixing member and the client himself while the fixing proceeds. The fixing members net-off all orders before communicating their individual net interest at the fixing. The fix begins with a suggested "trying price", reflecting the market price prevailing at the opening of the fix. This price is relayed by the fixing members to their dealing rooms who are themselves in touch with all interested parties who instruct their representatives to declare themselves as buyers or sellers at that price. Any market participant may enter the fixing process at any time, or adjust or withdraw his order according to his/her view of the price relayed. Provided that there are both buyers and sellers at the price, members are asked to state the number of bars they wish to trade. If at the opening price there are only buyers or only sellers, or if the numbers of bars to be bought or sold does not balance, the price is moved and the same procedure is followed until a balance is achieved (Goldfixing.com, 2006). The Chairman then declares that the price is fixed. However, it should be noted that the Fix is said to balance if the buy amount and the sell amount are within 25 bars of each other.

[6] NB: At the time of writing, the LBMA Gold Price (fixing by electronic auctions platform) replaced the historic London Gold Fix.

Sometimes, if it is impossible to strike a balance, the price will be fixed at the discretion of the Chairman, an event called “fixing on discretion”.

All fixing orders are transacted on the basis of this fixed price. These fixing prices are quoted immediately through the various news and business information wires or channels as well as the many gold information websites. The fix is therefore regarded as a full and fair representation of all market interest at the time.

In South Africa, one of the questions asked by the Mineral Resources Parliamentary Portfolio Committee (PPC) to the author (an employee of the South African Diamond & Precious Metals Regulator) recently was: *What influence does South Africa have on the setting of the price of gold and platinum?* This apparently stems from the resurgence of resource nationalism – a philosophy being pushed by some members of the PPC, who see the setting of a Producer Price for gold and platinum as beneficial to the country and almost as a sovereign right.

Producers like South Africa, are in fact, price takers, and the price is “discovered” through the market mechanism described above. This study will look at the pros and cons of the hypothetical case where South Africa sets the price for gold and platinum produced in the country. Whether there are any benefits to South Africa, and what effect such a pricing model could have on the global gold market are the questions that will be answered in this work.

Settlement

The basis of settlement is delivery of a standard London Good Delivery bar, at the London vault nominated by the dealer that made the sale. Currency settlement for gold transactions will usually be in US dollars over a US dollar account held in New York.

Delivery of Physical Gold

Delivery may be made in several ways, including delivery to the dealer’s vault, or a credit to an allocated account, or through the London Bullion Clearing to an unallocated account of the third party. In addition to delivery at its own vault, a dealer

may, by prior agreement, arrange delivery to any destination around the world and in any form or any fineness. To enable this service, most bullion dealers have consignment stocks in strategic centres around the world.

An allocated account refers to an account held in a client's name, where gold is exclusively held separately from other gold in a vault. This gold does not form part of the bullion bank's assets, but is titled over to the allocated holder. The gold in an allocated account cannot be lent out or used by the vault owner.

An unallocated account is basically a debit and credit arrangement, which is backed by the general stock of the bullion dealer where the account is held. If the client wishes to receive physical metal by allocating specific bars or equivalent bullion product, the fine metal content of this is debited from the unallocated account. The physical delivery period is normally two business days after the trade is transacted.

The Clearing process

The clearing process is simply a system of paper transfers whereby members offering clearing services use the unallocated gold accounts that they maintain between each other, not only for settlement of mutually agreed trades but also for third party transfers.

Available OTC Statistics (LBMA, 2014) show that volume cleared through London itself was about 240 million ounces valued at $300 billion in 2010 (aggregate of daily averages from LBMA, 2010). Worldwide OTC trades are much greater.

Futures Exchanges

The most important exchanges are the COMEX division of the New York Mercantile Exchange and the Tokyo Commodity Exchange (TOCOM). Trading on these exchanges is less flexible than the OTC market, and much more rigid in terms of delivery dates and transaction size for the futures and options contracts traded. In addition, the Commodity Futures Trading Commission (CFTC) requires that a large-scale trader on COMEX declare himself and the nature of his business (hedging, speculative, etc.). These markets are more geared to the speculator than the

physical market and, a case in point is COMEX where usually less than 1% of the market turnover actually results in eventual physical delivery.

HALLMARKING

A hallmark is a mark or number of marks, made on precious metal (gold, silver or platinum) jewellery or plate to confirm that its quality is up to the correct legal or specified standard (GoldAvenue, 2012). When backed by consumer protection laws, a hallmark (or assay or standard mark) is a guarantee that an article contains the specified minimum purity of precious metal.

This study (Chapter 4) will look at the pros and cons of hallmarking legislation as stand-alone legislation versus comprehensive precious metal trade legislation.

NATURE OF THE PRODUCT: PLATINUM

As with gold above, the section below, gives the background to the discussions in the central chapters below with regard to production, pricing trading and beneficiation of the platinum-group metals. The section focuses mainly on platinum, but the market for palladium is similar. It is worth noting, however, that a smaller but significant amount of palladium (some 15 tons) is used in jewellery compared with the 80 tons consumed in platinum jewellery fabrication (GFMS Ltd., 2015).

Palladium is often alloyed with gold to produce white gold jewellery. However, because of high platinum prices and the higher margins of palladium jewellery, there has been a rapid development of palladium jewellery manufacturing in China recently.

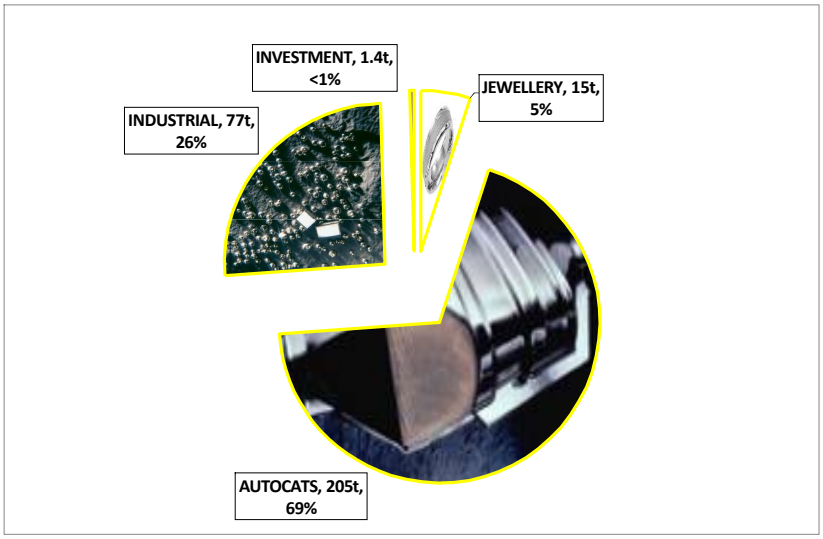


Figure 1.7: Palladium demand/fabrication sectors, 2014
(Source: Platinum & Palladium Survey 2015, GFMS Ltd.)

Palladium jewellery is expected to grow in popularity because the platinum price is expected to stay at high levels in the short-term. Nevertheless, it suffices for the purposes of this study to mention that according to GFMS Ltd. (2015), world mine supply of palladium amounted to about 188 tons, which at an average price of $803/ozt, was valued at $4.85 billion in 2014 and total supply (includes scrap recycling) at 249 tons was valued at $6.4 billion. Palladium is used mainly in autocatalysts (205 tons in 2015 according to GFMS Ltd.).

The other PGMs are not discussed in detail (as they are not as relevant to the study), but brief comments are made towards the end of the section.

PLATINUM'S UNIQUE PROPERTIES[7]

1. Platinum is rare (about 35 times more rare than gold). About 10 tons of ore must be mined to produce an ounce of platinum.
2. It is the densest known metal (at 21.45 g/cm^3 it is 11% more dense than gold).
3. It has a silvery-grey white colour (which makes it popular for so called "white-metal" jewellery). This white lustre complements diamonds and other

[7] Sourced from Platinuminfo.net, 2010 and Johnson Matthey, 2010

precious stones while its neutral colour enhances a stone's brilliance and depth (Professional Jeweller, 2003).

4. Its melting point (1 769ºC) is higher than that of gold, and it has high temperature stability.
5. Its main advantage for use in platinum jewellery fabrication is its strength and resistance to tarnish. Platinum can be repeatedly heated and cooled without hardening and oxidation effects. Platinum is a favoured choice for holding diamonds, because of its density and strength.
6. It is malleable and extremely ductile. The latter is illustrated by the fact that one gram of platinum can be drawn out into a fine wire thread over a mile long (Professional Jeweller, 2003).
7. It is an efficient catalyst, and thus finds use as an autocatalyst in motorcars to reduce air pollution.
8. It is a noble metal, hence, oxidation and corrosion resistant (non-reactive, does not tarnish and is resistant to heat and acids).
9. It has very high recyclability (over 96%).
10. It is hypoallergenic, so it is the jewellery metal of choice for people who are allergic to other metals.
11. It is biologically compatible, so it is important in many medical applications.

PLATINUM ORE BENEFICIATION[8], SMELTING AND REFINING

After platinum-bearing ore is excavated from the earth, it undergoes beneficiation, which includes the following in sequence:

Comminuition: Crushing and milling to maximise efficiency of the concentration process,

Concentration: separating milled ore into concentrate and waste by filtration and floatation.

[8] **Ore Beneficiation** means the various processes that involve upgrading, improvement, processing or treatment of a primary ore by the removal or separation of impurities from the economic mineral/s or metal/s. Strictly speaking, beneficiation means the treatment of ore to improve physical and chemical properties in preparation for further processing, especially smelting.

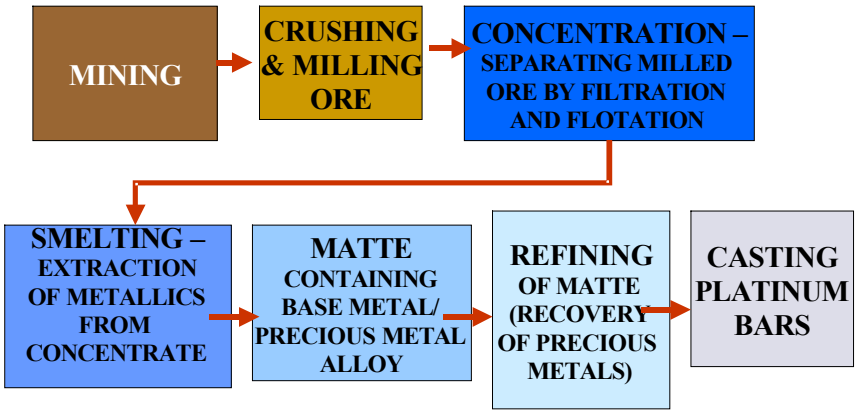


Figure 1.8: Platinum ore beneficiation, followed by smelting and refining processes

After beneficiation of the ore, the processes of smelting and refining follow in the following sequence:

- Smelting: Extraction of metallics from the concentrate by pyrometallurgical processes to form a matte containing base metal/precious metal alloy,
- Refining: Refining of the matte includes extraction of base metals and recovery of precious metals, and finally, the
- Casting of platinum bars.

PLATINUM SUPPLY: SOUTH AFRICA – PLATINIZING THE WORLD

Mine production of platinum is dominated by South Africa (see Figure 1.9), which contributed about 3.1 Moz (95.2 tons) or 66% of World supply in 2014 (GFMS Ltd., 2015). This contribution is down from the 75% plus in preceding years, and was due to supply disruptions in 2014 caused by one of the biggest strikes to hit the South African mining industry. Other producing countries are Russia (supplied 0.72 Moz in 2014), Zimbabwe and the North American countries (Canada the USA).

Proposals by South Africa and Russia to have a greater influence on supply and ultimately price of platinum are discussed in Chapter 3 of this study.

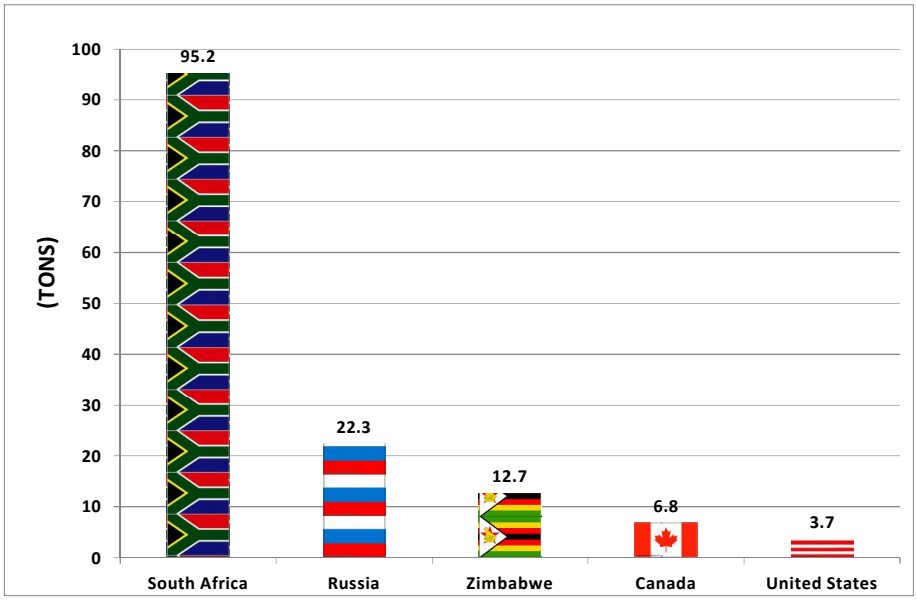


Figure 1.9: Top platinum producing countries, 2014
(Source: *Platinum & Palladium Survey 2015*, GFMS Ltd.)

PLATINUM USES

Autocatalysts

Platinum is a precious metal and an industrial metal. The main use for platinum, however, is in autocatalysts, which according to GFMS Ltd. (2015) consumed 3.1 Moz (95 tons) in 2015. Platinum usage in autocatalysts is linked to the introduction and evolution of emission regulations and standards (Johnson Matthey, 2003). These are currently in force in many developed countries, but standards vary from country to country. South Africa is yet to introduce such regulations.

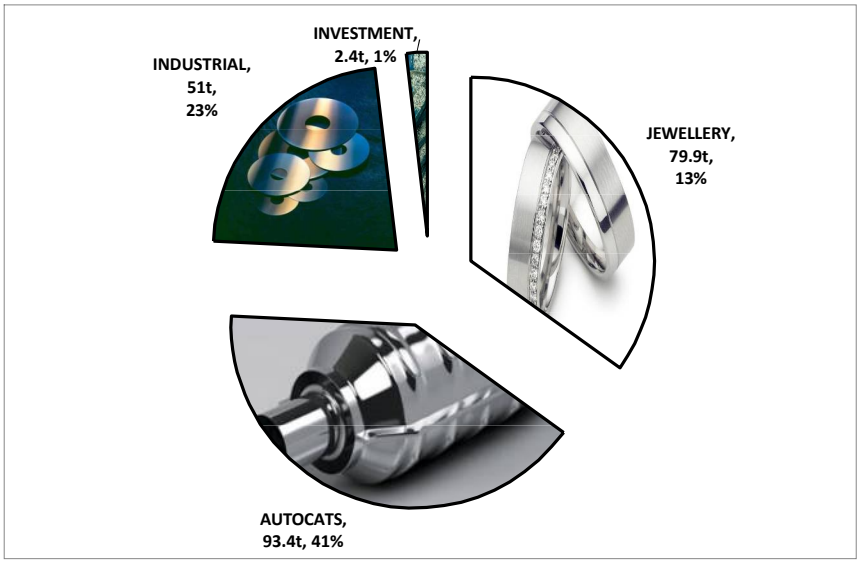


Figure 1.10: Platinum demand/fabrication sectors, 2014
(Source: *Platinum & Palladium Survey 2015*, GFMS Ltd.)

Jewellery

The second biggest demand sector is in jewellery, a sector that consumed 2.6 Moz (80 tons) in 2014, according to GFMS Ltd. (2015). The main jewellery fabricating countries are Asian countries, in particular China (1 680 Koz in 2014) and Japan (321 Koz in 2014), where citizens have a particular fondness for the “white” metals.

Industrial

Industrial demand for platinum, the third biggest demand component, consumed some 1.64 Moz in 2014 (GFMS Ltd., 2015). Industrial uses for platinum include platinum-based catalysts in the chemical industry and the petroleum refining industry, electronic applications (e.g., in computer hard disks & fuel cells) and platinum-containing equipment for the glass industry.

Investment

Demand for platinum in investment products, at 138 000 ounces (4.3 tons) in 2014, was strong due to high investment demand for precious metals. Investment products

include platinum coins (such as the famous US platinum American Eagle proof coins), small and large platinum bullion bars and platinum Exchange Traded Funds (ETFs). Sales of platinum coins and investment bars are price-sensitive.

South Africa, the World's largest producer of platinum, has never minted platinum coins. However, the SA Mint has plans to introduce South Africa's first platinum coin, in the near future (see Chapter 3 and Chapter 8).

PLATINUM TRADING

Size of the market

In comparison with gold, the platinum market is small and relatively illiquid. Market commentator, Market Predict (2003), quoted dealers as suggesting that purchases or sales of only 10 000 ounces can swing the price by about $10/ozt. At an average price of $1 386/ozt the platinum supply of 6.27 Moz (239 tons) in 2014, was valued at approximately $8.7 billion, which was about a fourteenth (1/14) of the value of primary refined gold production ($127 billion).

Until four years ago, platinum supply lagged behind demand growth, resulting in rising prices. However, since 2009, the weakening in Eurozone and the US economies has dampened demand growth. According to GFMS Ltd., demand in 2014 amounted to 7.28 Moz. Similarly, if one applied an average price of $1 386/ozt, this consumption was valued at about $10.1 billion.

Due to the mining strikes in South Africa in 2014, the physical surplus in the platinum market over the last four years turned into a physical deficit. Movement of stocks to balance the deficit was a net 1 082 000 ounces (GFMS Ltd, 2015) in 2014 (worth an estimated $1.5 billion).

Limited above-ground stocks and minor spot market

Platinum's limited supply and relatively small quantity of aboveground stocks (203 tons according to GFMS Ltd., 2015) are essential differences relative to gold. These

and irregular shipments from Russia have been responsible for the volatility of the platinum price in years prior to 2009. Recently supply disruptions at certain South African mines due to labour action and safety-related stoppages have also affected production and consequently prices.

The size of the Russian stockpile was a very important price-influencing factor in the 1990s, but it has dwindled in significance recently. Presently, the factors influencing mining in South Africa and Russia, economic conditions in the main consuming countries such as Japan, USA, China and the price of gold have a greater influence on the platinum price.

Also noteworthy is the fact that most of the World's supply of platinum is sold through long-term contracts to industrial consumers and thus is not available on the spot market. These industrial consumers include Johnson Matthey and large motor car manufacturers such as General Motors.

The main physical market for spot delivery is the London Platinum and Palladium Market. The market also maintains the London/Zurich Good Delivery List, which is a list of acceptable Melters and Assayers. Forward prices are also quoted for stipulated maturity dates, thus allowing producers and industrial consumers to hedge in volatile market conditions.

Price Discovery Mechanism[9]

The London Platinum & Palladium Market (LPPM) Fixings, also referred to as the London Fix, is considered the international benchmark for platinum and palladium prices and is transmitted by newswires. The quotation is done twice a day at 09H45 and 14H00 (GMT). The fix is a bid price loco Zurich i.e., a price that LPPM members would have been prepared to pay for platinum and palladium in the form of plate or ingot, deposited in a Zurich vault (Platinum.Matthey.com, 2003). The fixing procedure is similar to the London Gold Fix, in that it is a balancing exercise of buying and selling orders received from members or their clients, who respond to

[9] At the time of writing, the London Metal Exchange (LME) had been selected as the administrator of the London Platinum and Palladium Fixing.

price announcements and subsequent adjustments. The fixing price is the one at which all orders are cleared. Settlement is made within two days after the date of contract.

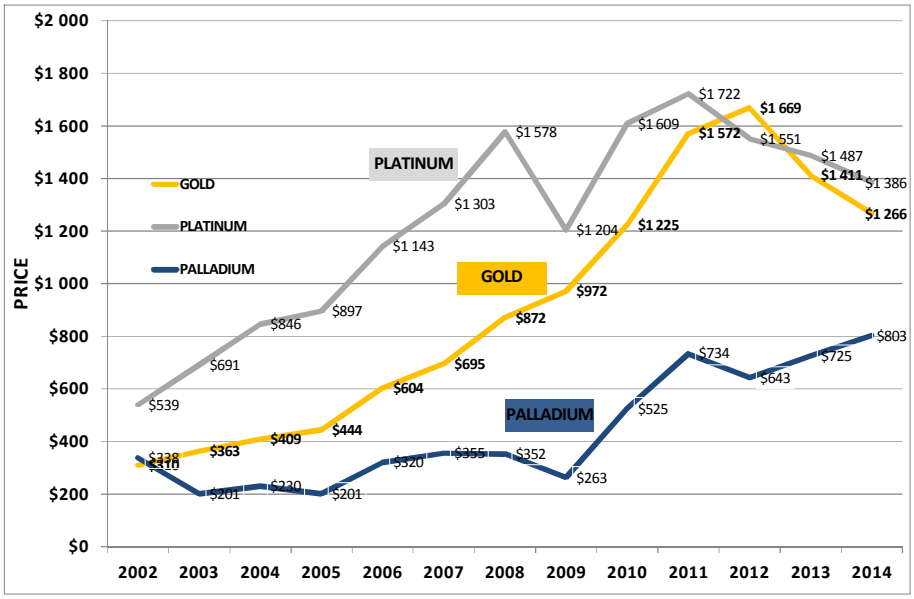


Figure 1.11: Platinum, gold and palladium prices, 2002 - 2014

The reference price for all platinum-group metals, including platinum, is the Johnson Matthey Base Price[10]. It is Johnson Matthey's quoted selling price for platinum-group metals set by the company's trading desks in the USA, Hong Kong and London, based on market offer prices (Platinum.Matthey.com, 2003). The price is for metal in sponge form, ex-Johnson Matthey refinery. The JM Base Price is set at 09H00 and 15H00 EST in the US, at 15H00 in Tokyo and 09H00 in Zurich every weekday. The prices are also published in *Platt's Metals Week* and *American Metals Market*.

Storage and delivery

The London and Zurich markets have facilities for storage of platinum and palladium in high security vaults. The metals can be held on unallocated or allocated accounts.

[10] Johnson Matthey, 2003

Many clients do not take delivery of their metal and request the members of the market to open metal accounts in their name. In such unallocated accounts, the specific bars are not set aside and clients have a general entitlement to the metal. This practice is popular because it is convenient and cheap. Allocated accounts are opened for clients who prefer their metal to be physically segregated and need a detailed list of weights and assays.

Futures Markets and Contracts

Exchanges offer the facility for trading futures and options on behalf of clients. Platinum futures and options are primarily traded on the New York Mercantile Exchange (NYMEX) and Tokyo Commodity Exchange (TOCOM). The trading of platinum contracts is conducted electronically at TOCOM but by open outcry at NYMEX.

Forward Contracts

Forward contracts are more flexible than futures contracts and are conducted principal-to-principal usually by mining companies to sell their platinum at an agreed price for delivery on a fixed future date. These are not transacted on an exchange, and usually always result in physical delivery of platinum.

NATURE OF THE PRODUCTS: OTHER PGMs

Although this study focuses on the platinum and palladium - the most important of platinum group metals. It is worth noting that the minor platinum-group metals are also regulated in South Africa, and that all the platinum-group elements are associated with each other (variably) in mineral deposits. The essential facts regarding the other platinum-group metals given below should also be borne in mind in the discussions in Chapters 3, 4, 7 and 8.

It should be noted that all the PGMs can be used as catalysts and in the electronics industry. Palladium often substitutes for platinum in autocatalysts and jewellery, because it is cheaper. Palladium is alloyed with gold to produce white gold jewellery. Rhodium and iridium are difficult to work; they are nevertheless popular in alloys and chemical compounds. Ruthenium and osmium are hard and brittle and thus

unworkable in the metallic state, but are used in combination with other metals. Iridium is the rarest of the precious metals. In fact, anomalously high concentrations of iridium in the Earth's crust can be indicative of extra-terrestrial (meteorite or asteroid) contamination.

CHAPTER TWO:

THE WORLD GOLD COUNCIL'S CONFLICT-FREE GOLD STANDARD

THE WORLD GOLD COUNCIL

The World Gold Council (WGC) is the market development organisation for the global gold industry. The WGC works within the investment, jewellery and technological sectors as well as engaging with governments and central banks. Its main purpose is to stimulate and sustain demand for gold worldwide, but is also seen by many as the "Board of Directors", in other words, the controlling body of the global gold industry as its member companies represent 80% of world gold production (WGC, 2014). South African members[11] of the WGC are AngloGold Ashanti (including Rand Refinery) and Gold Fields Limited.

BACKGROUND TO THE WGC'S CONFLICT-FREE GOLD STANDARD

When the intergovernmental Kimberley Process was formulating the Kimberley Process Certification Scheme for rough diamonds in the early 2000s, many were of the opinion that such a scheme could not be applied to the gold industry because of the magnitude, depth and complexity of the gold industry. To use just one indicator, that of the annual supply value, the value of gold supply per year (over 4 300 tons valued $178 billion) is more than 12 times that of annual diamond supply value (130 million carats valued at $14 billion). Moreover, the gold supply chain is complicated by the following:

1) The role of gold as a monetary asset i.e., a parallel currency
2) The high level of gold recycling (more than 35% of annual supply)
3) Gold is easily melted and once mixed with other sources of gold in refineries, its country of extraction or mining cannot be traced.
4) Gold is sold through a complex trade network of refiners, bullion banks, manufactures and retailers.

[11] As of 2015, there are no South African members of the World Gold Council

5) Significant gold production (10-15%) comes from artisanal sources (higher than that for diamonds)
6) There are several large suppliers of gold, while diamond production is dominated by only 3 companies (De Beers, Alrosa and Rio Tinto), and many more countries produce and/or refine gold (>70) than produce diamonds (22).

Despite these complexities, the World Gold Council began working on a "Conflict-Free Gold Standard" in November 2009 and released a draft Standard in June 2011 designed to ensure that "conflict gold" (<1% of total annual production – see definition below) is kept out of the supply chain of World Gold Council members.

Major impetus was lent to the Standard when the USA passed legislation (Section 1502 of the Dodd-Frank Act) in July 2010, which declared four minerals: tin, tantalum, tungsten and gold as potential "conflict minerals".

> *Section 1502 of the Dodd Frank Act requires persons to disclose annually whether any conflict minerals that are necessary to the functionality or production of a product of the person, as defined in the provision, originated in the Democratic Republic of the Congo or an adjoining country and, if so, to provide a report describing, among other matters, the measures taken to exercise due diligence on the source and chain of custody of those minerals, which must include an independent private sector audit of the report that is certified by the person filing the report.*

In addition, the Organisation for Economic Co-operation and Development (OECD) also developed guidelines for the responsible sourcing of minerals in May 2011. These Guidelines focused on the Democratic Republic of Congo and the eight adjoining countries, the so-called "conflict affected or high risk" areas.

Other industry-led initiatives have also been developed to complement the WGC's Conflict-Free Gold Standard, including the London Bullion Market Association's Responsible Gold Guidance (focused on refiners like the Rand Refinery), the

Responsible Jewellery Council's Chain-of-Custody Standard for Precious Metals (focused on jeweller's) and the Electronics Industry Citizenship Coalition's (EICC) Conflict-Free Smelter Protocols for tantalum, tin, tungsten and gold (focused on the electronic products supply chain).

Since then the Standard was "stress tested" by major producers and refiners, and the WGC sought and continues to seek feedback from various stakeholders including governments, NGOs, other supply chain participants, academics and civil society organisations.

OECD'S DRAFT SUPPLEMENT ON GOLD

Although the Organisation for Economic Co-operation and Development's Draft Supplement on Gold does not go into as much detail as the WGC's Conflict-Free Gold Standard, is not compulsory, nor does it require external assurance compliance (PWC, 2012), it is still worth noting as a conflict-gold initiative.

The Supplement focuses on the steps companies should take to avoid contributing to conflict and serious abuses of human rights in the supply chain of gold potentially sourced from conflict-affected and high-risk areas. It includes due diligence measures to be taken on recycled/scrap or previously refined gold ("Recyclable Gold") only insofar as recycled material is a potential means of laundering gold that has been mined in conflict-affected and high-risk areas in order to disguise its origin.

Gold investment products (ingots, bars, coins, and grain in sealed containers) held in bullion bank vaults, central bank vaults, exchanges and refineries with a "verifiable date" prior to 1 January 2012 ("Grandfathered Stocks") do not require information on their origin in terms of this Supplement. However, gold investment products will require "Know Your Counterparty" due diligence to ensure the trade in Grandfathered stocks is not carried out in violation of international sanctions or does not enable money-laundering resulting from, or connected to, the sale of gold reserves in conflict-affected and high-risk areas.

CHAIN-OF-CUSTODY CERTIFICATION OF THE RESPONSIBLE JEWELLERY COUNCIL (RJC)

The Chain-of-Custody Certification scheme of the Responsible Jewellery Council focuses on ensuring that gold and platinum-group metals are conflict-free and produced in a "responsible" manner. The RJC Chain-of-Custody (CoC) Standard builds on and complements the Code of Practices of the RJC, and is voluntary for RJC Members (Responsible Jewellery Council, 2012). The CoC Standard provides requirements for the creation of a Chain-of-Custody for responsibly-sourced Precious Metals produced, processed and traded through jewellery supply chains.

It specifies requirements for a company or business to segregate CoC Material from other material in its custody, and to provide relevant information supporting the provenance of CoC Materials when transferred or sold to other parties. CoC Material may be purchased and sold between different businesses certified as conforming with this Standard, thereby enabling credible claims to be made about the responsible sourcing of Precious Metals (Responsible Jewellery Council, 2012).

THE CONFLICT-FREE GOLD STANDARD AND HOW IT WORKS

Definitions (WGC, 2011[1&2]):

"Conflict-Affected or High-Risk Area": *A definition adopted from the OECD Due Diligence Guidance, which means: "an area identified by the presence of armed conflict, widespread violence, including violence generated by criminal networks, or other high risks of serious and widespread harm to people. High risk areas are those where there is a high risk of conflict or of widespread or serious abuses.*

"Conflict Gold": Gold which enables, fuels or maintains conflict through directly or indirectly financing or otherwise benefiting armed groups.

"Due Diligence": *Also a definition adopted from the OECD Guideline, and which means "an on-going, proactive and reactive process through which companies can identify, prevent, mitigate and account for how they address their actual and potential*

adverse impacts as an integral part of business decision-making and risk management systems".

The Conflict-Free Gold Standard essentially takes the form of a decision tree split into 5 parts:

Part A – Conflict Assessment: This part involves the use of external criteria to assess whether the area or country in which the company is operating should be considered as "conflict-affected or high risk"[12].

Part B – Company Assessment: If the area or country is considered "conflict-affected or high risk", this part assesses whether the company has the appropriate management systems in place in order to carry out its obligations in this area, to avoid fuelling or funding conflict and associated human rights abuses.

Part C – Commodity Assessment: Where the area or country is considered "conflict-affected or high risk", this part assesses how and by whom the gold is handled and the potential for this to contribute to conflict.

Part D – External Sources of Gold Assessment: When the company or operation site of the company acquires gold, this part assesses the process that needs to be in place to ensure that appropriate due diligence is undertaken on this gold so as to exclude gold tainted by conflict.

Part E – Statement of Conformance Documentation: Where the company has demonstrated conformance to parts A to D (where relevant), an appropriate statement needs to be provided to the next party in the chain of custody.

[12] Sources for guidance in "conflict affected or high risk areas" include the UN Security Council, the EU, AU, Organisation of American States, national bodies with international acceptance, authoritative NGOs

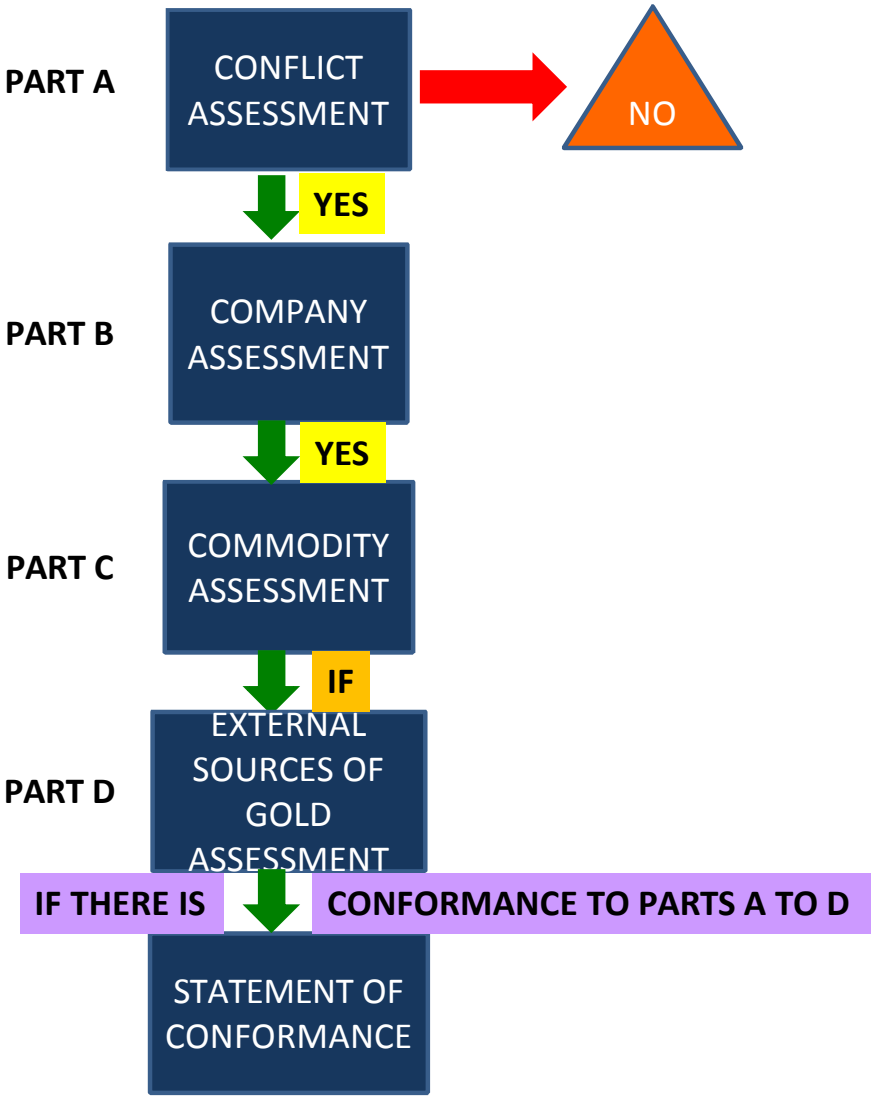


Figure 2.1: Decision tree relating to the Conflict-free Gold Standard

THE RATIONALE FOR THE WGC'S CONFLICT-FREE GOLD STANDARD

The Standard is mainly aimed at maintaining confidence which consumers, investors, governments and producing nations place in gold (Shishmanian, 2012). The objective is to create "absolute trust that gold produced under its principles and processes is delivered in a manner which does not fuel armed conflict or fund armed groups, nor contribute to the abuse of human rights associated with such conflicts" (Shishmanian, 2012). In addition to maintaining confidence, the Standard also seeks to avoid stigmatisation of gold from Africa.

In this respect it is very similar to the Kimberley Process for diamonds except that while the Kimberley Process Certification Scheme (KPCS) is an intergovernmental rough diamond trading scheme (with representation from industry and civil society as observers), the WGC's Conflict-Free Gold Standard is essentially a gold industry initiative. However, as will be discussed below, the Kimberley Process is not concerned with human rights abuses in connection with diamonds – something much criticised by outside parties, especially NGOs.

CONFLICT-FREE GOLD STANDARD AND KIMBERLEY PROCESS CERTIFICATION SCHEME FOR ROUGH DIAMONDS COMPARED

Definition of "conflict":

The main difference between the WGC's Conflict-Free Gold Standard and the Kimberley Process is in the crucial definition of "Conflict". The Kimberley Process Core Document defines "conflict diamonds" as follows:

> KP definition: *"CONFLICT DIAMONDS means rough diamonds used by rebel movements or their allies to finance conflict aimed at undermining legitimate governments, as described in relevant United Nations Security Council (UNSC) resolutions insofar as they remain in effect, or in other similar UNSC resolutions which may be adopted in the future, and as understood and*

recognised in United Nations General Assembly (UNGA) Resolution 55/56, or in other similar UNGA resolutions which may be adopted in future;"

The following points are important to note about this definition:

(1) The definition is restricted to rough diamonds used by rebel movements or their allies to finance conflict aimed at undermining legitimate governments. It matters not if that government is a dictatorship, military government or not which in certain countries is indeed a problem.

(2) The definition makes no mention of the abuse of human rights, which NGOs, such as Partnership Africa Canada and Global Witness have voiced concerns over.

(3) The form of diamonds is specified: rough diamonds. In other words polished diamonds are not an issue here.

OECD definition: "CONFLICT-AFFECTED AND HIGH-RISK AREAS: Areas identified by the presence of armed conflict, widespread violence, including violence generated by criminal networks, or other risks of serious and widespread harm to people. Armed conflict may take a variety of forms, such as a conflict of international or non-international character, which may involve two or more states, or may consist of wars of liberation, insurgencies, or civil wars. 'High-risk' areas are those where there is a high risk of conflict or of widespread or serious abuses as defined in paragraph 1 of Annex II of the OECD Guidance. Such areas are often characterised by political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure, widespread violence and violations of national or international law."

Likewise the following points are important to note about this crucial OECD definition:

(1) The definition is far wider - covering intra-national conflict, international conflict, wars of liberation or insurgencies, civil war, violence by criminal networks, widespread human rights abuses or other forms of harm on this scale. The most important of these is widespread human rights abuses,

which is what NGO's have been calling for in relation to conflict diamonds and the Kimberley Process.

(2) The Standard does not require a different approach between areas considered to be 'conflict-affected' or 'high-risk' areas.

The wider definition of the Conflict-free Gold Standard/OECD Due Diligence Guidance is what the critics of the Kimberley Process have been calling for many years. The narrow definition of the Kimberley Process definition is seen as outdated as it was drafted in the time of rebel wars in Angola and Sierra Leone which are now a thing of the past.

Who is the implementer?

In the case of the Conflict-free Gold Standard, the implementer is the Producing Company - in other words, the mining company producing gold in conflict or high-risk areas. In the case of the Kimberley Process, the implementer is the government of Participating countries who export or import rough diamonds, despite the problem being in or potentially being in producing countries in Africa in particular.

Self-regulation versus regulation by government

The Conflict-Free Gold Standard is an industry initiative and is classified as self-regulation. It entails industry itself taking steps to prevent "conflict gold" from entering the companies' supply chains. The Standard is not supported by any legislation/regulation.

The Kimberley Process is an initiative of governments of producing and trading countries. It entails governments implementing national legislation underpinning internal controls, and export and import controls to prevent conflict diamonds from entering the legitimate diamond trade. There are also severe penalties for transgressions in national legislation of Participating countries.

Certification:

The Kimberley Process is a certification scheme, in which governments certify exports of rough diamonds to any Participating country as "conflict-free", whereas in

the case of the Conflict-free Gold Standard a “statement” is made to the next party in the value chain.

Artisanal and Small-scale Mining (ASM)

To deal with the Artisanal and Small-scale Mining (ASM) issue, the Kimberley Process created the Diamond Development Initiative International, which the gold industry is yet to address. As artisanal and small scale mining of gold is relatively higher than that of diamonds, it can be classified as a weakness. This and other weaknesses are documented below.

AREAS OF WEAKNESS IN THE WGC STANDARD

(INCLUDES OPINIONS EXPRESSED IN INTERVIEWS & SURVEY QUESTIONNAIRES)

1. The biggest weakness is that there is no government oversight, and the Conflict-Free Gold Standard is implemented voluntarily by 20 large gold producers only. Moreover, it has to make financial sense to the company that adopts it. This leaves big loopholes in the system. Often in such matters, it is the small producers that are targeted by criminal syndicates to by-pass controls.

   There is also the matter of WGC members sometime deciding to exit membership of the WGC for cost-saving purposes.
2. It is also suggested that the percentage of supply that can be termed “conflict gold” is small (maybe 1 to 2%) relative to illicit gold, which is estimated at between 10-20% worldwide.
3. The other significant weakness is that once gold is melted and mixed with gold from other sources (including conflict-affected and high-risk sources), the origin is practically un-traceable.
4. The third weakness is that “conflict gold” can be legitimised, if unscrupulous traders import gold into a country such as South Africa and then re-export it. There is no requirement to record the country of extraction on export

documents, as is the case with the Kimberley Process Certification Scheme for rough diamonds.

5. Fourthly, sanctions for non-compliance are not adequate. It basically means that if something slips through the system, it would depend on the external auditor to pick up, which is difficult given the complexity and volume of trade.
6. At the World Gold Council Roundtable on Conflict-Free Gold (New York City, 7 September 2011), various other problems were pointed out. These include the following (World Gold Council, 2011[3]):
    - It was suggested that using "conflict" and "high risk" interchangeably leads to ambiguity.
    - It was pointed out that two gold mining companies operating in close proximity could come to different conclusions about the conflict risks inherent in a region, and therefore there is a need for consistency of application of the Standard.
    - Some argued that there was significantly less buy-in from India and China, which creates opportunities for "conflict gold" flows.
    - Participants also suggested that credibility could be enhanced if there was monitoring of progress in Standard implementation, and publicising aspects of internal management and training procedures.
    - Civil Society pointed out that public disclosure of external audits would improve transparency
    - Some also expressed the view that Artisanal and Small-scale Mining can be a challenge. A refiner voiced frustration that while the standards for large scale firms must be rigorous, well documented, audited, transparent, and verified by civil society, artisanal miners are seemingly subject to none. This places refiners in a difficult position, he claimed. He added that with respect to the DRC, refiners feel that Artisanal and Small-scale producers just cannot meet necessary standards of due diligence in that country. He believed that gold will get to the market through informal sectors or through refiners who don't care about standards (e.g. the Ugandan refinery).

- Some participants suggested that there should be a whistle-blowing mechanism to strengthen the Standard.
- It was pointed out that the objective of stopping the flow of conflict-gold out of the DRC is laudable, it will be impossible without government buy-in and the rule of law.
- If industry took the lead in the formalisation of Artisanal and Small-scale mining, it would greatly improve the situation in the conflict and conflict-affected areas.
- The Standard was also criticised for not seeking harmonisation and synergies with existing initiatives like that of the Responsible Jewellery Council.
- Many felt that there is room for increased Civil Society involvement in the initiative.

The views of Manhart and Schleicher (2013) who evaluated the Dodd-Frank Act and other resource-related measures are also worth noting in the context of the Conflict-free Gold Standard. They showed that the root causes for conflicts in the Democratic Republic of the Congo are manifold and only secondarily related to resources. According to them political power struggles were major triggers of conflict (wars), but strategies for stabilising the Great Lakes Region that do not address conflict minerals like gold are also prone to failure. They therefore recommended that measures on conflict minerals need to be embedded into a comprehensive strategy for the DR Congo. They also stated that the concept of Due Diligence is useful and should be supported as it helps to mitigate risks of directly or indirectly contributing to conflict and human rights abuses, however, extensive mandatory verification and reporting requirements can cause embargo reactions and unintended socio-economic side-effects (Manhart and Schleicher, 2013). The most important recommendation in their paper, however, is that rather than investing into costly downstream chain-of-custody systems, these resources could be better used to directly support responsible mining within the DR Congo.

IMPLEMENTATION OF A RESPONSIBLE GOLD INITIATIVE IN SOUTH AFRICA (CASE STUDY: RAND REFINERY LIMITED).

As Rand Refinery refines gold from other African producing countries, refines scrap sourced in South Africa and in other African countries and is the only LBMA-accredited refinery in South Africa, its implementation of the Responsible Gold Guidance in South Africa is illustrative.

The former Chief Executive Officer of Rand Refinery, Mr Howard Craig, spoke about the implementation of the Responsible Gold initiative at a recent (2013) African Mining Indaba. What he said at the conference is good summary of what Rand Refinery has been doing in this area.

He stated that Rand Refinery has adopted a Responsible Gold Policy which publicly confirms the company's commitment to the sourcing of Responsible Gold. This policy contains the guiding principles against which the company's commitment will be measured. Secondly, Rand Refinery has fully implemented the requirements of the LBMA's Responsible Gold Guidance. In this regard, the company has subjected itself to an external, independent readiness review audit in preparation for its first annual audit towards the end of 2013, as required by the LBMA. This will assist the company in identifying potential gaps and weaknesses in its processes.

In addition, the company has reviewed and revised its "Know Your Customer" process, which is applied rigidly when screening both potential and existing customers. In this way, all gold deposits entering Rand Refinery's systems and processes will conform to Responsible Gold, meeting the requirements of the LBMA Responsible Gold Guidance.

To offer certainty to customers that they are purchasing responsible, newly-mined gold as opposed to secondary or scrap gold, Rand Refinery can issue a certificate of assured "Chain of Custody". This is made possible by the company's capability to separate and stream particular batches of gold through its various processes,

thereby ensuring full traceability from mine to end product. This streaming capability is independently verified and audited by an international audit company.

The company has taken it a step further, with the introduction of a premium product brand into its markets across the world – the RandPure™ mark, which brand not only guarantees the ethical provenance, but also the fineness and exceptional quality of the gold it endorses. Used only to brand premium products which are manufactured using certified newly-mined gold under the company's control to finished end-product, the RandPure™ mark guarantees a fully verified chain of custody from "ore to store", states Mr Craig (2013).

Mr Craig also highlighted the fact that Rand Refinery was the chosen refinery to work with the first legitimate, large-scale gold mining operation in the DRC. He added that the Rand Refinery works in close co-operation with the Twangisa Mine, operated by the Banro Corporation to establish the appropriate procedures and processes which ensure full compliance with the standards and guidelines. This first engagement in the DRC is used as an example to establish an acceptable responsible gold protocol which the company can replicate in contracts with other future legitimate gold mining operations across the DRC.

With regard to the problematic issue of scrap, or secondary recycled, gold; the LBMA Responsible Gold Guidance requires rigorous screening of the last entity providing this gold to the refinery. Mr Craig stated that Rand Refinery will only deal with a select few, internationally reputable scrap traders. The company also applies its Know Your Customer process to secondary gold.

With regard to artisanal mining, Rand Refinery has adopted a model in which it will work with legitimate governments, government authorities and reputable financial institutions to provide a responsible supply chain for artisanal miners operating within a legal framework. In this way, the company can be sure that artisanal miners hold legitimate licenses from their governments and that the global financial institutions have applied their own compliance procedures in their dealings with the artisanal

miners. Mr Craig emphasised that the financial institutions pay a fair price for the gold and also are able to offer financial assistance to these miners.

Rand Refinery has implemented this model in countries in East Africa and is looking to work with other governments and similar reputable financial institutions in other parts of Africa. Mr Craig admitted that it is a challenge to evaluate and process numerous (sometimes hundreds at a time!), quite small artisanal mining deposits in a short time frame, but one that the company is prepared to accept.

CAN THE WGC CONFLICT-FREE GOLD STANDARD BE APPLIED TO COPPER OR DIAMONDS?

(INCLUDES FEEDBACK FROM INTERVIEWS)

In South Africa, especially, and in a few other countries, copper theft is a huge problem. In fact, copper theft in South Africa costs the country up to R5 billion a year. Copper is stolen in all forms mainly from storage warehouses and electrical installations (cables). Copper is also smuggled into and out of the country. High prices for copper over the last decade, fuelled by the recent[13] almost insatiable demand from China, have worsened the situation.

One of the questions asked in this study is if the Conflict-Free Gold Standard could be applied to expunge illicit or stolen copper from the massive legitimate trade. To do this, each aspect of the Conflict-Free Gold standard is assessed to gauge its applicability to copper or the copper industry.

[13] *Demand from China has declined towards the end of 2015, and with it prices have also come down*

Table 2.1: Applicability of the Conflict-Free Gold Standard to copper

COMPONENT OF THE CONFLICT-FREE GOLD STANDARD	APPLICABILITY TO COPPER
(1) Assessment of whether an area/country is High Risk	This is not applicable to copper, as illicit copper dealers are not confined to certain countries or areas. They can be found in any country, in urban areas and rural areas, in first world countries and third world countries. Many tend to be part of criminal syndicates that operate in several countries/across borders.
(2) Where the area/country is considered High Risk, assessment of whether the company has appropriate management systems in place	Having appropriate management systems, policies and skills in place can indeed help to ensure a company excludes stolen and illicit copper from the company's supply chain.
(3) Where the area/country is considered High Risk, assessment of how and by whom the commodity is handled	Knowing your clients in the supply chain is crucial to the system working to exclude illicit or stolen metal. If only trustworthy parties are involved in handling and working with copper, then the company can be reasonably sure of dealing with only legitimate players.
(4) Where the company acquires the commodity, assessment of the processes in place to ensure that illicit or stolen commodity is excluded	Having appropriate processes can help ensure a company excludes stolen and illicit copper from supply and work streams.
(5) Where the company has demonstrated conformance, to (1) to (4) where relevant, an appropriate statement needs to be provided to the next party in the chain of custody	A chain of warranties across the whole supply chain is essential and can help avoid illicit and stolen copper. An audit trail is essential for this.

From the above, it can be seen that theoretically the Conflict-Free Gold Standard can be applied to copper with some modifications. Practical implementation,

however, will not be without challenges as barriers to entry are low and it requires willingness across a huge industry to be successful.

Table 2.2: Applicability of the Conflict-Free Gold Standard to rough diamonds
(Includes feedback from interviews)

COMPONENT OF THE CONFLICT-FREE GOLD STANDARD	APPLICABILITY TO ROUGH DIAMONDS
(1) Assessment of whether an area/country is Conflict-affected or High Risk	This is applicable to rough diamonds, as there are areas of conflict where diamonds are mined. There are also areas of high risk where there is violence and human rights abuses associated with the exploitation and trade in rough diamonds.
(2) Where the area/country is considered High Risk, assessment of whether the company has appropriate management systems in place	Having appropriate management systems, policies and skills in place can indeed help to ensure a company excludes conflict diamonds from its supply chain.
(3) Where the area/country is considered High Risk, assessment of how and by whom the commodity is handled	Knowing your clients in the supply chain is crucial to the system working to avoid conflict diamonds.
(4) Where the company acquires the commodity, assessment of the processes in place to ensure that illicit or stolen commodity is excluded	Having appropriate processes and internal controls in place can ensure a company excludes conflict diamonds.
(5) Where the company has demonstrated conformance, to (1) to (4) where relevant, an appropriate statement needs to be provided to the next party in the chain of custody	A chain of warranties across the whole supply chain will indeed assist in avoiding conflict diamonds.

SUMMARY

The above assessment shows that the Conflict-Free Gold Standard can be applied to rough diamonds better than it can to copper, due to the smaller size of the industry and due to the fact that there are Conflict-affected and High Risk countries and areas. This is probably due to the higher unit value of diamonds compared with copper.

It can be summarised from the discussion above that the Conflict-Free Gold Standard provides some practical guidance on a way to work responsibly in conflict-affected and high risk environments, at least on paper.

LESSONS FROM THE CONFLICT-FREE GOLD STANDARD FOR THE FUTURE REGULATION OF THE SOUTH AFRICAN PRECIOUS METALS INDUSTRIES

There are a few lessons that one can learn from the Conflict-Free Gold Standard:

(1) There is a place for self-regulation by industry. When regulation is voluntary, the companies embrace it as part of business and essential to good business knowing that ultimately it will translate to consumer confidence in the product that the company produces (PwC, 2012). Consumer confidence, in turn, translates to better product branding, which leads to greater demand and better profits for the company.
A system of such voluntary self-regulation by industry does indeed contribute to an effective internal control system.

Self-regulation also tends to be less burdensome for the company in terms of paperwork and compliance in general. Most often companies incorporate the audit trail, including statements to the next party, into their enterprise software such as SAP. On the other hand legislation in the precious metal sector is regarded as too prescriptive. This is put very eloquently by Price Waterhouse Coopers (2012) which concludes on the matter by saying that: "the use of voluntary and market mechanisms to achieve greater levels of governance and accountability are progressing operating standards and

transparency significantly". PWC (2012) adds, however that "legal compliance requirements still have a role to play".

(2) In contrast to the simpler and easier-to-regulate diamond industry, the gold industry is extremely complex and involves 1000s of players. This includes about 90 producing countries, and 1000s of traders throughout the world. Having a certification scheme, although possible will be a huge logistical challenge. Even if there is a certification scheme for gold like the Kimberley Process Certification Scheme, it will not be able to plug all the gaps. Self-regulation if implemented by all players in the value chain can close loopholes that a government-implemented certification scheme cannot.

(3) The third lesson is that government oversight or regulation can improve the system. If a system is voluntary, it will be implemented by the larger, more ethically conscious players only, leaving numerous small gaps that can be exploited by criminals and unscrupulous traders.

(4) The fourth lesson from the Conflict-Free Gold Standard is that external assurance from an external party provides a measure of confidence in the system.

APPLICABILITY OF LESSONS

These lessons from the Conflict-free Gold Standard suggest that three different approaches can be used in dealing with conflict minerals like gold and diamonds:

(1) Government Regulation backed up by industry self-regulation.
(2) Self-regulation backed by external (Independent) assurance
(3) Deregulation, because no system is perfect, and well-resourced criminal syndicates will exploit weaknesses.

In South Africa, the trend is for more regulation, judging from the more than 3 000 pieces of legislation passed by government in the last decade, and therefore deregulation is unlikely in the short term.

For this study, Government regulation backed up by self-regulation is explored firstly to gauge its feasibility and then to make proposals for the future regulation of the gold industry in South Africa.

(1) SELF-REGULATION:

It would be a relatively easy task to make provision for industry-self regulation in current precious metals legislation (Precious Metals Act, 2005). The essential ingredient is to make provision for recognition by the South African Diamond & Precious Metals Regulator of self-regulation by holders of precious metal licences (mining licences, refining licences, beneficiation licences and jeweller's permits).

(2) KNOW YOUR CLIENT/COUNTERPARTY:

"Know your customer" (KYC) is not a new practice. It is used widely especially in the Financial and Investment service industries. It refers to due diligence activities that regulated companies must perform to ascertain relevant information from their clients for the purpose of doing business with them. It entails customers providing detailed anti-corruption due diligence information, to verify their probity and integrity to the service provider.

Once again, it is relatively simple to insert such a provision in precious metals legislation and to require that holders of precious metals licences perform due diligence to ensure the integrity of the person they are sourcing precious metal from. It can be made compulsory that holders of precious metals licences satisfy themselves with reasonable certainty that their clients have not associated themselves with conflict or illicit gold.

(3) CHAIN OF CUSTODY:

The chain of custody is fundamental to any scheme to prevent conflict gold from entering the legitimate trade. If a chain of custody is backed up by industry self-regulation, then it is substantially strengthened.

There are some measures already in the Precious Metals Act, 2005. In particular holders of precious metals licences must record transactions of precious metals purchases and sales in registers prescribed by regulation. There are however, no assurances given to the next party that the gold was purchased or handled in a manner that is "conflict-free" or human rights abuse free. This can be fixed in current precious metals legislation by inserting a provision requiring invoices of sales and exports contain a "conflict-free" or "human-rights-abuse free" statement such as:

The gold/gold-bearing material invoiced herein has been acquired lawfully and/or handled in a manner that is conflict and human-rights-abuse -free and meets the minimum requirements of the OECD Guidelines on sourcing of minerals from Conflict-Affected or High Risk areas.

(4) IMPORT AND EXPORT OF PRECIOUS METAL:

Current precious metals legislation can be improved by requiring that assurances of the conflict-free and human-rights-abuse free nature of the gold or gold-bearing material being exported is declared in writing on invoices and export documents.

(5) MINE PROFILING BY GEOCHEMICAL FINGERPRINTING:

Although this ground-breaking provision was inserted in precious metals legislation when the Precious Metals Act was drafted in 2005 (Section 22 of the Precious Metals Act, 2005), there is room for improvement.

As it stands, the legislation requires that Producers in South Africa provide profiling specimens from each mine in the name of that Producer to the Forensics Science Laboratory of the South African Police Services. The Forensics Science Laboratory uses trace element geochemistry in a proven methodology (since 1993) to fingerprint gold (gold, gold-bearing ore or gold in various stages of metallurgical processing) form different mines. Gold from each mine has a geochemical signature that distinguishes it from gold from another gold mine.

The major short-coming is the fact that the database of profiling specimens from different mines is inadequate for non-South African Mines. There should be a requirement that any precious metal licence holder operating in gold mines outside South Africa or acquiring or receiving gold or gold-bearing material sourced from outside South Africa also provide profiling specimens. This can be easily inserted in current legislation as well.

CONCLUSION

The above discussion suggests that Government regulation backed by self-regulation efforts such as the World Gold Council's Conflict Free Gold Standard is feasible in the South African context, and would tighten regulation of the precious metals industry should this be the objective of Government. Indeed, it would solve certain problems as suggested above, but it will not solve all the problems. In particular, it would not solve the problem of illegal mining in South Africa – as initiatives such as the World Gold Council's Conflict Free Gold Standard are implemented by the larger, legitimate mining and refining companies only.

CHAPTER THREE:

RESOURCE NATIONALISM (IN THE CONTEXT OF THE SOUTH AFRICAN PRECIOUS METALS INDUSTRY)

"The desire of gold is not for gold. It is for the means of freedom and benefit."

Ralph Waldo Emerson

RESOURCE NATIONALISM: DEFINITION

Resource Nationalism is a term that encompasses various efforts by people and governments (in resource-rich nations) to assert political and economic control over their energy and mining sectors (Bremmer and Johnston, 2009).

The rationale for resource nationalism is indeed a noble one in theory, that of maximising society's or the country's benefit from resource extraction. Rationalised like this, it is easy to see why the word "beneficiation" has become synonymous with the concept of resource nationalism. However, beneficiation is just one aspect of resource nationalism.

Other examples of resource nationalism include:

- State-owned mining/mineral companies;
- State equity in mining companies (free-carried interest without any contribution or with contributed (paid for) interest);
- Taxes and/or royalties on mineral resource extraction or export (sometimes including windfall or super profits taxes);
- Indigenous participation (indigenisation and local equity requirements) in mining and minerals processing (in South Africa, this is known as Black Economic Empowerment or BEE);
- Use-it-or-lose-it mineral/mining rights policies;
- Social investment requirements on mining licence holders;

- Mandated local beneficiation by mining companies (value-added processing before export, *inter alia* through export taxes/levies);
- Mandatory local inputs;
- Restrictions on foreign ownerships (Governments blocking the acquisitions of certain mining companies by foreign multi-national companies);
- Review of mining contracts with a view to renegotiation or cancellation (Peter Leon, 2013);
- State-owned mineral trading companies (which are empowered by law to buy a percentage or the whole of mineral production from mining companies; and
- In the rare and extreme case, outright expropriation or nationalisation without compensation.

Resource nationalism usually takes the form of regulatory expropriation/controls, in which regulation and taxes are adjusted to increase the government's share of resource rents (Reuters, 2013). It usually takes place during periods of high commodity prices. Leon (2013) surmised that the challenge from these initiatives is to strike a balance of interests ensuring that mining is productive, profitable, as well as fair to foreign investors, host states and affected local communities. Ernst & Young (2013) identified resource nationalism as the "biggest risk" facing the mining industry globally.

CAUSES OF RESOURCE NATIONALISM OR ITS RISE

The reasons for resource nationalism or the escalation in resource nationalism include the following:

1. Minerals are finite;
2. Most countries instituting various resource nationalism measures are trying to offset the legacy of colonisation – which often resulted in raw materials including minerals being mined and exported in raw form to European countries;
3. Some countries instituting resource nationalism measures are trying to avoid the Resource Curse;

4. Populist resource nationalist rhetoric (such as the 2011-2012 calls from the former ANC Youth League president now leader of the Economic Freedom Front, Julius Malema in South Africa);
5. Often promoted by rising commodity prices;
6. Resource nationalism is contagious (measures are often copied in other jurisdictions);
7. To promote local beneficiation and maximisation of the value from minerals; and
8. Seeking energy security (in the case of energy minerals such as coal).

Cawood and Oshokoya (2013) provided an excellent overview of existing resource nationalism instruments in South Africa and an assessment of their effectiveness. They pointed out that the *Minerals & Mining Policy for South Africa* (Mineral Policy) released in 1998 outlined the "resource nationalism" objectives of the country: "to develop South Africa's mineral wealth to its full potential and to the maximum benefit of the entire population." This Mineral Policy served as the bedrock for the enactment of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA), which had as its main objectives: to vest mineral rights custodianship in the State and secondly, to allow all South Africans to benefit from the country's mineral resources.

Cawood and Oshokoya (2013) broached that during the commodity boom a few years after the promulgation of the MPRDA popular feelings rose revealing disillusionment with the mining sector and the notion that foreign mining investors were benefiting at the expense of South Africans. This led to the Youth League of the ANC utilising the political tool of the call for nationalisation of South Africa's mines in 2010. The Youth League suggested that a State mining company should be established and that the MPRDA be amended to ensure all private mining investors operate in partnership with this proposed state mining company (Cawood and Oshokoya, 2013). This started the debate on nationalisation of mines which subsided after the release by the ANC of the SIMS (State Intervention in the Minerals Sector) document discussed later in this Chapter. At the ANC Mangaung

Elective Conference in 2013, the ANC rejected wholesale nationalisation as a policy option, and adopted the National Development Plan as a key strategic area (Baxter, 2013). Butler (2013) asserted that while there were some positive consequences from the deliberation about nationalisation (in particular that it was managed by the ANC at a time of heightened anti-colonial sentiment) there were costs too that resulted from policy uncertainty.

Cawood and Oshokoya (2013) listed the following as existing resource nationalism instruments in South Africa, designed to ensure the State collects a reasonable share of resource revenues, and secondly to address inequity and other apartheid legacies:

(a) State Custodianship over mineral resources (MPRDA);
(b) Use-it-or-lose-it and conversion from the old order to the new order rights of the MPRDA;
(c) Implementation of sustainable development (via the MPRDA);
(d) Promotion of beneficiation (mainly via the Diamonds Act, 1986 and the Precious Metals Act, 2005;
(e) Broader participation through new entrants to mining (chiefly via the Broad-based Socio Economic Empowerment Charter and the requirement for social and labour plans in the MPRDA);
(f) Mineral Royalties (via the Mineral and Petroleum Resources Royalty Act, 2008);
(g) Diamond Export Levy (via the Diamond Export Levy Act, 2007).

Cawood and Oshokoya (2013) concluded that the Royalty Act has had a positive impact on the collection of revenue. They added that they did not agree with the SIMS report which contended that the MPRDA failed to ensure that the Mining Right system provided for in the Act maximised the developmental impact. They suggested that any failure in delivery of benefit by the mining right system should be blamed rather on “administrative inefficiency and political intervention during the implementation and governance of the MPRDA”.

Neighbouring country Zimbabwe was also going through several proposals for greater benefit from its mineral resources during the period from 2008 to 2015. Of relevance to this study is the fact that Zimbabwe has the largest platinum reserves after South Africa (USGS, 2013). In 2009, the Zimbabwe government threatened to withdraw export licences from miners exporting raw platinum in order to force companies like South Africa's Impala Platinum to build refineries in Zimbabwe. Platinum producers including Anglo American Platinum and Impala Platinum argued that they need a production threshold of at least 500 000 ounces of platinum to justify the creation of a smelter (New Zimbabwe.com, 2013).

In March 2015, Zimbabwe introduced a 15% tax as a disincentive to the export of raw platinum. In May 2015, Zimbabwe put this 15% export tax on hold after Zimplats (which has Impala Platinum as a major shareholder) indicated it has the capacity to build a smelter in the country and Anglo Platinum's Unki promised to provide plans for a local smelter (Miningmx.com, 2015).

WHY DO PRECIOUS METALS LEND THEMSELVES TO RESOURCE NATIONALISM?

Precious metals are a common target for resource nationalism because of their high unit value or price. In times of commodity price increases, investors are attracted to precious metal exploration or mining assets. Governments see this as an opportunity or as leverage to introduce resource nationalism measures such as new taxes etc.
The extraction of gold, in particular, is relatively well known and easy to adopt technology, which makes it less risky for governments to impose resource nationalism measures on foreign companies. Should foreign companies be scared off by such measures, there are often many local players eager to fill that space.

Gold and platinum are priced in US dollars; a currency which has an inverse relationship with the gold price. So, when the gold price is rising it is usually associated with a weakening of the US dollar resulting in revenues from sales being even higher in local currency terms. This attracts calls for higher taxes or taxes on super profits on gold mining companies in particular.

THE SOUTH AFRICAN PRECIOUS METAL CONTEXT

In South Africa, there have been many resource nationalism measures and instruments introduced, proposed or contemplated. The relatively new minerals legislation, the Mineral & Petroleum Resources Development Act, 2002 (MPRDA) is the best manifestation of this. Through that Act, custodianship of mineral resources was vested in the State after many decades of being in private hands. The Mining Charter which is part of the MPRDA, also introduced the concept of Black Economic Empowerment (BEE) into the mining and minerals industry, and is now standard practice for licensing of prospecting and mining activities. The Act also made provisions for the Social and Labour Plan to ensure that communities around the mine and employees of the mining company benefit from mining. However, this is now standard practice, and for this research the proposed and contemplated measures and instruments are more important to focus on. These are discussed below.

PRODUCER-COUNTRY PRICE FOR GOLD AND PLATINUM VERSUS MARKET PRICE

In 2011, the author of this thesis was asked by the Mineral Resources Parliamentary Portfolio Committee (PPC): *"What influence does South Africa have on the setting of the price of gold and platinum?"* This stemmed from the resurgence of resource nationalism in 2011 – a philosophy that was being promoted by some members of the PPC, who saw the setting of a Producer Price for gold and platinum as beneficial to the country and almost as a sovereign right. Producers like South Africa, are in fact, price takers, and the price is "discovered" through the market mechanism described below.

Currently the price of gold is 'fixed' twice daily at 10.30 am and 3.00 pm (BST) in London, which has been the centre of the gold market for over 300 years[14]. The process is detailed in Chapter 1. As far as platinum and palladium prices are concerned, the London Platinum & Palladium Market (LPPM) Fixings, also referred to as the London Fix, is considered the international benchmark. The quotation is

[14] NB: At the time of writing, the LBMA Gold Price (fixing by electronic auctions platform) replaced the historic London Gold Fix.

done twice a day at 09H45 and 14H00 (GMT). The fixing procedure[15] is similar to the London Gold Fix, in that it is a balancing exercise of buying and selling orders received from members or their clients, who respond to price announcements and subsequent adjustments. The fixing price is the one at which all orders are cleared. Settlement is made within two days after the date of contract.

PROS AND CONS OF A PRODUCER PRICE FOR GOLD

What are the pros and cons of the hypothetical case where South Africa sets the price for gold produced in the country? First of all, it has to be said that the gold market is very different from other metal markets. In fact, it is unique mainly because of its complexity as described in Chapter 1.

World production of gold is around 3 000 tons a year and gold is mined in over 70 countries. Gold is, for all practical purposes, virtually indestructible, thus besides some minimal industrial and other losses, almost all the gold that has ever been mined (183 600 tons) is still in existence in some form or other (World Gold Council, 2010). Therefore, there is sufficient gold above ground to even allow for the world to do without many years of mine production. It is also a well-known fact that mine production has little or no effect on the gold price. The gold price is affected more by central bank sales or purchases of the metal, the strength/weakness of currencies especially the US dollar, investment demand for the metal, inflation and economic uncertainties or slowdowns.

More importantly, South Africa's gold production is currently less than 165 tons, and is unlikely to wield any power in terms of price setting. The price setting mechanism of gold described above is so well established (only changes are technological improvements) that it is unlikely a South African price for gold will be of any consequence. In the interconnected world we live in, a South African price for gold will have to relate to the international price of gold which defeats the purpose of having a South African price in the first place. A local price for gold would most likely

[15] At the time of writing, the London Metal Exchange (LME) had been selected as the administrator of the London Platinum and Palladium Fixing.

be nullified by arbitrage opportunities which would be pounced upon by local traders and international players.

Also of importance to note is the fact that South African gold production costs are higher compared to other major gold mining countries. This would mean that a South African price would most likely have to be higher than the international price for this to work otherwise most mines would eventually close down. If those who propose a South African price for gold, hope it to be internationally recognised, it is very difficult to understand why it would be. The price for gold is set in the major demand areas in the US, UK, Hong Kong and Tokyo. A South African price for gold will have relevance only in South Africa, and will most probably be ignored by the rest of the world unless there are arbitrage opportunities as mentioned above.

PROS

Between 2011 and 2012, the Department of Minerals Resources (Menoe, 2012), proposed a "Development Price" for certain minerals and metals to promote beneficiation. Such a development price was proposed as a lower price (relative to the market price) to make beneficiation or manufacturing in South Africa of products that use such minerals and metals more competitive. If that were applied to gold, it will obviously be of benefit to the jewellery industry in South Africa and make it more competitive in theory than their counterparts elsewhere. This may attract large foreign jewellery manufacturing companies to set up in South Africa if the price differential from the market price is significant, say 5% or more.

CONS

The biggest negative of a South African gold price is that it would not be internationally recognised. That aside, if the gold price in South Africa were to be set significantly lower than the market price, although it would make jewellers and other fabricators happy in the short term, it would most likely accelerate the demise of the gold mining industry in South Africa. If, on the other hand, the gold price differential was subsidized by the government, tax payers would be paying for something they should not be paying for. This is unlikely to be popular with South African citizens, especially since the benefit to South Africa would be relatively small.

PROS AND CONS OF A PRODUCER PRICE FOR PLATINUM

What are the pros and cons of the hypothetical case where South Africa sets the price for platinum produced in the country?

With platinum, the main difference is South Africa is the largest producer in the world, producing as much as 75% of global mine production, and hosting more than 80% of the known reserves of the metal. So technically, a South African price for platinum produced in the country has a far better chance of being internationally recognised than any such gold price. In addition, the above-ground stocks of platinum are relatively small. In most years the market supply/demand balance is either a small surplus or small deficit.

PROS

The advantage of a South African producer price for platinum is that it would take into account demand from local fabricators, which in turn will attract new players to South Africa. A South African price would also take into account the cost of production in South Africa and the impact of rand/dollar exchange rates

CONS

The disadvantage of a South African price is that other countries would hasten to become less reliant on South Africa as a source of platinum. There would be more emphasis on recycling of platinum, i.e., secondary sources of platinum. It would also result in a doubling or tripling of efforts to find alternatives to platinum in applications such as autocatalysts.

As with gold, some sort of subsidisation for local fabricators would be required, which would be unpopular with tax payers. However, the biggest disadvantage would be that the cost/benefit analysis would hardly be compelling.

LESSON: PRODUCER PRICE FOR GOLD AND PLATINUM

It can be deduced from the above discussion that balancing the interests of Producers of precious metals and fabricators of precious metals in South Africa would be problematic to achieve, making attempts at a South African price for these precious metals not favourable in terms of cost/benefit. Moreover, South Africa earns far more revenue from mining and exporting precious metals than it does from manufacturing products from them and exporting these. The cost of setting up efficient price discovery mechanisms for gold and platinum would outweigh any benefit, and it is not warranted in South Africa.

METAL/MINERAL PRICING MECHANISMS AND OTHER EXPERIENCES WITH PRODUCER PRICE

There are essentially three methods of price determination for the numerous mineral and metal commodities produced internationally:

(a) determination by commodity exchanges,
(b) determination by major producers, and
(c) determination through direct negotiation between buyer and seller.

Prices determined on commodity exchanges are for standardised commodities, mainly metals, while those prices determined through negotiation between buyer and seller tend to be for commodities for which transport costs are a large portion of total value or which are produced according to customer specification.

Producer prices are determined by producers and, to a lesser extent, by consumers. On commodity exchanges, in addition to producers and consumers, brokers, traders and speculators are also market participants. There has been a significant reduction in the role of producer pricing for metals since the 1970s. The main reasons for this were the decline in horizontal concentration and vertical integration, and the increase in international integration.

Markets that are concentrated tend to have more stable prices than those with many producers. This is because of the instruments available to control prices (can vary

price, output or inventories). In a competitive market, on the other hand, producers are price takers.

The main advantage of exchange-determined prices is their transparency. Exchange prices are published continuously and have worldwide visibility. In contrast to producer prices, they are actual transaction prices and are uniform across customers. Moreover, exchange markets are much more important than their physical volumes might indicate. Another useful function of exchanges is their inventory-carrying role (warehouse network), which means that a producer need not hold unwanted stocks. A very large quantity of metal sells at prices based on commodity-exchange quotes, without actually being sold via an exchange.

In the late 1980s, commodity exchanges switched from a principal's market (a market where members act as principals for the transactions they conclude at the exchange trading floor and with their clients) to a clearing house system. A clearing house is an independent body that clears and guarantees transactions between member brokers. An outcome of the clearing house system implementation in the UK was the introduction of margins (initial margins paid for every trade and variation margin calls made as the market moves against trades). In the US, the COMEX clearing system requires a daily cash settlement system as opposed to the prompt or due date settlement system of the LME.

There are no examples of producer price set for any mineral/metal by a producer-country. In the oil industry, there is OPEC which consists of a group of exporting countries, but there is a separate discussion below as far as this relates to proposals for platinum and palladium.

Iron ore prices do have a so-called Producer Price, but it is important to note that this is at the company level and not at the country level. An explanation of how this works is given below. Some 98% of iron ore is used to make iron and steel, thus its price is determined by what steelmakers are willing to pay for it, and that is based on how the ore behaves in the iron making process, i.e., whether it raises or lowers the costs of producing steel (Kirk, 1996).

Generally, iron ore prices are set on a yearly basis, even for contracts longer than one year, and are most often negotiated directly between buyer and seller. The benchmark level in price negotiations is usually set by the major producers and the Japanese steel industry, or between Brazilian producers and German steel fabricators. The reference price of Fine Ores is usually established first as this represents about 60% of the traded market. Prices for lump and pellets are then usually determined as a premium to the Fines price.

OPEC-STYLE TRADE BLOC FOR PLATINUM AND PALLADIUM?

At the recent BRICS (Brazil, Russia, India, China and South Africa) Summit held in Durban, South Africa in March 2013, South Africa and Russia, countries that hold about 80 percent of platinum-group metal reserves, announced that they plan to set up an OPEC-type trading bloc to coordinate exports of platinum and palladium (Bloomberg, 2013). "It can be called an OPEC," Russian Natural Resources Minister Sergey Donskoy said at the meeting in Durban. "Our goal is to coordinate our actions accordingly to expand the markets. The price depends on the structure of the market, and we will form the structure of the market", he added.

Donskoy (2013) stated that the two countries had formed a working group to work out joint actions on the markets for platinum and palladium which will be meeting in July 2013 to discuss mechanisms in detail. South Africa's Mineral Resources Minister at that time, Susan Shabangu (2013) stated that the deal sought to counter oversupply of platinum, possibly through taxes and incentives. When questioned about whether a cartel would be created, the Minister was quoted as saying: "We're not really controlling the market. We want to contribute without creating a cartel, but we want to influence the markets."

South Africa produces about 75% of the world's platinum and 38% of its palladium. Russia produces about 14% of the global mine output of platinum and 41% of its palladium. Together the two countries contribute 89% of the global mine production of platinum and about 80% of global palladium mine production. Major (2013) head

of mining and resources at Cadiz Corporate Solutions, said that the proposed trade bloc could break international trade law and agreements and fall foul of competition authorities, particularly in regions such as Europe, which is the main market for platinum and palladium. He also commented that China which is a major market for PGMs as well is also a BRICS country and would not welcome the market being controlled artificially.

OPEC (FOR OIL) AND HOW IT WORKS?

OPEC**,** the Organization of the Petroleum Exporting Countries is an oil cartel whose mission is to coordinate the policies of the oil-producing countries. Its goal is to secure a steady income to the member states and a secure supply of oil to consumers. OPEC is an intergovernmental organization that was created at the Baghdad Conference in September 1960, by Iraq, Kuwait, Iran, Saudi Arabia and Venezuela. Later it was joined by nine more governments: Libya, United Arab Emirates, Qatar, Indonesia, Algeria, Nigeria, Ecuador, Angola, and Gabon, to make up its current 12 member countries (OPEC, 2014). Important in the context of this study, OPEC was formed at a time when the international oil market was largely separate from centrally planned economies, and was dominated by multinational companies (Yergin, 1991). OPEC's 'Policy Statement' states that there is a right of all countries to exercise sovereignty over their natural resources (Weil, 2007). OPEC is a swing producer and its decisions have had considerable influence on international oil prices.

ANALYSIS OF THE PROPOSAL FOR AN OPEC-TYPE TRADE BLOC FOR PLATINUM AND PALLADIUM

It is suggested that although it is feasible for South Africa and the Russian Federation to create an OPEC for platinum and palladium, because of their dominance of global mine production, it would be difficult for the two countries to work together to manage the trade bloc, to manage supply and demand and to price platinum and palladium in these internationally integrated markets for reasons set out below.

Russia's platinum and palladium industry is state-centric and has been since the Soviet era. It has the Gokhran, which is the State Precious Metals and Gems Repository - a state institution under the Russian Ministry of Finance responsible for the State Fund of Precious Metals and Precious Stones of the Russian Federation. It is responsible for the purchase, storage, sale, and use of precious metals, precious stones, jewellery, rocks, and minerals by the State Fund.

So, similar controls needed are well known and used in Russia for palladium. In fact Russian stockpiles of palladium were for many decades one of the major controls on the palladium price. Much of these stockpiles have been exhausted, and so it is in the interests of Russia to have a partner such as South Africa to influence palladium markets.

In South Africa on the other hand, there is no State body purchasing platinum or palladium mined in South Africa. In fact, export of these metals was encouraged for many years as it was either the highest or second highest mineral export revenue earner for the country. Most importantly, however, the platinum and palladium produced do not belong to the State, but to the mining companies of which Anglo Platinum, Impala Platinum, Lonmin and Northam Platinum are the most important.

There are two ways in which South Africa can institute controls on the market for platinum and palladium:

(a) by controlling exports, i.e., limiting exports by export taxes and an export licence system; and
(b) by forming a State Platinum Trader to buy up platinum in times of excess supply, or like the State Diamond Trader to buy a percentage of platinum mined in South Africa from each Producer (stands at 10% for diamonds currently).

This is analysed further below:

MARKET MONITORING AND SUPPLY/DEMAND MANAGEMENT REQUIRED

It is suggested that South Africa does not have the required expertise or infrastructure to monitor the global platinum and palladium markets or to manage supply and demand of platinum and palladium.

Although the Reserve Bank did, prior to 1997, buy up a significant portion of the country's gold mine production and act on behalf of South Africa in the gold market, it has no knowledge or expertise of note in the platinum and palladium markets. Some may argue that such expertise could be hired, but even so, it will take many years to develop and commission the systems to achieve the required level of real-time knowledge and efficiency that will allow for market monitoring and supply/demand management.

RECYCLING WILL INCREASE

Platinum and palladium are readily recyclable, supplying 20-25% (see Figures 3.1, 3.2 & 3.3) of global demand for the metals (a record 25.1% of global platinum supply in 2014). The tightly controlled recycling of catalytic converters is a profitable and reliable source of platinum and palladium, with recyclers often hoarding stock until they feel the price is right (Freer, 2013). It is an alternative supply of platinum which will become more and more significant, if controls on supply are instituted. According to Freer (2013), the recycling industry lies outside the control of Russia and South Africa and the existence of this source starts annulling the first condition for successful cartels which is to limit the number of suppliers. In 2011 and 2012, the recycling industry supplied the equivalent of 90% of South Africa's contribution to the global supply in the same two years (Freer, 2013). The graphs below (see Figures 3.4 and 3.5) show that recycling of both platinum and palladium are significant and currently correlated to prices (i.e., recycling is price elastic). It is worth noting that at present there is no clear negative correlation between mine production and recycling and this indicates that recycling is currently chiefly price driven. That trend could change if mine production is controlled by an OPEC-type trade bloc or similar mechanism.

SEARCH FOR ALTERNATIVES WILL INTENSIFY

If controls on supply are instituted by South Africa, the search for alternatives will intensify, and at the very least thrifting (using less of the metals) will become more innovative. Platinum and palladium are very rare metals and a suitable replacement has not been found nor will it be found soon, but it will be a certainty that efforts to find alternatives will receive more funding; perhaps ten-fold is not out of the question.

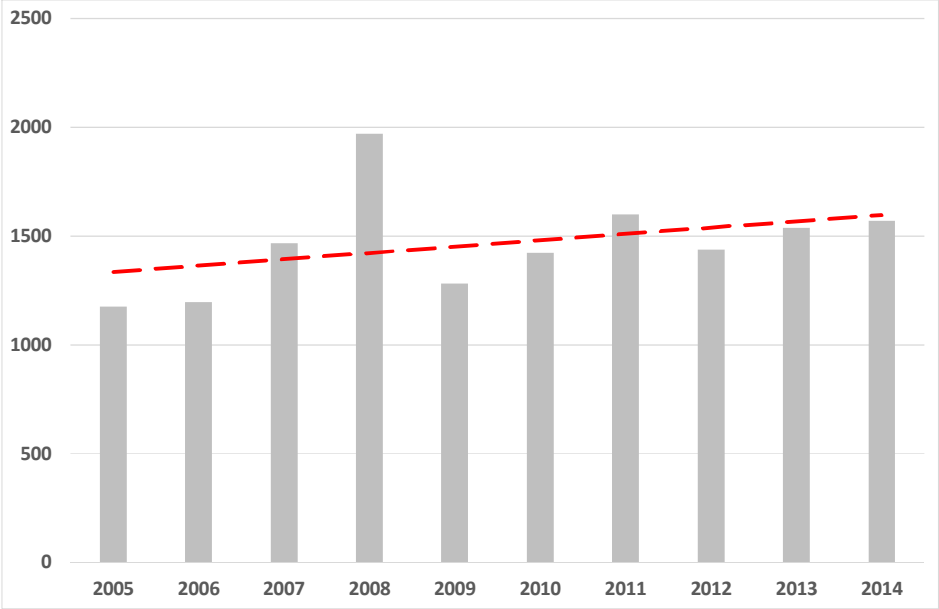


Figure 3.1: Supply of platinum from recycling of scrap, 2005-2014

After the Marikana debacle, which resulted in a significant rise in the platinum price in anticipation of a shortage, industries have continued to pursue the search for less expensive, more readily available alternatives (Freer, 2013).

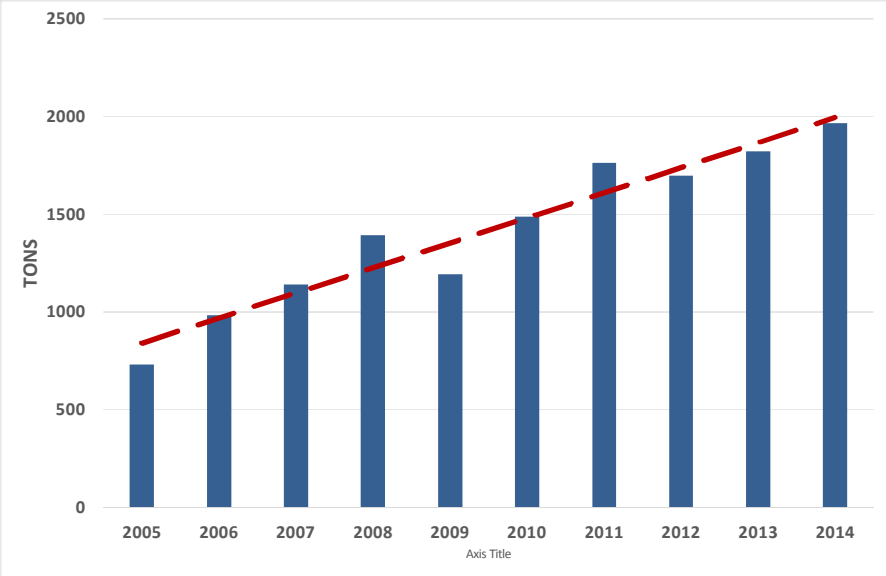


Figure 3.2: Supply of palladium from recycling of scrap, 2005-2014
(*Source of data for figures 3.1-3.5: Platinum and Palladium Survey, 2015, GFMS Ltd.)*

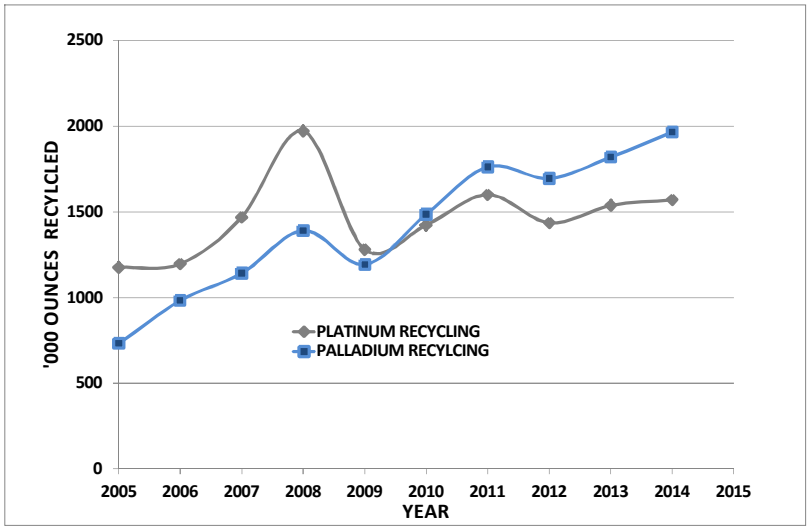


Figure 3.3: Platinum & palladium recycling, 2005-2014

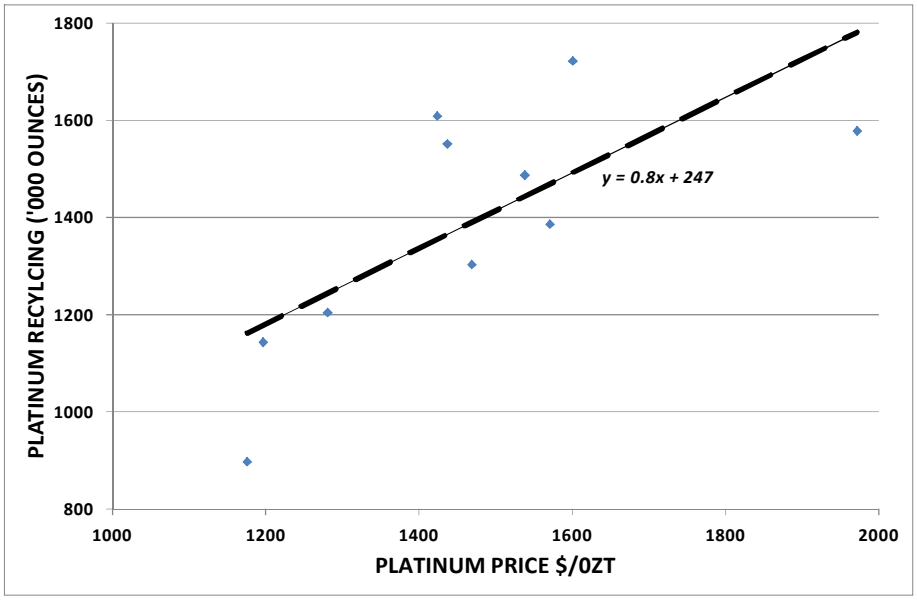


Figure 3.4: Platinum recycling versus average annual price, 2005-2014

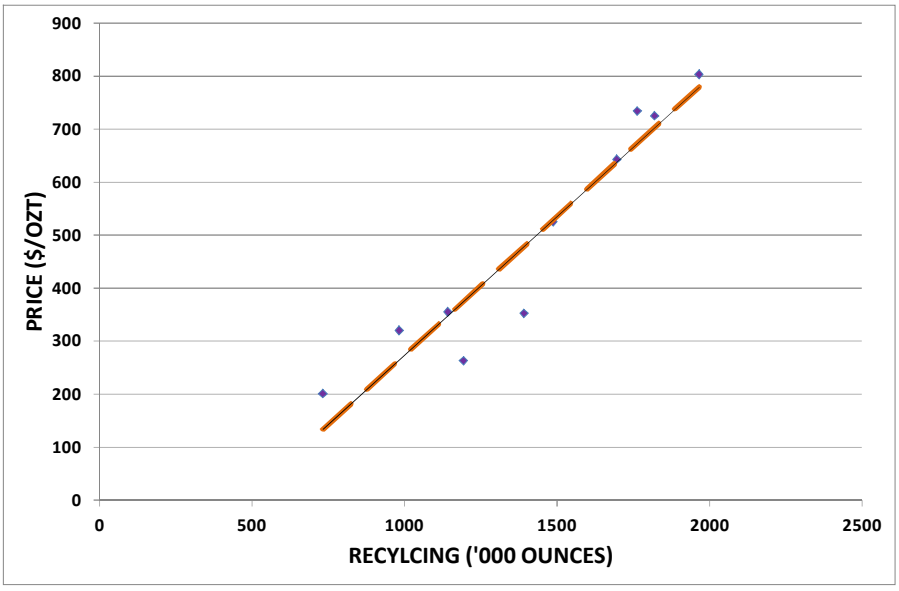


Figure 3.5: Palladium recycling versus average annual price, 2005-2014

STABILIZATION FUND FOR PLATINUM

Saville (2015) asserted that the platinum industry is an oligopoly in which three players control the bulk of new mine supply, but that the industry is a price taker that is vulnerable to swings in the prices of platinum-group metals. He posed the question: are there remedies available to producers or are they likely to remain victims or beneficiaries to price movements down and up, respectively. He added that while the proposed platinum producers' cartel could be a solution, a cartel comes with risks such as cheating on supply quotas when prices rise. He also suggested that a cartel requires a lead steer to act as the co-ordinator and also the swing producer, but argues that South Africa's production inflexibility would mitigate against mining groups in the country taking on such a role. He claims that the greatest political and legal challenge to a cartel would come from South Africa itself where it is illegal to collude and agree prices. South Africa's Competition Commission continues to dismantle any remaining harmful, non-competitive industry practices borne under Apartheid. Saville (2015) concludes that because of such risks and challenges a platinum cartel is not a realistic solution. He proposes instead a stabilisation fund – a mechanism aimed at protecting producers from volatile prices, which he explains works as follows: Firstly, an "industry effective" price needs to be determined, which is a price that corresponds to a healthy return. If the platinum price rises above the agreed level, the "surpluses" are "side pocketed", and if the prices fall below the agreed level, funds are withdrawn from the "side pocket" to stabilise revenue.

While some people commented that it could work (such as Wagner, 2015), others questioned where the money would come from to set up the stabilisation fund. Conroy (2015) argued that miners don't have the money, labour unions would not put in their own money, and shareholders are unlikely to do this. He adds that only government can be the real source of such a fund. Considering that it would require billions of dollars for such a fund to be successful, in the current climate of low economic growth, it is unlikely that government would be keen to set aside such an amount of money for one industry.

STATE PLATINUM TRADER?

Since the State in South Africa does not own the platinum produced in the country; to be able to control supply to the market, a State Platinum Trader in the mould of the relatively recently established State Diamond Trader could be created. As with the State Diamond Trader, if established, a State Platinum Trader would have the following functions:

- buy a percentage of platinum (say 10%) from producers (miners) possibly at a cost plus basis;
- Buy-up surplus production at a "market-related" price, whenever a surplus is evident;
- Sell platinum to local fabricators (beneficiators) at a cost plus margin basis or at a "Developmental Price" (discounted market price);
- Play a vital role in supply/demand management;
- Provide market intelligence in terms of platinum supply and demand, and
- Promote local fabrication of platinum.

A State Platinum Trader is feasible in South Africa. In fact it has a better chance of achieving its objective (that of local beneficiation) than the State Diamond Trader. However, its major obstacles would be safe and secure warehousing of a relatively bulkier commodity, systems and human resources for global supply/demand monitoring and the logistics of transport, distribution and insurance.

Most importantly, however, is the crucial issue of pricing of platinum. Currently the State Diamond Trader buys rough diamonds at market price from producers and sells this to its clients (diamond beneficiators) at a margin of between 2 to 4 percent. This it needs to do in order to fund itself – a flaw in its model if its mandate of promoting beneficiation is considered. A State Platinum Trader working in the context of this pricing model would almost certainly be a failure. If, alternatively, a State Platinum Trader were to buy platinum at a discount from producers, it would affect the profitability of platinum mines in South Africa and the marginal ones would close down.

SINGLE EXPORT-CHANNEL FOR MARKETING OF PLATINUM

Paul Jourdan (2015) proposed that there should be a single channel for the export of platinum from South Africa owned and run by the producers themselves. He proposed that platinum producers should be given the first right to run such a "Central Selling Organisation", but with conditions. One condition would be that once running smoothly, the large players like Johnson Matthey should be persuaded by the producers to re-locate their operations to South Africa – like the previously London-based Diamond Trading Company of De Beers was coerced into relocating to Gaborone in Botswana by the Botswana government.

This proposal by Jourdan seemingly has the same rationale as the other platinum proposals discussed above: control of supply to influence prices. The difference with his proposal is that he advocates that South Africa's producer power be used as leverage to draw the large traders and fabricators to relocate to South Africa, and thereby transplant large scale fabrication (of autocatalysts and industrial chemicals) to the country.

This proposal can only work if all platinum producers in South Africa, large and small, buy into the concept first. If there are any producers that want to export platinum outside the Single Channel, the model will not work. The famous Central Selling Organisation (CSO) of De Beers which existed prior to 2000 eventually failed and was replaced by the Supplier of Choice Strategy because of the exit of companies from the CSO (started most famously by the Argyle Mine of Australia in 1996). Secondly, the single channel marketing of platinum would encounter the same resistance as the OPEC-type trade bloc proposal from competition authorities in the EU and the US – the major markets for platinum.

PRECIOUS METALS EXCHANGE IN SOUTH AFRICA

Damarupurshad (2003) suggested the establishment of a major financial hub in Johannesburg built around a precious-metals exchange. He stated that while mineral-commodity exchanges have been established worldwide, South Africa at

present only has a diamond exchange, which was set up solely to provide an avenue for diamond producers and dealers to avoid the payment of duty on the exportation of rough diamonds, and does not even provide a platform for the trading of polished diamonds.

Damarupurshad argued that South Africa could benefit strongly from a precious-metals exchange based on examples of such as the LME in the UK, the Comex in New York, Tocom in Tokyo, Dubai's Metals & Commodities Centre and gold exchanges in Shanghai and Istanbul. He added that a physical exchange for precious metals would offer a crucial first step towards market opening and nurturing, by allowing for such activities as gold loan schemes. He argued further that a futures precious-metals exchange could also provide the catalyst to developing Johannesburg into a major financial hub, built around precious metals-backed financial-instruments trading. Damarupurshad argued that that such an exchange could be seen as a natural progression for Johannesburg as one of the world's main mining centres.

THE INVESTIGATION INTO THE POTENTIAL VIABILITY OF A SUSTAINABLE COMMODITY EXCHANGE IN SOUTH AFRICA

In 2005, the Fund for Research into Industrial Development, Growth and Equity (FRIDGE) commissioned a study to investigate the potential viability of a sustainable commodity exchange in South Africa. The study was conducted by Virtual Metals Research & Consulting Ltd. (hereinafter Virtual Metals) and chaired by the author of this thesis (Ashok Damarupurshad). They found the following:

South Africa as a location: In its favour, South Africa has the legal infrastructure than can support an exchange, well established and functioning credit systems, good financial regulation, sufficient financial resources and banking skills, and in the Rand Refinery, a world-class gold depository (Virtual Metals, 2005). Against the country, are its limited cash markets in gold and platinum, and the lack of first-mover advantage (it will be extremely difficult to grab liquidity from existing successful exchanges like Nymex and COMEX).

South Africa's pre-eminence (this was in 2005) in the production of gold and platinum-group metals does not necessarily give the country a comparative advantage relative to the non-mining host countries of existing or potential exchanges (Virtual Metals, 2005). Virtual Metals (2005) added that strong metals' production is not a particular advantage. The reason for this it said is that a small percentage of futures contracts come to physical delivery (<1% in the case of gold and PGMs) and thus access to this metal, by virtue of proximity to mines, is not of huge importance. Although South Africa produces these metals, the bulk of annual output is exported and thus there is little in the way of metal circulating in the local markets whence a physical market could logically develop into a derivatives one. Virtual Metals emphasised that of more importance than production, is the access to and association with secure and reliable warehousing and safe transportation to and from the warehousing, which is found in terminal markets rather than in producing countries.

Virtual Metals concluded that the likelihood of the emergence of sufficient local trading interest in a South African commodity exchange does not look positive. The South African metal futures contracts will have to compete with COMEX/Nymex, where history has shown, latecomers to a competing market usually enter at a disadvantage. Virtual Metals suggested in their conclusion that the prognosis for a South African commodity futures exchange will greatly improve once a cash or physical market for the commodities has evolved in the country. Even the latter will be difficult to achieve, the Consultancy said, as most of the country's production is exported as domestic demand for the commodities is small.

CONCLUSION RELATING TO A PRECIOUS METAL EXCHANGE

Although it is relatively easy to provide for a Precious Metals Exchange in the Precious Metals Act, 2005, from experience with the diamond exchange one will find that since domestic demand is low, most of the metal offered at a proposed Precious Metals Exchange will eventually still be exported. We find this with diamonds where only 3-4% of mine production is actually beneficiated in the country with the rest being exported directly or after changing hands in the secondary market. Of this, 3-4%, a significant portion is also sold directly from producer to diamond cutter or

dealer, without making use of the Diamond Exchange. In short, current physical demand, is not sufficient to support the creation of a Precious Metals Exchange in South Africa.

It would be better if South Africa were able to use local precious metal (platinum, gold, palladium and rhodium) at discounted prices to attract fabricators into the country first before establishing an exchange. Discounting metal comes with its own problems, not the least of which is the prospect that the discount would have to be funded by government (subsidisation).

Moreover, South Africa does not have much in the way of warehousing and before any Precious Metals Exchange can be provided for in legislation, the logistics of creating an exchange infrastructure would have to be looked at. Warehousing tends to be located in terminal markets or established port-gateways to terminal markets, which South Africa is/has not.

PROPOSAL FOR THE CREATION OF A STATE GEM & PRECIOUS METAL BOURSE

The Bourse concept proposed by the Department of Mineral Resources in 2014 entails the creation of a State-owned, "State of the Art Bourse" to trade in diamonds, semi-precious stones and precious metals (DMR, 2014[2]). It is envisaged by the DMR that the Bourse would be an extension of the Diamond Exchange and Export Centre a statutory export/import centre and exchange established in terms of the Diamonds Act, 1986 and it would also be a member of the World Federation of Diamond Bourses. Analysis of this concept by commodity is given below and is imbued by feedback from industry players interviewed.

DIAMONDS:

There is already a functioning rough diamond bourse in the form of the Diamond Exchange & Export Centre which is a statutory exchange and export/import centre created by legislation (Diamonds Act, 1986). It functions because it is the only legislated export and import centre for rough and polished diamonds and legislation

compels all exporters to offer rough diamonds for local sale via the exchange and only if not sold may such rough diamonds be exported. This legislation has not been tested in the constitutional court as yet.

GOLD:

For gold to be traded on a bourse there would most probably need to be a legislated requirement for producers to offer a certain percentage of production (say 10% as with the State Diamond Trader in the case of diamonds). Producers would not voluntarily sell a percentage of production via a bourse as it would serve no benefit to them to do so. Gold producers are price takers. In addition, most of the major gold mining companies use the Rand Refinery to export gold on their behalf. Rand Refinery exports such metal to some 20 international banks mainly in London, Hong Kong, Tokyo, Chicago and New York. Some smaller companies also have export arrangements with Dubai, while several small companies do not export bullion but concentrates or melted scrap metal bars for further upgrading and refining in countries such as Belgium, UK and in Dubai.

The main issue relates to pricing. If the gold offered will be priced through price discovery – i.e., through bids and offers by market participants, then one would require significant liquidity for this to work. Considering the competition from other exchanges in particular the London market as discussed above (under Precious Metals Exchange in South Africa), it would be difficult to attract such liquidity for a physically delivered product. Physically delivered products are of interest to fabricators essentially. In South Africa, fabrication is small. Domestic demand for gold is less than 2 tons currently and most of this comes from recycling of scrap. So domestic fabricators, the bulk of who transact in grams at a time, will therefore not be purchasers of metal from a proposed bourse but rather from local refiners. Some foreign players may be interested, but because of deterrents such as VAT, Exchange Control (capital controls) and distance from markets, other Exchanges would be preferred. Furthermore, arbitrage opportunities would nullify any differences in price relative to the international benchmarks, in particular the LBMA Gold price which is fixed twice every weekday.

PLATINUM:

For platinum to be traded on the bourse, it is suggested that legislation would be required to force all platinum produced in the country to be sold via the bourse. This would not be popular with platinum miners who have built up relationships with overseas customers over decades. Moreover, most of the platinum is sold via long-term contracts with fabricators and traders such as Johnson Matthey, General Motors, Mitsubishi etc. Very little platinum is sold on the spot market. As South Africa dominates production of platinum, this could work if producers agree to change the way they have operated for decades and relationships with end-users overseas are severed. This would affect the platinum market seriously – in fact, turn it on its head and the arguments raised above relating to an OPEC for platinum will also apply. In particular, end-users would take steps to become less reliant on South Africa for platinum, such as through focussing on recycling. They would also concentrate on efforts in developing substitutes for platinum, and there will be a move away from diesel cars.

AFRICAN GEMSTONES

To attract trade in gemstones such as tanzanite and emeralds mined in other African countries, South Africa would have to convince producing countries such as Tanzania and Zambia that a South African bourse would offer them better prices for rough stones and they would have to relinquish their control on pricing of mined gemstones. This would not be an easy task as South Africa is not an end-user market. Moreover, coloured gemstones such as emeralds, rubies and sapphires are also popularly traded by the Auction System, without the need for bourse (Gemstone.org, 2015).

It is also unlikely that the polished trade in such coloured stones would be attracted to a South African bourse as there are established markets for polished stones in Thailand, Sri Lanka and India which are end-user markets, while South Africa is not. Tanzania the source of tanzanite, it should also be pointed out, has a Sightholder System (preferred client system) for tanzanite, with Sightholders from the USA, India, China (Hong Kong) and other gem-set jewellery manufacturing countries (Tanzaniteone.com, 2015). In fact, tanzanite is not found anywhere else in the world

and Tanzania has given the exclusive rights to mine tanzanite to one company, viz., Tanzanite One (Tanzaniteone.com, 2015) which has spent millions on marketing.

SOUTH AFRICAN GEMSTONES

The gemstone (other than diamond) industry in South Africa has always been fragmented – consisting of several small producers and traders. South Africa is not a significant producer of gemstones. There is some tiger's-eye, sugilite, blue lace agate and rose quartz production, but much of it is informal and most of it is smuggled out of the country in rough form. Customs at points of exit are unable to control the smuggling due mainly to a lack of knowledge on gemstones. It is highly unlikely that this problem can be eradicated by the creation of a bourse to trade in them; in fact it will increase the smuggling of these gemstones out of the country. Traders who benefit from the current lax controls are unlikely to change by the creation of a bourse.

CONCLUSION ON STATE BOURSE

It is argued that successful bourses are created by association of commercial traders who form such a bourse because of a market need for a trading platform. There is no need for a trading platform for gold and platinum in South Africa because producers have established their own marketing arrangements directly or via agents such as Rand Refinery. Domestic demand for gold is low and supply to fabricators is managed by refiners such as Rand Refinery, Metal Concentrators and Cape Precious Metals. Autocatalyst fabricators in South Africa are supplied platinum-group metals by the mining companies (Anglo Platinum, Lonmin and Impala Platinum). The system works and no fabricator of precious metals in the country complains about not being able to access metal for manufacturing purposes (Budhai, 2015). There is therefore no market need for a State Bourse trading precious metals, and this was the view of 95% of industry players interviewed in this study.

States do not establish bourses, but rather marketing commissions, or State-controlled central selling organisations, such as in Zimbabwe and Angola. This often occurs where the State owns mines or has a significant interest in mines. This is not the case in South Africa where 99.9% of diamond production, 100% of gold

production and 100% of Platinum-group metal production is in private hands. The State is also not involved in the trading of precious metals in South Africa. It therefore does not have any experience or expertise in trading of precious metals. The State Diamond Trader was a test of the trading environment by the State, which has not proven to be a success as at seven years of its existence. It is argued that if a bourse is to be established in South Africa, either a public private partnership or a completely private endeavour is required. A bourse requires an association of banks, and large trading companies as its basis, not the State (Budhai, 2014).

PLATINUM COIN CONCEPT

Despite South Africa's dominance of platinum production for decades and the tremendous success of the Krugerrand (gold legal tender coin regarded as the world's most successful by several metrics), South Africa has never issued a legal tender platinum coin. It is proposed that, unlike the other proposed interventions discussed above, a legal tender platinum coin would be very positive for the platinum industry. A legal tender platinum coin, in the mould of the Krugerrand, is long overdue in South Africa and should have been launched during the FIFA Soccer World Cup in South Africa in 2010, which was the best marketing opportunity the country has ever had. Patel (2014) suggested that the platinum coin will have more international appeal and prestige if it was made with South African platinum, by South Africans and it depicted Nelson Mandela. He proposed that it be called the "MandelaRand" (Patel, 2014). It will provide a means for South Africans to own platinum other than in jewellery form and minted bars, both of which are not popular in South Africa. It would need to be marketed in a manner that associates (brands) South Africa as the "Land of Platinum" and the Bushveld Igneous Complex (layered igneous intrusion containing world's largest reserves of PGMs) whence platinum is mined as a unique heritage of the people of South Africa bestowed by nature (or God, for those religiously inclined).

A legal tender coin would have the benefit of being VAT-free, and the same restrictions as to export of Krugerrands could apply for exchange control purposes. In the current market conditions of excess supply and low demand, a platinum coin could provide a new demand sector and reduce the excess supply in the market and

stockpiles held by producers. If the platinum coin is legal tender, it will also allow for other financial instruments such as those linked to the Krugerrand offered by Rand Merchant Bank.

THE SIMS REPORT AND ASPECTS INCORPORATED IN THE 2012 AMENDMENTS TO THE MPRDA

The SIMS report (2012) is the ANC study document "*Maximising the Development of People's Mineral Assets: State Intervention in the Minerals Sector*" that ensued after a robust debate on the threat of nationalisation of the mining industry. This study concluded that nationalisation of the mining industry was not a feasible option for South Africa and that at a cost of R1 trillion it would be unaffordable, and that nationalisation without compensation would be unconstitutional (Parson, 2012).

Dismissing nationalisation as an option, the report then focussed on proposing various State interventions in the mining industry. These include the following in simple terms:

- Introducing a 50% resource rent tax on all mining profits above a 15% return on capital and when implemented a reduction in royalties to 1%.
- Imposing export duties or restrictions and infrastructure tariffs, to encourage local beneficiation on the assumption that the raw mineral producer would be persuaded to transform the product into a higher value-added product that would not attract a tariff/duty.
- A ban on scrap metal exports
- Prohibiting the sale of platinum without National Treasury approval.
- Creation of Minerals Beneficiation Hubs, especially in Industrial Development Zones close to areas of high unemployment
- Increasing State participation in mining companies (in some strategic instances to over 50%);
- Local procurement conditions in mining concessions
- Increasing the required minimum equity ownership by historically disadvantaged South Africans from 26% to 30% of voting shares.

- State Minerals Company[16] mandate should include the development of strategic minerals" (including platinum-group metals) in partnership with other investors if necessary, in order to supply them into the domestic market at competitive or utility prices.
- Amending the MPRDA to maximise the Development Impacts
- Amending the MPRDA and Regulations to cater for "strategic minerals" such that it would permit concessions/licences to have sales/pricing and other conditionality
- The State Minerals Company should be given preferential exploration rights for "strategic minerals" (including platinum-group metals) and a free carry** in mineral right concessions (which will be issued by public tender).

It is important to bear in mind that the SIMS document is an ANC document, not a government document. However, the ANC is the ruling party, and such proposals have a good chance of becoming government policy, if not legislation. Indeed, at the end of 2012, the Mineral and Petroleum Resources Development Draft Amendment Bill, 2012 (hereinafter MPRDA amendment Bill), incorporating some of these proposals, was published for comment. These are discussed below.

FREE CARRIED INTEREST**

The MPRDA amendment Bill defines "free carried interest" in order to implement the proposal of the SIMS document. It is defined as "a share in the annual profits derived from the exercise of an exploration right in terms of the Bill as acquired by the State in terms of section 80(7) or section 84(6) as the case may be, despite the State not contributing to the capital expenditure."

STRATEGIC MINERAL

The MPRDA amendment Bill defines "strategic minerals" as "*such minerals as the Minister may declare to be strategic minerals from time to time"*. This means that government intends to give force to the proposals made in the SIMS document

[16] *At the time of submission of this report, government release d a draft Bill titled African Exploration Mining and Finance Corporation Bill, 2015 for public comment*

relating to strategic minerals [*preferential exploration rights for "strategic minerals" (including platinum-group metals), and a free carry*** *in mineral right concessions; concessions/licences to have sales/pricing and other conditionality; State Minerals Company mandate should include the development of "strategic minerals" (including platinum-group metals) in partnership with other investors if necessary, in order to supply them into the domestic market at competitive or utility prices*].

OFFER BY PRODUCERS FOR LOCAL BENEFICIATION AT A CERTAIN PRICE

The draft amendments to the MPRDA also provide for the Minister to *"from time to time by notice in the Gazette determine such percentage per minerals commodity or form of petroleum and the price in respect of such percentage of raw minerals as may be required for local beneficiation, after taking into consideration national development imperatives."* The draft amendments provide further that: "*Every Producer shall offer to local beneficiators a certain percentage of its raw mineral production as prescribed by the Minister"*.

EXPORT LICENCE

The draft amendments to the MPRDA also provide for an export licence in everything but name. The provision is as follows: "*Any person who intends to export any designated minerals mined or form of petroleum extracted in the Republic may only do so with the Minister's written consent subject to such conditions as the Minister may determine"*.

HOW THE PUSH FOR GREATER BENEFICIATION AFFECTS THE SA PRECIOUS METALS INDUSTRIES

The Precious Metals Act, 2005 has as one of its key objectives the promotion of *"equitable access to and local beneficiation of precious metals"* in South Africa. This is an extension of the provision in the Mineral & Petroleum Resources Development Act, 2002, which provides that any person who wishes to beneficiate a mineral mined in South Africa outside South Africa must obtain written permission from the Minister.

HOW IS BENEFICIATION PROMOTED IN THE PRECIOUS METALS ACT

Beneficiation is promoted in the Precious Metals Act 2005 as follows:

(1) The Act provides as one of the key objects (objectives) of the South African Diamond & Precious Metals Regulator, the promotion of equitable access to, and local beneficiation of, South Africa's precious metals;

(2) In considering an application for any licence, permit or certificate the Regulator must have regard to the promotion of equitable access to and the orderly local beneficiation of precious metals.

(3) The Act provides for a Precious Metals Beneficiation Licence for the fabrication (manufacture) of precious metal products (products consisting of or containing precious metals).

(4) The Act deregulates the possession, buying and selling of silver.

(5) The Act provides for a nominal fee for the jeweller's permit (which is for the manufacture of jewellery from precious metals) of R100 (increased to R500 in 2015).

(6) Most importantly it provides for an Export Approval for any person who wishes to export any unwrought or semi-fabricated precious metal, which is subject to the promotion of equitable access to, and orderly local beneficiation of such metals.

IMPACT OF THIS LEGISLATION ON BENEFICIATION OF PRECIOUS METALS

The Precious Metals Act, 2005 has been in effect since July 2007, a period of almost 8 years. The question that needs to be asked is: What impact has this legislation had on beneficiation of precious metals in South Africa? The best way to answer this question is to look at the fabrication statistics:

- Since 2007, gold jewellery fabrication in South Africa has dropped from 7.5 tons to 2 tons (Jewellery Council., 2015);
- Gold coin fabrication has increased from 6.8 tons to 21.5 tons (Rand Refinery, 2014);
- Since 2007, platinum jewellery fabrication in South Africa has dropped from 0.5 tons to 0.3 tons (Jewellery Council, 2015).

- Consumption of PGMs in the manufacture of catalytic converters has dropped from 40 tons to 30 tons (Catalytic Converter interest Group, 2014).

The statistics show that since the implementation of the Precious Metals Act, 2005 beneficiation (fabrication) of precious metals has declined in all sectors except in gold coin fabrication. Even the gold coin fabrication expansion was not attributable to the Act, but due to the bullish market in gold (upward trend in prices from 2002 to 2012) which spurred unprecedented demand for investment products such as gold coins especially at the time the US debt crisis was receiving much media coverage.

Therefore, legislating for beneficiation of precious metals has seemingly had a negative impact on beneficiation of precious metals in South Africa. This is because it has not addressed the factors that people consider before investing in large scale fabrication projects, which are lowering the cost of production, access to competitive metal loan schemes, access to skilled and productive labour, market development and market access. It is proposed that legislation is not the instrument to deal with such issues.

Promotion of transformation (discussed below) simultaneously with beneficiation has reportedly had a negative impact on beneficiation (anonymous, 2014). A person who insisted on remaining anonymous claimed that before the implementation of the Precious Metals Act, 2005 (with BEE as a major objective) there were over 5 000 holders of jewellery permits in South Africa, and this number has dropped to 2 000. He claimed that some medium to large jewellers had closed down because they did not wish to share ownership in what were previously family-owned and run businesses. He also suggested that BEE is yet another form of taxation on an already over-taxed and barley viable sector.

It is argued that the Broad-based Socio Economic Charter (Mining Charter) was not designed and should not be applicable to the downstream industry but to the mining industry in particular. The downstream industry (which the Precious Metals Act, 2005 regulates) involves trading and manufacturing and the players in these sectors were

not involved in the negotiation of the Mining Charter in 2001-2002. Some of the pillars in the Mining Charter such as Housing, Mine Community Development, Sustainable Development and Growth were clearly not intended for the downstream industry.

It is suggested that legislating for local beneficiation of precious metals has not had a positive effect on beneficiation of precious metals in South Africa because it has not addressed the factors that prospective beneficiators consider before investing in large scale fabrication projects, which are lowering the cost of production, market development and markets access. Promoting beneficiation by legislation is not a simple task and sometimes, as explained above, legislation actually has the opposite effect. This is especially in the case of precious metals where it is a known fact that there is no clear advantage of the beneficiation taking place in proximity to mine production (i.e., in a producing country).

If one looks at gold jewellery fabrication, the following contribute to higher jewellery fabrication in the large jewellery fabricating countries:

1. Access to gold loan schemes at attractive rates (as low as 1%) to finance working inventory;
2. Family businesses in jewellery manufacture that have been passed down for generations;
3. A pool of excellent jewellery designs and world-class jewellery designers;
4. A high level of skill, work ethic and productivity of goldsmiths;
5. No red tape and bureaucracy in accessing gold (it is not illegal to be in possession of unwrought and semi-fabricated gold in other fabricating countries for example);
6. Favourable tax treatment (such as VAT exemption relating to gold purchases for fabrication and gold imports);
7. Favourable Customs infrastructure to enhance gold jewellery manufacture like Export Processing Zones;
8. Market Development and Market Access promoting organisations; and most importantly,

9. Significant and growing domestic demand for jewellery (including cultural links to jewellery). Domestic demand drives beneficiation as mentioned in Chapter 1.

Of the 9 factors listed above, only 5, 6 and 7 have anything to do with legislation; and only factor 5 bears any relation to the Precious Metals Act, 2005. Based on the above, the following are suggested to improve promotion of beneficiation in legislation (based on feedback from industry participants interviewed):

(1) The application fees relating to the precious metals beneficiation licence and the Jeweller's Permit should be nominal (R100);
(2) The duration of both the licence and permit should be at least 10 years to allow for security of tenure, which in turn will allow for the investment in expensive equipment such as casting machines and CAD (computer aided design) equipment;
(3) The red tape associated with application for the precious metal beneficiation licence and the jeweller's permit should be eradicated. The licence and the permit should be issued within 20 days, not 60. Police Clearance for such a licence and permit should be fast-tracked through an alliance between the Regulator and SAPS on this matter.
(4) The requirements for compliance with the Broad-based Socio Economic Empowerment Charter should be limited to skills development only or totally eliminated for the Precious Metal Beneficiation Licence and the Jeweller's Permit applications. This is because beneficiation is as important an objective of the Act, as transformation. These objectives are given equal status in the Precious Metals Act, 2005.
(5) The requirement to submit registers for the Precious Metal Beneficiation Licence and the Jeweller's Permit should be limited to the submission of beneficiation statistics only, not buying and selling transactions.
(6) Gold purchase for the manufacture of jewellery should be VAT-exempt, and jewellery manufacturers should enjoy a tax holiday for the first two years at least.

(7) There should be more incentives to attract jewellers into Industrial Development Zones than is currently provided. These should include: guaranteed Gold Loans at interest rates of less than 3%; tax holidays; ability to hold US dollar accounts; and duty free treatment for all imports (except for imports of manufactured jewellery itself).

If one looks at autocatalyst fabrication, the following contribute to higher fabrication:

(1) Incentives in one form or another (such as under the Motor Industry Development Programme that existed in South Africa prior to 2013)
(2) Preferential Tax treatment;
(3) No red tape or bureaucracy in accessing platinum-group metals (it is not illegal to be in possession of unwrought and semi-fabricated PGMs in other countries for example); and
(4) Favourable Customs infrastructure to enhance autocatalyst manufacture like Export Processing Zones.

Here too, of the factors listed above, only 2, 3 and 4 have something to do with legislation; and only factor 3 has relation to the Precious Metals Act, 2005. Suggestions made above (1-7) relating to gold to improve promotion of beneficiation in legislation are also applicable to PGMs:

PROPOSAL: “BENEFICIATION CREDITS” COULD BE TRADABLE LIKE CARBON CREDITS

The Kyoto Protocol established three mechanisms to help Annex 1 Parties (in Developed Countries) reduce the costs of meeting their emissions targets by taking advantage of opportunities to reduce emissions in countries where it costs less than it does in their home countries. These mechanisms are known as Emissions Trading, Joint Implementation (JI) and the Clean Development Mechanism (CDM). While the cost of limiting emissions varies considerably from region to region, the benefit to the atmosphere is the same, regardless of where the action takes place.

Emission reduction units (ERUs) generated by JI projects (chiefly in countries with economies in transition) can be used by investing Annex 1 Parties to help meet their emission targets. Certified Emission Reductions (CERs - tradable internationally) generated by CDM projects in developing countries (Non-Annex 1 countries – which currently have no emission reduction obligations) can also be used by investing Annex1 Parties to help meet their emission targets – with the host country benefiting from the investment, and the sustainable-technology transfer. Emissions Trading, the third "flexibility mechanism", allows companies (in Annex 1 countries) that overshoot their targets to buy allowances (to emit) from other parties. These market-based mechanisms allow these so-called "carbon credits" and allowances to be a tradable commodity.

It is suggested that one can draw parallels between Kyoto's objective and the South African Government's policy of expanding "beneficiation" – a term it uses to refer to the downstream value-addition to minerals and metals: Government wants miners to add value to their mineral and metal output. Mining companies, some of them world-class, argue that they should not be coerced into beneficiation – because what they are good at is taking the "stuff" out of the ground. Fabricators in South Africa are in many cases under-capitalised and less competitive, and some complain of the lack of the raw materials for "beneficiation".

If "beneficiation credits" were to be made tradable, BEE companies and SMEs that undertake domestic fabrication could earn "beneficiation credits", which they could sell to miners that don't undertake fabrication – thereby helping to finance the BEE and SME companies' enterprises. Miners could buy the "beneficiation credits" as an allowance to export a certain percentage of their mineral/metal output in the commercial trading form (tariff and/or duty/levy-free). The idea should be to price "beneficiation credits" cheap (in terms of percentage of production exportable in the commercial trading form), and progressively more expensive as domestic fabrication capacity increases.

Miners could also earn credits by selling some of their production for local fabrication and investing in domestic "beneficiation" projects, community projects and targeted

research and development, which in turn, could be used as an offset against their own BEE obligations, mineral royalties or as allowances for the above-mentioned purpose. It is cautioned, however, that it should be a requirement that mining companies provide evidence that their use of beneficiation credits is supplemental to BEE equity.

DEVELOPMENTAL PRICE FOR GOLD AND PLATINUM

The Department of Mineral Resources proposed a Developmental Price for certain minerals and metals including gold and platinum in the first draft of the Mineral & Petroleum Resources Amendment Bill, 2012. The draft amendment read: *"(2B) The Minister shall from time to time by notice in the Gazette determine such percentage per mineral commodity or form of petroleum and the price in respect of such percentage of raw mineral as may be required for local beneficiation, after taking into consideration national development imperatives"* (South African Government Online, 2012).

The rationale for such a proposal is to offer beneficiators (fabricators of gold and platinum such as jewellers and autocatalyst manufacturers) a competitive advantage. This amounts to subsidisation which has been proven not to work in the diamond industry in South Africa. While through subsidisation the diamond cutting industry employment was increased to over 4 000 in the late 1980s and early 1990s, this number began dropping fast to under 1 000 when the subsidy was removed (Commission of Inquiry into the South African Diamond Industry, 1999). It is further argued that this subsidy may also been a contributor to the low productivity (Commission of Inquiry into the South African Diamond Industry, 1999) of the South African diamond cutting industry relative to other diamond cutting centres.

The big question is: who will pay for the subsidy? If miners are to accept a discounted price for their production to be sold to beneficiators, this will affect their profitability and marginal mines would close. The gold and platinum mining industries are already under severe pressure from rising costs, falling prices, declining grades and labour issues. If government is to use tax payer's money for the subsidy, the Gauteng Toll-roads debacle suggests that South Africans would object strongly.

THE IMPACT OF TRANSFORMATION (BEE) POLICIES ON THE REGULATION OF THE PRECIOUS METALS INDUSTRIES IN SOUTH AFRICA

The Precious Metals Act, 2005 also has as one of its key objectives the advancement of "the objectives of the broad-based socio-economic empowerment charter" contemplated in section 100 of the Mineral & Petroleum Resources Development Act, 2002 – the so called "Mining Charter" or BEE Charter for the Mining Industry.

BEE PROMOTION IN THE PRECIOUS METALS ACT, 2005

BEE is promoted in the Precious Metals Act 2005 as follows:

(1) *"In considering an application for any licence, permit or certificate the Regulator must have regard to the "requirements of the broad-based socio-economic empowerment charter developed in terms of section 100 of the Mineral & Petroleum Resources Development Act, 2002".*

This means that the only way in which BEE is promoted in terms of the Act, is through the licensing process. An applicant for a licence or permit must either be an HDSA (Historically Disadvantaged South African) or commit that during the duration of the licence or permit, he or she will address the pillars of the Mining Charter, which include 26% BEE ownership, employment equity, skills development and beneficiation.

IMPACT OF THIS LEGISLATION ON TRANSFORMATION OF THE PRECIOUS METALS INDUSTRY

Since the implementation of the Precious Metals Act, 2005 there has been a degree of positive impact on transformation of the industry (SADPMR, 2013), to the extent that there has been a 40% increase in the number of licenses held by HDSAs. However, these are usually one-man, or small companies (<5 employees). Their contribution to output in South Africa in terms of jewellery fabrication and the fabrication of other products is very small <5% (SADPMR, 2013).

It is important to note that because jewellery manufacturing companies tend to be family-owned businesses (mainly Jewish, Indian and European), and jewellery

manufacturing skills get passed on in these family businesses from generation to generation, it does not lend itself to transformation as easily as some other businesses (e.g. in agriculture).

LESSONS: BENEFICIATION PROMOTION

Legislating for transformation of the precious metals industry has had only a small, real effect on changing the "face" of the industry in South Africa. It is still dominated by white-owned jewellery and catalytic converter manufacturing companies. It should be noted that these large industries e.g., refining and catalytic converter industries are very capital intensive and require huge infrastructure.

It is proposed, based on feedback from industry players, that the requirements for compliance with the Broad-based Socio Economic Empowerment Charter should be limited to skills development only or totally eliminated for the precious metal beneficiation licence and the Jeweller's permit applications. This is because beneficiation is as important an objective of the Act, as transformation.

CONCLUSIONS ON RESOURCE NATIONALISM AND HOW IT WILL AFFECT REGULATION OF THE PRECIOUS METALS INDUSTRIES IN SOUTH AFRICA

In general, the discussion above shows that resource nationalism is driven by politics and not by economics (cost/benefit analyses). Resource Nationalism measures scare away foreign investors and curtail capital investment by mining companies due to the uncertainty they face around issues of ownership and expropriation (security of tenure). Other conclusions are given below:

(1) It is suggested that the surge in Resource Nationalism in South Africa is coming at the wrong time, with the mining industry suffering from high production costs, labour issues, declining grades, move towards more mechanisation and the current down-cycle in the demand for metals and minerals (driven mainly by the decline in demand from China from the heady heights of previous years).

(2) It can be concluded from the above discussion that balancing the divergent interests of Producers of precious metals and fabricators of precious metals in South Africa would be problematic to achieve.

(3) It is suggested that South Africa does not have the required expertise or infrastructure to monitor the global platinum and palladium markets or to manage supply and demand of platinum and palladium to ensure a Producer Price for platinum or palladium would have the desired effect.
(4) The precious metal markets are highly competitive and the world today is highly integrated/inter-connected and thus producer prices and trade blocs are unlikely to be sustainable.
(5) Subsidisation of the precious metals industries (inter alia through price discounting) is unlikely to be popular in South Africa.
(6) BEE and beneficiation legislation has had little or no effect on the output of fabricated precious metal products in South Africa. In fact, output has been curtailed in some sectors.

As a general suggestion, this study suggests that South Africa should avoid attempting to legislate the various aspects of resource nationalism discussed above. It would serve the country better if we deregulate the precious metals industries in South Africa further and look at other non-legislative instruments. In particular, tax incentives, reducing red tape, and making information (geological, mineral and other related investment information) readily and easily accessible online or on mobile platforms will probably be more effective in attracting investment in the mining and minerals sectors in South Africa.

CHAPTER FOUR:

ANALYSIS OF PRECIOUS METALS ACT AND COMPARISON TO HALLMARKING LEGISLATION

"Whenever regulation increases, personal freedom decreases"
Alan Wilson

INTRODUCTION

Although a few countries like Russia, Zimbabwe, Kenya and Botswana still have precious metals legislation, South Africa & Russia are the only countries in the world that strictly regulate all aspects of the gold trade and platinum-group metal trade, i.e., the possession, receipt, transfer, buying, selling, transporting, metallurgical processing, melting, smelting, extraction, refining, fabrication, use, recycling, export and import of all precious metals (except silver in the case of South Africa). It is argued that South Africa's regulation of precious metals (except silver) is the most onerous in the world. This is done mainly through the Precious Metals Act, 2005. South Africa, however, does not have hallmarking legislation. Hallmarking is voluntary, and enforced to some extent only if a jeweller is a member, of the Jewellery Council of South Africa (a jewellery trade association).

Most other countries, especially in the western world have hallmarking legislation only. Hallmarking legislation makes it a criminal offence to "under-karat" i.e., mark a precious metal product as having a certain purity or caratage of a precious metal, but in actual fact it has less than the marked amount of the metal. These countries that have hallmarking legislation some of them for over 100 years, do not restrict the possession, buying and selling of precious metal. Some did regulate precious metals (gold in particular) in the past, but deregulated over the past century (USA for example). A few countries do still, however, restrict imports of gold or impose disincentives to import gold – where current account deficits are being addressed.

It should be noted, though that South Africa deregulated silver in 2007. The reasons for this are expounded on, as some inform the way forward for gold regulation in South Africa.

SUMMARY:

This chapter looks at the pros and cons of both these regulatory regimes, viz., comprehensive precious metal trade legislation versus hallmarking legislation as stand-alone legislation and will make certain recommendations. This it will do by comprehensively analysing the Precious Metals Act, 2005, the challenges in the precious metals industry (in particular illegal mining and trade), regulation of gold in other countries, experience with deregulation of silver in South Africa and the cost benefit of regulation through a Precious Metals Act versus statutory hallmarking on its own.

THE PRECIOUS METALS ACT: CONTROL OF POSSESSION, BUYING AND SELLING OF PRECIOUS METALS

The Precious Metals Act, 2005 (Act 37 of 2005) provides as follows:

"Prohibitions relating to acquisition, possession or disposal of unwrought precious metal

4. (1) Save as is otherwise provided in this Act, no person may acquire, possess or dispose of, either as principal or as agent, any unwrought precious metal, unless-

- *(a) he or she is the holder of a refining licence and acts in accordance with the terms and conditions of his or her licence;*
- *(b) he or she is an authorised dealer;*
- *(c) he or she is a producer who has won or recovered such unwrought precious metal;*
- *(d) he or she has obtained a certificate from the Regulator authorising him or her to acquire or to dispose of such unwrought precious metal;*
- *(e) such unwrought precious metal does not exceed a prescribed mass and is acquired in accordance with a special permit issued by the Regulator for scientific or beneficiation purposes or to make jewellery; or he or she is the*

holder of a precious metal beneficiation licence and acts in accordance with the terms and conditions of his or her licence;

(2) The Regulator may only issue a certificate contemplated in subsection (1)(d) to a person in consultation with the National Treasury, in the case of gold, and the National Commissioner.

(3) No person may have in his or her possession any unwrought precious metal unless

he or she is-

(a) a person contemplated in subsection (1); or

(b) in possession of such precious metal in fulfilment of a contract of employment

(5) Only a person contemplated in subsection (1)(a), (c),(e) or (f) may make up, smelt

or change the form of any unwrought precious metal in his or her possession in terms of that subsection with any person contemplated in subsection (1)".

In South Africa, in terms of the Precious Metals Act, 2005, no person may possess, buy (legal language used is "acquire") or sell (legal language used is dispose of) any precious metal (gold and the platinum-group metals in unwrought or semi-fabricated form.

The Precious Metals Act, 2005 **defines unwrought precious metal** as:

"(a) precious metal that-

(i) is unrefined (including concentrate and matte), or has been refined to a purity less than 99,9% and has not undergone any manufacturing process other than being refined or formed into a bar (but not a minted bar), an ingot, a button, plate, sponge, powder, granules, (excluding granules made from precious metal that has been refined to or beyond 99,9% purity, and carat gold alloys), solution; or

(ii) is prescribed as any substance, material or product of similar form to any such substance, material or product listed in paragraph (a)(i); or

(b) any article or substance containing or consisting of precious metal contemplated in paragraph (a)," …

The Act **defines semi-fabricated precious** metal as follows:
"means refined precious metal that is in the form of sheet, tube, wire, granule, plate, strip, rod, or sponge (including carat gold alloys as prescribed), or such other refined precious metal as may be prescribed"

To be in possession and acquire or sell precious metal, one has to be a refining licence holder, authorised dealer (usually banks), a miner producing precious metal (which he/she can sell), a precious metal certificate holder, a precious metal permit holder or a precious metal beneficiation licence holder. The relevant sections of the Act are given below for unwrought precious metal and then for semi-fabricated precious metal.

Prohibitions relating to acquisition, possession or disposal of semi-fabricated precious metal

5. (1) Save as is otherwise provided for in this Act, no person may acquire, possess or dispose of, either as principal or as agent, any semi-fabricated precious metal, unless-

- *(a) (a)he or she is the holder of a refining licence and acts in accordance with the terms and conditions of his or her licence;*
- *(b) he or she is an authorised dealer;*
- *(c) he or she is a producer who has won or recovered the unwrought precious*
- *(d) metal which has been refined and made into such semi-fabricated precious metal; he or she has obtained a certificate from the Regulator authorising him or her to acquire or to dispose of such semi-fabricated precious metal;*
- *(e) such semi-fabricated precious metal does not exceed a prescribed mass and is*
- *(f) acquired in accordance with a special permit issued by the Regulator for scientific purposes;*
- *(g) he or she holds a precious metals beneficiation licence; or*
- *(h) he or she holds a jeweller's permit.*

(2) No person may have in his or her possession any semi-fabricated precious metal unless he or she is-

(a) a person contemplated in subsection (1); or

(b) *in possession of such precious metal in fulfilment of a contract of employment with any person contemplated in subsection (1*).

A jeweller's permit holder may also acquire and possess precious metal, but in semi-fabricated form and not in unwrought form.

The licences and permits (except for the mining licences which are issued by the Department of Mineral Resources and authorised dealer designations which are authorised by the Reserve Bank) are issued by the South African Diamond & Precious Metals Regulator (SADPMR or Regulator for short), which administers the Precious Metals Act, 2005 and the Diamonds Act, 1986.

Before any of these licences or permits is issued, the Regulator must consult with the South African Police Services (SAPS – Precious Metals Desk of the Organised Crime Division) and the Reserve Bank (the latter in the case of gold only) and obtain consent for issuance of the licence or permit. The Precious Metals Act, 2005 also allows the employees of licence and permit holders to be in possession of and work with precious metals, as per their contract of employment, but only at the employer's approved premises. Moreover to export or import unwrought and semi-fabricated precious metal, an export approval or import permit is required. This is also issued by the South African Diamond & Precious Metals Regulator.

The Act also requires that the premises, on which an applicant for a licence or permit under the Act will work with any unwrought or semi-fabricated precious metal, be approved by the Regulator. Once the licence or permit is issued, possession of unwrought or semi-fabricated precious metal is restricted to the approved premises. To transport any such precious metal outside the boundaries of the approved premises or outside the mine, prescribed documentation containing particulars of the precious metal, and from which licensee it is being transported and to which licensee it is destined.

Perhaps the most onerous requirement of the Precious metals Act is the requirement for licensees and permit holders to keep a register of transactions of any unwrought or semi-fabricated precious metal received/bought or dispatched/sold. This has to be submitted to the Regulator periodically, usually every quarter. In such registers, the parties to the transaction (buyer and seller), the metal/s involved, the price paid, the form of the precious metal, the gross mass or fine mass of the metal/s and the purity of the precious metal has to be recorded for each and every transaction.

The Act also provides the Police powers to inspect search and seize precious metal where an investigation of a premises is warranted. Penalties for transgression of any provisions of the Act, especially offences relating to possession, acquisition or disposal of unwrought precious metals carry are harsh - fines up to R1 million and imprisonment of up to 20 years or to both such fine or imprisonment.

WHY DOES SOUTH AFRICA HAVE SUCH STRICT REGULATION OF PRECIOUS METALS?

The Precious Metals Act, 2005 has its origins in Chapter 16 of the Mining Rights Act, 1967 and the Currency and Exchanges Act, 1933. These give an indication of why such stringent controls were necessary in the past. It is the subject of discussion in this Chapter whether such stringent controls are still necessary. The historic reasons for these controls are given below:

(1) For most of the 1900s, South Africa was the biggest gold producer in the world (Department of Mineral Resources, 2006). Legislation thus served to protect the authorised mines from illegal miners and theft of gold produced.

In the 1900s, gold was accessible closer to the surface than it is today, which was a risk to mineral right holders.

(2) Gold is a monetary asset (a parallel currency) and therefore, legislation was in place for exchange control purposes. Exchange Control Regulations made in terms of the Currency and Exchanges Act, 1933, prevented the ownership of gold by citizens unless there were licensees such as miners, refiners or jewellery manufacturers.

(3) Gold is priced in US dollars internationally, and hence could not be owned in South Africa except in finished, consumer forms such as jewellery and Krugerrands, the form of which could not be changed by non-licensees.
(4) Gold is a portable, concentrated store of value and therefore its trade had to be controlled.
(5) Gold was and still is used a reserve asset (World Gold Council, 2003). Until 1997, the Reserve Bank bought all the gold produced in South Africa, and kept some gold as a reserve asset and sold the rest to counterparties overseas in return for foreign exchange, in particular US dollars.

The gold trade in South Africa was virtually non-existent apart from the miners and some large jewellers.

Gold exports were South Africa's predominant source of foreign exchange in the 1970s and 1980s (contributed more than 50% to foreign exchange revenue until 1983). Gold mining also contributed significantly to the macro economy during this period; in 1980 it contributed 17% to South Africa's GDP (Department of Mineral Resources, 2006). However, South Africa's economy is much more diversified now, so much so that the entire mining sector contributed only 7.0% to GDP and about 30% to South Africa's export revenue (from goods) in 2014. The gold mining industry has contracted significantly, but this has been outweighed by growth in the secondary and tertiary sectors of the economy, which is characteristic of a progressing economy. Nevertheless, gold still contributes about 9% to export earnings (from goods) and a little under 2% to GDP. It currently makes up about a fifth of South Africa's gross reserves.

Platinum mining in South Africa began in earnest in the 1970s. Due to rarity (35 times rarer than gold), platinum is the most precious of precious metals. Hence its price has, except for brief periods, been higher than that of gold. Like gold, platinum was controlled through Chapter 16 of the Mining Rights Act, 1967, but unlike gold, platinum is not a reserve asset in South Africa, and it does not have a traditional monetary role. However, because of its high price, and because South Africa contributes about 75% of world production, platinum together with its associated

platinum-group metals (palladium, iridium, rhodium, ruthenium and osmium) is controlled in South Africa. This does not happen elsewhere in the world[17].

REGULATION OF GOLD IN OTHER COUNTRIES

The gold market and the diamond market (the latter due to the implementation of the *Kimberley Process* in 2003) are regulated mineral-commodity markets. However because of the monetary role that gold plays and the sheer size, complexity, history and breadth of the gold market, it is in a class of its own. This complexity is due largely to the derivative products in the gold market, which are still a few years off for the diamond market.

Gold possession and gold trading are subject to regulations, controls and taxes in many countries (see Table below). However, the deregulation of gold ownership by citizens was widespread in the 1970s and 1980s. Singapore was the first to open its gold market, which it did in 1969. Hong Kong followed in 1974, the US in 1975, Tokyo in 1982, Taiwan in 1986 and Turkey in 1989.

In India, the model for deregulation was based on the following policy:

- Removal of restrictions on import and export of gold, in order to curb smuggling and hoarding;
- Development of gold-related financial instruments (forward trading and other gold derivatives);
- Development of markets for physical and financial gold; and
- Encouragement of banks and non-banks to operate freely in the domestic and international gold markets (offering gold-related savings and loan products and interest-bearing physical gold deposit schemes).

[17] *There are some controls on PGMs in Russia but not to the extent in South Africa*

Table 4.1: Restrictions on gold possession and buying in various countries

COUNTRY	POSSESSION	BUYING
Australia	No restrictions	Consumers can buy gold in bar, coin, wafer or other tradable form. Gold ETF launched in 2003.
Botswana	Gold possession restricted to Producers (mining right holders), and jeweller's permit holders	Gold and silver buying controlled by *Unwrought Precious Metals Act*. Only Permit Holders may buy gold and silver.
Canada	No restrictions	Consumers can buy bullion bars, bullion coins and wafers. Investment options include gold futures/options contracts
China	Final stages of complete deregulation	The Shanghai Gold Exchange was set up in 2002. A retail gold investment market has opened recently. Platinum futures trading began in late 2003. Some companies were allowed to import gold jewellery since May 2004.
Ghana	Not controlled specifically	Precious Minerals Marketing Company -appointed Licensed Buyers can buy from small scale miners
India	Allowed	Gold bars and coins can be imported under *Open General Licence* by government approved Banks and Agencies. India's Multi-commodity Exchange was established for the trading of gold and silver in October 2003.
Japan	No restrictions	There are gold bullion shops and banks and direct marketing by gold mining companies. TOCOM offers a physical market and futures.
Kenya	Possession of gold, silver and platinum restricted to Mining Title, licence & certificate holders in terms of the *Trading in Unwrought Precious Metals Act*	Buying and selling controlled in terms of *Trading in Unwrought Precious Metals Act (Chapter 309).*
Russia	Gold, silver and PGM possession State controlled through licences for mining, refining, and jewellery making in terms of the *Precious Metals Law*	State has pre-emptive right to purchase gold, silver and platinum-group metals from authorised miners and refiners for the State Fund in terms of the *Federal Law on Precious Metals & Stones (Precious Metals Law)*

South Africa	Possession and trading of unwrought and semi-fabricated gold is restricted.	Only licensees, permit holders and other relevant authorisation holders may buy and/or sell unwrought gold. South Africans can purchase legal tender bullion and proof coins made of gold and silver. Platinum coins are not available yet.
Turkey	Allowed	Istanbul Gold Exchange offers bullion bars. Dealers and jewellers sell coins.
UAE	No restrictions	Available at jewellery outlets and bullion dealers. Dubai Metals and Commodities Centre was established a decade ago. A physical market and futures are offered.
UK	No restrictions	Bars, wafers and coins are available to consumers. Gold ETF launched in December 2003.
USA	No restrictions	Bullion bars and coins available. Gold oriented Mutual Funds also available. Gold ETFs launched in 2004/5.
Zimbabwe	Possession of gold restricted to Mining Authorisation Holders; and licence or permit holders in terms of *Gold Trade Act*	Controlled in terms of the *Gold Trade Act (Chapter 21:03)*

Sources: World Gold Council, 2003; Webber Wentzel, 2014 & Rough-Polished.com, 2009

As far as legislative controls are concerned, gold market deregulation began in 1990 with the abolition of the *Gold Control Act*, which had prohibited the holding of bar gold, except by authorised dealers and goldsmiths, and sought to limit the jewellery holdings of families. In 1997, *Open General Licences* was introduced, which allowed substantial direct imports by local banks from the international market.

Manufacturers located in Special Export Zones can import gold tax-free through various registered banks under an Export Replenishment scheme. In 2003, India's Multi-commodity Exchange was established for the trading of gold and silver amongst other commodities.

In Turkey, a number of innovative changes to the status quo were introduced. The aim was to convert the existing idle gold savings into an active resource for the economy by channelling them into investments:

- In 1995, the Istanbul Gold Exchange was opened for the purpose of liberalising the Gold Sector in Turkey, integrating it with international markets, rationalising gold imports and introducing gold-based financial instruments.
- In 1997, the Istanbul Gold Exchange Futures and Options Market was launched to meet the demand for gold futures.
- In 1999, silver and platinum trading began on the Istanbul Gold Exchange.
- In 2000, the Precious Metals Lending market was started on the Exchange with the objective of bringing supply and demand into an organised market, lowering the jewellery sector's production cost and facilitating the securitisation of gold.

Until recently, the Chinese gold market was tightly controlled by the Chinese Government. The World Gold Council assisted the government to devise a 3-step programme of deregulation, which was recently implemented:

- The gold supply system was released through the establishment of the Shanghai Gold Exchange (which opened in 2002);
- The gold usage system was improved by abolishing the gold licensing system for jewellery market participants and by liberalising the gold investment market by allowing gold bars and bullion coins to be sold to consumers and traded by both institutional and individual investors; and
- The liberalisation of gold imports and exports to link freely with the international market.

As part of China's entry to the WTO, the 40% duty on imported jewellery was scrapped. The licensing system for local retail, wholesale and manufacture of gold products was abolished and replaced by a registration system in 2001. Most of the barriers to gold trade have been removed. Foreign companies may now invest in gold jewellery manufacturing, wholesaling and retailing in China, provided the gold if it is to be sold locally as jewellery is bought from the local market.

WHY WAS SILVER DEREGULATED IN SOUTH AFRICA?

Although the Precious Metals Act, 2005 was a disappointment for those campaigning for the deregulation of precious metals markets in South Africa, it did have a silver lining. The Act provided for the deregulation of the possession of, and dealing in silver (silver was excluded from the definition of "precious metals" in the Precious Metals Act, 2005.

Those unversed in reading legislation incorrectly interpreted this to mean that silver is not a precious metal anymore – that it had suddenly lost its value. This is not the case. Silver is still regarded the world over as a precious metal. In fact the silver price was at the time of its deregulation in South Africa, at a multi-year high. The deletion of silver from the definition of "precious metal" in the Precious Metals Act was a legislative way of deregulating silver. It simply means that silver is not regarded as a "precious metal" for the purposes of the Act – which in turn means that the provisions that apply to gold and the platinum-group metals do not apply to silver. Similarly, if the need arises (say to control copper theft), by including a non-precious metal like copper in the definition of "precious metal" the provisions controlling the possession, processing, trade, and fabrication of gold and the platinum-group metals could be applied to copper. However, regulating a common household metal like copper by declaring it a "precious metal" in terms of the Precious Metals Act, 2005, is not considered practical due to intensive and ubiquitous use of the metal in households and buildings in general.

Silver deregulation was long overdue because there are no silver mines in South Africa. Silver is a by-product of gold, lead-zinc, copper and platinum mining, and its production has also declined significantly. Therefore, unlike gold there is a very small security-risk (theft from mines) consideration and exchange control is not an issue as silver is not a monetary asset in the modern day. Moreover, silver has only a residual precious metal status, as more than two-thirds of the metal is used in industrial applications.

BENEFITS OF DEREGULATION OF SILVER IN SOUTH AFRICA

Deregulating the possession of, and dealing in silver is beneficial to South Africa. Deregulation promotes the secondary industry – the recycling of silver, especially from used photographic material and electrical/electronic components. It also attracts recycling of silver-bearing material from the rest of Africa and has led to the expansion of silver refining in South Africa, including third-party or toll-refining.

Deregulation may yet also result in an increase in retail investment in South Africa, if players exploit the opportunity to create instruments to that effect. A Silver Exchange Traded Fund (ETF) was launched in the USA in 2006, and a silver ETF could be feasible in South Africa.

The affordable precious metal has become the available precious metal, allowing for hobbyists and other non-professionals to make their own jewellery in garages and workshops. This is also a boost for rural craft jewellers and other craft fabricators, who could increase the intrinsic value of their crafts with the easily workable precious metal. Art Clay Silver, introduced recently, could also grow in popularity and use, especially amongst these SMMEs.

The deregulation of silver provides an opportunity to evaluate to some extent what impact the deregulation of gold would have in South Africa. However, the market for gold and the market for silver are quite different. Silver is more of an industrial metal in the modern day. Thus far, the most significant impact of deregulation of silver has been the expansion of silver jewellery manufacturing in South Africa. There are currently over 2 000 jewellers working exclusively on silver and non-precious metals (including over 800 hobbyists and part-time jewellers and other fabricators) and 27 new, preciously disadvantaged South Africans that have entered the silver recycling business (Budhai, 2015).

RE-REGULATING SILVER?

Despite all the positives described above for the de-regulation of silver, there are officials in SAPS such as Mahlangu (2014) that think that it was a mistake to deregulate silver in South Africa. The Author of this thesis, being the person that was

responsible for the deregulation of silver, obviously does not agree. It is believed that silver does not satisfy the criteria to justify regulation, especially the regulation of possession and trade as with other precious metals: Firstly, South Africa produces very little silver (6 tons), with production having declined drastically over the last decade, and all of this production is a by-product of lead/silver, gold, copper and PGM mining. Secondly, there is no theft of silver from mines as is the problem with gold, no illegal mining and it is not a high value commodity (generally less than 2% of the price of gold). Moreover, the deregulation of silver has given the jewellery industry and small-scale recycling of silver scrap a huge boost in South Africa. Furthermore, it is argued that wherever it is possible to deregulate possession and trade, it should be pursued because this is the case in other countries in the world. Regulation must have a purpose, and the regulation of silver in South Africa would serve no purpose. In legislative drafting, one is taught that a "mischief" (harm or injury caused by something i.e., something causing a problem) leads to legislation being drafted to address this mischief. Otherwise, legislation is merely imposing a burden – like a tax or a penalty. There is no mischief to address with silver – certainly with there being no silver mines in South Africa anymore or theft of silver. Similarly, imposing a penalty on silver fabricators or recyclers is not warranted. These players do not need to be punished but in fact they should be allowed to flourish in line with what the market demands.

THE COST/BENEFIT OF PRECIOUS METAL TRADE REGULATION

One has to measure the costs to implement the Precious Metals Act, 2005 and related legislation in South Africa against the benefits to South Africa. However, also important is to look at the effectiveness of the implementation of the legislation by the South African Diamond & Precious Metals Regulator.

THE COSTS TO IMPLEMENT THE PRECIOUS METALS ACT AND RELATED LEGISLATION IN SOUTH AFRICA

The budget for the Precious Metals Division of the South African Diamond & Precious Metals Regulator is in the region of R15 million per annum (SADPMR, 2013) and is projected to increase to R30 million in the next five years. It is well known that the current number of precious metals inspectors employed by the

SADPMR is not enough as some provinces are not being serviced adequately. These are the Northern Cape and Free State provinces in particular. Furthermore, additional (at least 2) export and import inspectors are required. So, staff will have to be increased by at least four and up to eight in the next five years. An inflation rate of 6% is factored in the projected costs of R30 million.

WHAT ARE THE BENEFITS OF THE PRECIOUS METALS ACT

The only way to measure the benefits of the Precious Metals Act, 2005 are to total the value of precious metal recovered during arrests of people involved with precious metal related crime. This figure varies from year to year and range from R2 million to R10 million a year (SAPS, 2012). It can be quite erratic and often one bust can contribute as much as 60% of the precious metal recovered. It should also be noted that often the SAPS have to return precious metal to the person arrested as it is very difficult to prove cases of illegally mined metal or stolen/smuggled metal. Metal is often mixed and melted down making it difficult to trace the origin of metals.

Also noteworthy, is the fact that SARS claims that VAT fraud associated with precious metal dealings runs into 10s of millions a year, but there have been no convictions of note to date. VAT fraud is incurred when VAT is claimed from SARS for metal that has not attracted VAT. This is mainly through the melting of Krugerrands (which is a zero-VAT item) and sales of old jewellery by individuals not registered for VAT to second-hand dealers and pawn shops; and then claiming VAT for acquiring this metal.

HALLMARKING AND HOW IT IS CONTROLLED

A hallmark is a mark or number of marks, made on precious metal (gold, silver or platinum) jewellery or plate to confirm that its quality is up to the correct legal or specified standard (GoldAvenue, 2002). When backed by consumer protection laws, a hallmark (or assay or standard mark) is a guarantee than an article contains the specified minimum purity of precious metal. Such a control on precious metal content is for the protection of both the consumer and the manufacturer.

Countries develop their own regulations on precious metals control based on local traditions and industrial developments, which determine fineness, sampling, testing, marking and technical requirements. Fineness ranges from 333/1000 to 999/1000 (8-24 carat). Some countries require compulsory control and hallmarking of every article by an independent body, some have a voluntary hallmarking system while others only require prescribed marking by the manufacturer (see Table 4.2). In the UK hallmarking of articles weighing greater than 1g, at one of four assay offices (in London, Birmingham, Sheffield or Edinburgh) is compulsory, while in France all articles greater than 3g must be hallmarked in one of 24 offices located throughout the country. In Italy the individual manufacturer carries out hallmarking of products.

INTERNATIONAL HALLMARKING CONVENTION

The different European laws on precious metals and title diversity posed a problem in trading jewellery between countries with different systems. This led to the Convention on the Control and Marking of Articles of Precious Metals which introduced a Common Control Mark (CCM) indicating fineness.

PLATINUM HALLMARKING

In most countries, platinum is identified by the accepted international abbreviations of “Pt” or “Plat” either preceded or followed by the fineness number (Johnson Matthey, 2002). In the USA, alloys of 950 fineness or greater may be marked with the word “platinum”. In the UK, platinum is identified by a 5-sided shape within which the fineness number is stamped.

Table 4.2 – countries with compulsory or voluntary hallmarking systems

COMPULSORY HALLMARKING	VOLUNTARY HALLMARKING
Austria	Belgium
France	Denmark
Ireland	Finland
Netherlands	Sweden
Portugal	Norway
Spain	Israel
United Kingdom	Morocco
Russian Federation	Qatar
Ukraine	Japan

Poland	Singapore
Romania	
Slovakia	
Bulgaria	
Hungary	
Lithuania	
Czech Republic	
Algeria	
Egypt	
Bahrain	
Tunisia	

Source: GoldAvenue.com, 2002

China has a national hallmarking standard that covers platinum articles, and this is policed by retailers who send incoming goods from manufacturers to approved testing centres. In Hong Kong, as in Europe and Japan, the hallmarks Pt850, Pt900, Pt950 and Pt990 are used to denote the platinum contents of alloys.

South Africa currently lacks regulations relating to hallmarking of precious metal jewellery, plate and minted bars. Some jeweller's in South Africa, especially those who are members of the Jewellery Council of South Africa (Jewellery Council, 2013) do practise voluntary hallmarking of their jewellery production. This is part of their membership criteria – and according to the Council, serious cases of under-carating are dealt with by the Jewellery Council, including expulsion from the Council.

Kaiser Associates (2002) in their study for the Department of Trade and Industry presented as one of their conclusions a recommendation that South Africa should develop and internationally recognised hallmarking system. "An internationally recognised hallmarking system will help cement South Africa's reputation as a high quality manufacturer with the guarantee factors associated with hallmarking", the consultancy claimed. It added that hallmarking will ease the import/export process and reduce paperwork requirements for entry into certain export markets.

THE COST/BENEFIT OF STATUTORY HALLMARKING: ESTIMATED COST OF A STATUTORY HALLMARKING SYSTEM

To implement statutory hallmarking in South Africa, what can be broadly referred to as "infrastructure" would be required. These include:

- Legislation enforcing hallmarking
- A hallmarking authority
- Statutory assay offices throughout the country (at least four in the main centres: Johannesburg, Durban, Cape Town and Port Elizabeth; and
- Staff and equipment for the hallmarking authority and assay offices.

The biggest cost component would be the four assay offices in the four centres throughout the country. It is estimated that it would take a budget of R10 million to set up each one, and each would need an operating budget of at least R5 million/year. This totals R60 million. This is double the cost of implementing the Precious Metals, Act - although there are serious deficiencies in the current implementation of the Act and a more effective job can be done with more resources.

The World Gold Council (2015) in its study done in India found that there should be one hallmarking centre for every 30 jewellers suggesting a national network of more than a 1000 hallmarking centres in that country. If also suggested that a typical hallmarking centre in India would require 7-10 people and cost 6-8 million rupees to set up. The WGC estimated that operating costs for each centre would be 6 million rupees, including wages and rent, 10% royalties payable to the Bureau of International Standards (BIS) and annual licence fees. Nevertheless, it is suggested that the estimates for South Africa in the paragraph above are plausible because South Africa would require only four hallmarking centres to start with, but each hallmarking centre would need to serve about 300 jewellers because of the small size of jewellers in South Africa in terms of the amount of metal worked with.

BENEFITS OF STATUTORY HALLMARKING

The benefits of hallmarking can be summed up as: consumer protection. Statutory hallmarking protects the consumer, mainly the jewellery consumer or the gold/platinum coin consumer from unscrupulous jewellers/fabricators misrepresenting the precious metal content of precious metal consumer goods (mainly jewellery and gold coins). In other words, it is designed to protect the

consumer against cheating (under-carating) by goldsmiths/platinum smiths in general.

The Bureau of Indian Standards (2011) states that the benefit to the customer is that hallmarking provides third party assurance and satisfaction that customer gets the right purity of gold, silver or platinum for the given price (value for money); and that jewellers benefit as it provides a clear indication of his/her capability, commitment to quality and assurance of consistency in purity and quality of gold, silver or platinum jewellery. The World Gold Council (2015) which conducted a study on introduction of hallmarking in India stated that benefits of hallmarking would include:

- enhancing trust in gold as collateral making gold more productive in the economy (by monetising gold lying dormant in households);
- Indian jewellery being more highly valued, thereby boosting exports; and
- strengthening the gold market which would sustain growth in the gold jewellery sector, thereby creating significant employment opportunities.

The Pakistan Jewellery Development Company (2010) states the following befits of hallmarking to the Pakistani Jewellery industry:

- Standardization of products i.e. guarantee of the purity of precious metals,
- Consumer Protection to get quality product against their best price,
- Promotion of fair competition,
- Assurance of the gold content, hence the value of purchases,
- Hallmarking will ensure that mixing of other metals in gold will be within the permitted limits,
- Hallmarking protects the public against fraud and traders against unfair competition,
- Useful in case of resale,
- No inspection will be required for exporting articles to the signatories of Vienna Convention thus saves inspection cost,
- Enhance international acceptance of local Jewellery,
- Facilitates the export of the jewellery items with full confidence,
- Facilitates the cross border trade and so help in boosting export, and

- Help in brand building

Whether the cost/benefit of hallmarking in South Africa is favourable for its introduction, can only be gauged if statistics were available on the prevalence of under-carating in South Africa. The Jewellery Council state that it is very difficult to determine the magnitude of under-carating in South Africa (Jewellery Council, 2009). It claims that under-karating is a common occurrence, especially by jewellers who are not members of the Jewellery Council, although it admits that it has dealt with a few cases over the years by jewellers who were in fact members of the Council; these were few and far between. The Jewellery Council however suggest that the main problem lies with cheap imports of jewellery from China. These are not hallmarked, they claim, as it is not a requirement in South Africa, but there have been many complaints from consumers in South Africa, especially over the last five years. The Council recommends harsher import duties on jewellery imports and the quickening of the pace in setting up statutory hallmarking in South Africa, especially the testing of imports of jewellery through OR Tambo International Airport and Cape Town International Airport.

Therefore, anecdotal evidence is the only evidence that can be used currently, and this suggests that the benefits of hallmarking, if one had to put a Rand value to it, could run into millions of Rands.

LESSONS: WHICH TYPE OF REGULATION IS MORE SUITABLE FOR THE MODERN DAY?

Notwithstanding the above discussion it should be noted that putting a Rand value cost to the two types of regulation of the Precious Metals Trade, on its own cannot be the decider of which is better, especially if estimates or mainly anecdotal evidence is used to derive costs. One has to take other factors into consideration, which include:

(1) The experience in other countries, and lessons learnt in those countries;
(2) The modern milieu, especially in the context of the Constitution of South Africa and the rights of citizens in general;

(3) Globalisation and the openness of the new South Africa to trade with neighbouring African countries and to countries with bi-lateral relations such as China;
(4) The decline in the mining industry in South Africa, especially with regard to gold mining (see discussion on deregulation of silver in South Africa as it is a pointer for gold in the future);
(5) The relaxation of exchange controls in South Africa;
(6) The recent, apparent waning of gold's "safe haven" status;
(7) The recent trend of reduction in the use of gold as a reserve asset; and
(8) The processes of recovery/winning of platinum are complex relative to gold recovery and winning.

It was mentioned earlier that most other countries have deregulated precious metals trade as much as possible. Although some countries still impose exchange control regulations, there is no control on the possession of gold or platinum-group metals in western countries. In fact, countries such as Canada (National Resources Canada, 2002) believe that controlling the possession of precious metals and rough diamonds as South Africa does, would be an insult to its citizens and a violation of citizens' basic rights.

Some commentators in South Africa (example: Cross, 2001) suggest that restrictions on the possession of precious metals and rough diamonds in South Africa is unconstitutional as it can be viewed as an exclusionary act. However, this has never been tested in any constitutional court in South Africa.

It should also be borne in mind that South Africa is not the biggest gold producing country in the world anymore. It lost this status in 2007, and its production continues to decline. It is still the world's largest platinum-group metals producer, but there is significant contribution to supply from recycling of scrap and secondary metal in other countries

Exchange controls have been relaxed in South Africa, although it will be a while before these are totally abolished. To illustrate this we now have the de-regulation of

minted gold and platinum bars (bars that are minted like coins with officially controlled masses and purities), trading of gold futures contracts on the JSE and the trading of gold and platinum exchange traded funds (ETFs) on the JSE. Moreover, since 1997, gold miners are allowed to market their gold production independently – there is no requirement to sell gold production to the Reserve Bank anymore, as long as foreign exchange is repatriated to South Africa as per Exchange Control Rules.

South Africa has also changed its blend of reserve assets with the US dollar now enjoying a higher status as a reserve asset than ever in the past. Other currencies such as the relatively new Euro are also used as reserve assets these days, as the EuroZone is an important trading partner of South Africa.

Sibanda (1998) reviewed deregulation of gold in India, China and Turkey and expounded on the benefits of gold liberalisation in those countries. He called on the gold mining industry of South Africa and other African countries to support such a process in their respective countries. He believed that there is great potential for increasing gold consumption in Africa if the legislative environment could be improved – meaning that there should be deregulation of gold ownership in such African countries. He also highlighted the need for reform because the gold mining industry in South Africa is "ailing" (high cost structure of South African mining companies) and concluded that "we need economic liberalisation and deregulation to sweep this part of the world".

All these factors point to the fact that in the modern day draconian controls on possession and buying of precious metal are out of place, inefficient, ineffective, costly and, in general, an outdated allocation of resources.

A NOTE ON THE CONSUMER PROTECTION ACT, 2008

In South Africa, the Consumer Protection Act, 2008 was promulgated in 2009. It can be used to prosecute violations such as under-karating of precious metal consumer products such as jewellery and gold coins (Mononela, 2012)

In particular, section 41 of the Consumer Protection Act, 2008 provides for false representations, of which under-karating is an example, as an offence. The relevant extract from this section of the Act (sourced from: www.info.gov.za, 2013) is given below:

"False, misleading or deceptive representations

41. *(1) In relation to the marketing of any goods or services, the supplier must not, by words or conduct—*

(a) directly or indirectly express or imply a false, misleading or deceptive representation concerning a material fact to a consumer;

(b) use exaggeration, innuendo or ambiguity as to a material fact, or fail to disclose a material fact if that failure amounts to a deception; or

(c) fail to correct an apparent misapprehension on the part of a consumer, amounting to a false, misleading or deceptive representation, or permit or require any other person to do so on behalf of the supplier.

…

(3)Without limiting the generality of subsections (1) and (2), it is a false, misleading or deceptive representation to falsely state or imply, or fail to correct an apparent misapprehension on the part of a consumer to the effect, that—

(a) the supplier of any goods or services has any particular status, affiliation, connection, sponsorship or approval that they do not have;

(b) any goods or services—

(i) have ingredients, performance characteristics, accessories, uses, benefits, qualities, sponsorship or approval that they do not have are of a particular standard, quality, grade, style or model;

(ii) are new or unused, if they are not or if they are reconditioned or reclaimed, subject to subsection (4);"

…

The Act also provides for a penalty of up to R1 million for the offences contemplated in section 41 above. However, so far this section has not been used to prosecute any under-karating offenders.

LOOPHOLES IN IMPLEMENTATION AND IN THE PRECIOUS METALS ACT ITSELF

SAPS' statistics and anecdotal evidence show that crime related to precious metal is significant in South Africa. Illegal mining and trading of gold and platinum exceeds R5 billion (Institute for Security Studies, 2010). Most of this amount of R5 billion is due to illegal mining, which can range from 8 tons to 16 tons a year. However, it must be noted that the Precious Metals Act, 2005 was not designed to control mining of precious metals. This is done through the Mineral & Petroleum Resources Development Act, 2002; however, some say the provisions in the Act are not adequate to control illegal mining of gold and platinum in South Africa. The Department of Mineral Resources, custodian of the Mineral & Petroleum Resources Development Act, however counters this by saying that illegal mining like anything illegal is a crime, and all crime should be dealt with by the crime fighting agencies namely the South African Police Services (SAPS), The Hawks (DPCI, which stands for Directorate for Priority Crime Investigation) and the National Prosecuting Authority (NPA).

Nevertheless one can conclude that SAPS, the other law enforcement agencies and the SADPMR are behind the curve in fighting crime relating to precious metal. Their only saving grace is that it would be a lot worse if there were no controls at all.

ILLEGAL MINING AND CONTROLS IN THE PRECIOUS METALS ACT AND MPRDA

ILLEGAL MINING AND HOW IT OCCURS

Illegal mining, as the name implies, is mining without the required authorisation in terms of legislation, which in South Africa means mining without a mining right or permit issued in terms of the Mineral & Petroleum Resources Development Act, 2002. It is regarded as the biggest problem in the South African precious metals industry (in particular the gold mining industry) and the problem has existed as long as there has been legislation regulating mining in South Africa (1909 – Van der Schyff, 2012).

It is estimated that between 8 and 15 tons per annum (Chamber of Mines, 2014; Institute of Security Studies, 2009; Department of Mineral Resources, 2014, South African Police Services, 2014) of gold valued at between R3 billion to R7 billion are mined illegally in South Africa. Due to the size of the problem, illegal mining was declared a priority crime in South Africa in 2009, joining copper theft which also costs the country billions of Rands.

Illegal mining is driven by poverty, unemployment, and the large numbers of illegal immigrants in South Africa. About 70% of all illegal miners arrested are illegal immigrants, chiefly from Lesotho, Mozambique and Zimbabwe (Chamber of Mines, 2014). Illegal miners earn as little as R800 to a R1 000 a month for a few grams of illegally mined gold in abandoned mines (Maseko, 2014). However, in the hotspots such as in Welkom and the East Rand, the quantities can rise to tens of kilograms per month. Most of this illegal gold is melted down into small pieces of gold or consolidated into small bars which are then traded by criminal syndicates, and finally laundered via refineries (Dixon, 2014). The ultimate beneficiaries of illegally mined gold are most often well-organised international criminal syndicates (Dixon, 2014).

The Directorate for Priority Crime Investigations (popularly referred to as the Hawks) has found that illegal mining has a complex five-tiered crime syndicate hierarchy (see figure below; Source: Van Dyk, 2014).

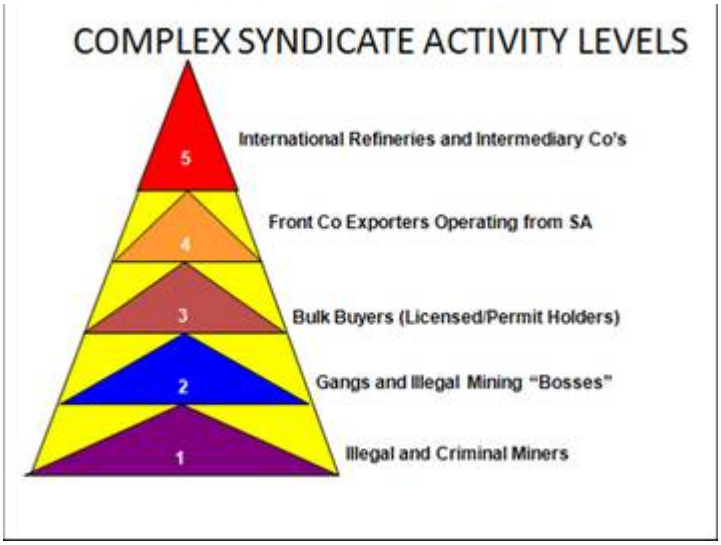


Figure 4.1: The illegal mining criminal syndicate five-tiered hierarchy

At the first level is the individual illegal miner which could be an illegal immigrant, a former mine employee or an existing mine employee. These are the people who do the physical mining. Illegal miners are often heavily armed and possess explosives, making them dangerous to confront. Illegal miners use chemicals, commonly mercury, to crudely refine the product to about 70% purity. At the second level is the group or gang behind the individual illegal miner which sometimes has arrangements with shift managers and security guards within the mining company. These gangs provide the individual illegal miners with food and water, and exorbitantly-priced luxuries which can include cigarettes, alcohol and even prostitutes. At the third level is the local criminal syndicate which can include refining licence, beneficiation licence or jeweller's permit holding individuals and companies. Such licences and permits are issued by the South African Diamond & Precious Metals Regulator in terms of the Precious Metals Act, 2005. See note below on why this happens. At the fourth level is the exporter of the illegally mined gold, which is often an Export Licence -holding company licensed to export by the South African Diamond & Precious Metals Regulator. Level five, the top of the pyramid, is occupied by international buyers. Levels 3 to 5 rarely handle the product, but are usually involved in devising and executing plans to get the product out of the country (Chamber of Mines, 2014). These syndicates are well organised and professionally operated.



Figure 4.2: Illegal miner's access point via abandoned mine shaft

Illegal mining takes place in operating mines and abandoned mines. Illegal miners gain access to underground mining areas in various ways, including using explosives to blast open concrete seals of surface shaft entries, going down ventilation shafts, or bribing their way into existing mine entrance (Chamber of Mines, 2014). Usually illegal miners spend long periods of time underground due to the difficulty of getting there. They are supplied with food and drinks by existing miners who smuggle such in exchange for lucrative amounts of money. Illegal miners also steal explosives, diesel, copper cables and other equipment from mines. They also make illegal electricity connections from the mines electricity infrastructure. Such interruptions to the mine's electricity supply can create significant risks to the mines ventilation systems underground and the ability to hoist persons from underground. Illegal mining therefore also endangers the lives of mine employees and illegal miners are sometimes trapped underground and have to be rescued by mine rescue services. From time to time illegally miners also lose their lives during significant seismic events and underground fires.



Figure 4.3: Illegal miner underground

WHY ARE PRECIOUS METALS TARGETED?

Obviously, precious metals are targeted because of their high value. However, illegal mining and theft of PGMs is much lower than that of gold in South Africa. The

Institute for Security Studies (2009) estimated illegally mined and stolen PGMs at about R50 million per year from the period 1999 to 2004. The main reason for this is that there are considerably more abandoned and operating gold mines in vast areas in the Witwatersrand, Free State and Barberton. Secondly, gold can be processed to a crudely pure form by simple chemistry such as through the use of mercury unlike PGMs which require complex chemistry. Gold can also be laundered much more easily through the numerous gold refineries in South Africa and internationally. More importantly, with PGMs, it is more of a theft problem than an illegal mining problem. The theft of platinum-group metals occurs above ground during one of the extraction processes (Coetzee and Horn, 2006).

HOW IS ILLEGAL MINING BEING FOUGHT

Currently, illegal mining in operating gold and platinum mines is being fought by mine security personnel and the South African Police Services. Arrests are made frequently, but illegal miners, including illegal immigrants often return to illegal mining after release or attempted deportation efforts. In abandoned mines, the DMR is involved with sealing of entry points (holes and shaft entries), although as mentioned earlier, illegal miners employ explosives to blast open such seals.

Ghana which also has an illegal mining problem has used three main approaches to combat illegal mining: formalisation, military intervention and alterative livelihood projects (Banchirigah, 2007). Formalisation is not an option in South Africa, as illegal mining is taking place on already operating mines, and in abandoned mines the resource is not suitable for formalised mining and it also presents safety and environmental risks. The mining companies in South Africa oppose illegal mining on their properties. Alternative livelihood projects are possible, but one has to note that this is complicated by the fact that most illegal miners are illegal immigrants. Mining companies in South Africa, such as AngloGold Ashanti prefer to invest in community development (social and economic) projects. Military intervention is the best option for South Africa because of the limited resources of the South African Police Service and the fact that illegal miners are very well armed and extremely dangerous. It goes without saying that more effective control of South Africa's borders is also required

because illegal metal continues to leave and enter South Africa's borders as do illegal immigrants.

THE LEGISLATIVE CONTROLS: THE MINERAL & PETROLEUM RESOURCES DEVELOPMENT ACT

Illegal Mining is proving difficult to control due to the limited resources at the disposal of law enforcement agencies, such as the police, immigration/border control and prosecuting authorities. Moreover, it is believed that there are also legislative impediments which impact on effectively addressing illegal mining. There are omissions and loopholes in legislation that present challenges in implementing legislation effectively to combat illegal mining and trading. There is a need to strengthen legislation to tackle the problem of illegal mining. There is also a debate as to whether there is any legislation that specifically controls illegal precious metal mining: Does the Mineral & Petroleum Resources Development Act, 2002 control illegal mining or does the Precious Metals Act, 2005 control everything related to precious metals? Do any of these pieces of legislation have adequate controls to combat illegal mining?

It is argued that the legislation that deals with mining should be the one that should also deal with combatting illegal mining. It is proposed that the problem of illegal mining should be controlled at source. Once gold mined illegally gets to refiners/traders, it is difficult, although not impossible (but acutely constrained by resource implications), to trace its source. The legislation that controls mining and prospecting in South Africa, the Mineral & Petroleum Resources Development Act, 2002 (MPRDA) should have had as one of its chief objectives the control of illegal mining and prospecting. While Section 2 of the MPRDA provides for the objectives of the Act, and stipulates equitable access, socio-economic and sustainable development issues, it does not include the control of or combating of illegal mining and prospecting. This omission is conspicuous despite section 5(4)(b) of the Act containing the explicit prohibition that no person may prospect or mine without a prospecting right, mining right or mining permit, as the case may be.

Section 91 of the MPRDA provides powers to any person (including the Regional Manager of the DMR in the various provinces and officers of the DMR) authorised by the Minister to conduct inspections and investigation in any area where prospecting or mining is taking place, under the authority of a warrant, to ensure that the provisions of the Act are not being contravened. This section also provides the authorised person powers to obtain evidence, seize any material, document or data and take samples of any material for testing and analysis. Therefore “police” powers can be given to certain Managers and officials of the DMR to police the provisions of the Act including ensuring prospecting and mining is carried out with the relevant right or permit and in accordance with the provisions of the Act and conditions of the right or permit. A corollary of this is that illegal mining and prospecting should be policed by the DMR. For this to happen, there needs to be greater emphasis placed on this aspect of regulation of the industry, and the capacity of the DMR needs to be strengthened at the provincial level to enable the implementation of sections 91 and 92 of the MPRDA (sections dealing with inspections to ensure compliance with the Act).

Section 98 of the MPRDA, which deals with offences does include an offence for contravening or failure to comply with section 5(4) (which includes prohibition against mining or prospecting without the relevant right or permit) and this offence carries the maximum penalty of a fine of R100 000 and/or up to two years in imprisonment. Be that as it may, for a few reasons, mainly the lack of capacity and the relevant skills, the DMR has not performed the task of combating illegal mining adequately. In fact, some senior managers of the DMR have in some fora distanced themselves from this function – stating that illegal mining is a crime and is a matter for the police. Tseoute (2011), a Manager in the Mine Health & Safety Division of the DMR made such a statement for example.

It is proposed that illegal mining can be controlled, but it requires the DMR's on-the-ground and daily involvement in enforcing the provisions of the MPRDA together with support from the South African Police Services (SAPS) and the National Prosecuting Authority (NPA). Amendments to the Act and Regulations under the Act, setting out more clearly the responsibilities of the DMR especially with a view to practical implementation are also necessary.

PROVISIONS IN THE PRECIOUS METALS ACT THAT ASSIST IN CONTROLLING ILLEGAL MINING AND TRADING

It should be pointed out here that the Precious Metals Act, 2005 does not control mining of precious metals. However, there are a few provisions relating to holders of mining rights or permits, or Producers as they are referred to in the Act. A Producer (miner) is one of the persons that is allowed to be in possession of unwrought or semi-fabricated precious metal if such metal was mined by the Producer. A Producer is also allowed to sell/transfer unwrought or semi-fabricated precious metal mined by that Producer. For this reason, Producers are also required in terms of the Act to register with the South African Diamond & Precious Metals Regulator (SADPMR) to allow for the monitoring of sales and the purchasers of such metal (who need to have a licence to buy unwrought precious metal). This is monitoring is done through the requirement for Producers to submit a register of transaction of all unwrought precious metal sold/transferred on a quarterly basis.

In addition to the above, there are three main provisions in the Precious Metals Act, 2005 that assist in controlling illegal mining and trading. The most import of these are the provisions that controls possession of unwrought and semi-fabricated precious metal. Sections 4 and 5 of the Act restrict possession of unwrought and semi-fabricated precious metal to a Refining Licence holder, Authorised Dealer, Producer (who as mined that precious metal), holder of a Precious Metals Certificate, holder of a Special Permit (for scientific purposes), holder of a Beneficiation Licence and holder of a Jeweller's Permit. These provisions relating to possession are used to prosecute cases against illegal miners if they are caught in possession of unwrought precious metal. Illegal Miners are sometimes not found in possession of unwrought precious metal, as they discard any such material before being confronted by the police or mine security personnel.

The second provision in the Precious Metals Act that assist in controlling illegal mining, is section 22 of the Act, which provides that any Producer or any person that imports precious metal must submit to the Forensics Science Laboratory of the of the South African Police Services such specimens of any precious metal produced or imported by him or her. The Forensics Science Laboratory is required in terms of this

section to create and maintain a geochemical database of the precious metal - containing specimens from different provenances (different mines, shafts of mines, refineries, smelters etc.). This provision in the Precious Metals Act, 2005 is the only such known provision in legislation, in the world. It allows for profiling of gold from different sources and PGMs from different sources and smelters/refineries, which in turn allows for illegal or stolen metal to be identified and returned to the rightful owner. This is commonly referred to as fingerprinting of precious metal. Gold and PGM profiling has helped the police to convict persons caught with stolen metal, and metal has been returned to mine owners (Dixon, 2014). The technique works with a 90% success rate. If metals from different sources are physically mixed, the different metals can be separated out, but if its mixed chemically, such as gold melted together, gold from different sources can lose their characteristic fingerprint of origin (Dixon, 2014).

The gold fingerprinting technique utilises laser ablation inductively coupled plasma mass spectrometry (LA-ICPMS) in conjunction with a data processing model to generate profiles corresponding to minor and trace element distribution in gold (Grigorova, et.al., 1998). These profiles are unique for each individual source of mine gold, which makes provenance discrimination possible. The generation of gold fingerprint profiles for about 85% of South African gold mines and larger mines in some African countries (including Ghana, Mozambique, Mali, Zimbabwe, Tanzania & Zambia) has led to the creation of the South African Gold Bullion Databank (Grigorova, et.al., 1998).

PGM profiling is based on the principal that PGMs from different sources have different ratios of Pt, Pd and Rh in particular. In general, PGM mines in South Africa (mining the Bushveld Complex) have a high Pt/Pd ratio relative to other sources such as Russia, which have high Pd/Pt ratios.

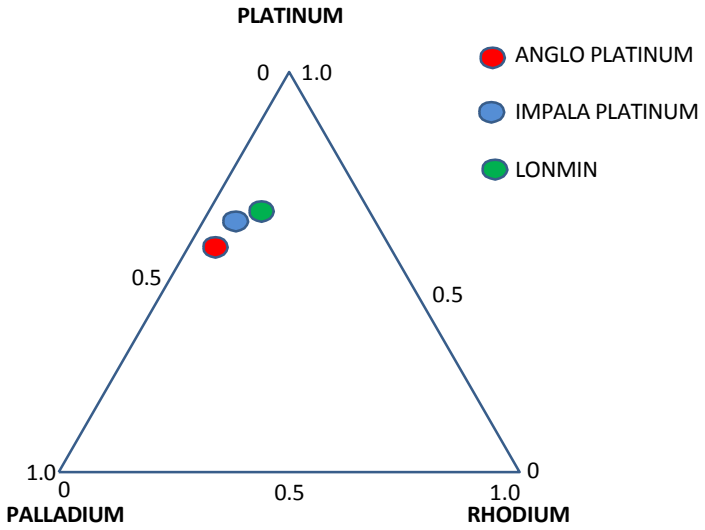


Figure 4.4: Platinum-group element ratios plotted on a ternary diagram

Rhodium is also higher in South African mine platinum. Plotting a ternary diagram (see Figure above) of the relative concentrations of Pt, Pd, and Rh allows for discrimination of the different provenances of PGM beneficiation products (Schouwstra, 2014).

The third provision in the Precious Metals Act, 2005 that assists with combatting illegal mining and trading, is the requirement for all holders of licences and permits issued in terms of the Act, to submit registers (to the SADMR) of transaction of all precious metal bought, sold or worked with. Theoretically this allows for anomalous transactions and illegal transactions to be identified by cross-checking of transactions between buyer and seller. Such registers have been used as court evidence for the prosecution of a number of illegal mining and trading cases.

Despite these controls in the Precious Metals Act, 2005, illegal trading of precious metals does continue to take place. This is because illegal transactions are not recorded in registers (or disguised as scrap jewellery), and illegal metal is apparently processed secretly - usually after working hours. In addition, although an applicant for a licence or permit is required to provide certain documents attesting to being fit

and proper (such as police clearance, tax clearance and technical ability), the applicant can sometimes be a front for criminals.

THE PRECIOUS METALS ACT: CONTROLS ON ILLICIT TRADE

The Precious Metals Act, 2005 has a few important provisions to control the illicit trade. The most important provisions which also form the crux of the Act are the prohibitions relating to acquisition, possession or disposal of unwrought and semi-fabricated precious metal (sections 4 and 5). Acquisition, possession or disposal of unwrought and semi-fabricated precious metal is restricted to:

(a) the holder of a Refining Licence;
(b) an Authorised Dealer;
(c) a Producer (miner who has mined such metal in accordance with a mining right or permit);
(d) the holder of a Precious Metals Certificate;
(e) the holder of a Special Permit (for scientific purposes);
(f) the holder of a Precious Metal Beneficiation Licence; and
(g) the holder of a Jeweller's Permit.

The prohibition against possession of unwrought/semi-fabricated precious has been used to successfully prosecute many cases involving illegal mining or illegal trade where the transgressor was caught in possession of such metal.

Note that all the licences and permits (except the Authorised Dealer and Precious Metals Certificate) are to authorise a specific business i.e., refining, scientific or lab work, fabrication of products or jewellery making. The Authorised Dealer is authorised, not by the SADPMR but by the Reserve Bank to deal in foreign exchange, gold or platinum. For this reason it is usually only registered banks that can apply to be registered as an Authorised Dealer. The Precious Metals Certificate is not meant for dealing, but for either a once off or temporary (less than 3 month period) purchase or sale. One cannot use it for both purchase and sale as it will amount to dealing. Dealing in precious metals is restricted to Authorised Dealers (Banks) in the Act. No other licensee is allowed to deal.

The Precious Metals Act, 2005 also makes provision for an Import Permit to import unwrought and semi-fabricated precious metals. This permit, issuable by the SADPMR, can only be applied for by an existing holder of a licence or permit such as a refiner importing precious metal-bearing material for refining, an Authorised Dealer importing for the purpose of bullion dealing, a laboratory importing for scientific work or a beneficiator importing metal for fabricating products. The Act makes provision for a member of the South African Police Service or an Inspector of the SADPMR to inspect imports.

The Act makes provision for an Export Approval to export any unwrought or semi-fabricated precious metal subject to the promotion of equitable access to, and local beneficiation of such metals. The Export Approval is issued by the SADPMR after consultation with National Treasury. In the case of this Approval too, only an existing licence or permit holder (Producer, Authorised Dealer, Refiner or Beneficiator) qualifies to apply.

Section 13 of the Act stipulates that no person may transport or convey any semi-fabricated or unwrought precious metal outside the boundaries of any mine, works or other property or place where such metal is mined, refined or worked with, unless he or she is in possession of the prescribed documentation. The documentation includes a waybill with prescribed information such as the sender's and recipient's details (including licence and contact numbers), the contents of the parcel/shipment, invoice number and physical address of both parties. This serves as proof of a legitimate transport from licensee to licensee for business purpose for which the licensee is authorised.

Section 15 of the Act makes provision for a register of transactions to be kept and submitted periodically by licence and permit holders. The licensee or permit holder is required to record immediately upon conclusion of each (purchase or sale) transaction –

(a) the date of the transaction;
(b) the names and addresses of the parties to the transaction;
(c) the nature and mass of the material or the mass of the precious metal which is the subject of the transaction; and

(d) the price paid or received.

These registers must be submitted to the SADPMR every quarter of a year. Their purpose is to allow the SADPMR to monitor transactions (cross check between buyer and seller) and compile statistics on trade and beneficiation. However because of the number and volume of transactions, the SADPMR cannot cope with capturing and captures only a small percentage of registers submitted.

Sections 16 to 18 provide the police with powers to inspect premises of licence holders, search such premises and seize any precious metal or documents relating to suspected illegal activity in connection with such metals. The Act also makes provisions for inspectors of the SADPMR to conduct routine inspections to ensure licensees are adhering to licence conditions.

Section 22 of the Precious Metals Act, 2005 (titled: *Database for precious metals*) provides that any producer (miner) or any person who imports precious metal must submit to the Forensics Science Laboratory of the South African Police Services specimens of any precious metal produced or imported as prescribed. This allowed the Forensics Science Laboratory to create a geochemical fingerprinting database of precious metal from the different mines, which in turn allows for the maintenance and augmentation of that database. This provision in legislation is the only one of its kind in the world and has been used in court cases to successfully prosecute many cases involving illegal mining and theft of gold and platinum-group metals from South African mines. However, the Act does not require specimens of exports of unwrought and semi-fabricated precious metal which is a loophole that is exploited by dishonest refiners and criminal elements.

While the fingerprinting database for precious metals is a valuable tool, the Forensics Science Laboratory has a huge backlog of samples that have not yet been analysed. Moreover, the organisation also suffers from a lack of human resources with the specialised skills to perform the function of analysing these samples for the purpose of fingerprinting and provenance determination.

CONTROLS RELATING TO PRECIOUS METAL IN SCRAP FORM

The Second-hand Goods Act, 2009 which was implemented in 2011 is the principal legislation dealing with second-hand jewellery, jewellery in scrap form and scrap precious metal in general. This piece of legislation is administered by the South African Police Services, however as soon as the scrap precious metal is melted it becomes unwrought precious metal and this is the jurisdiction of the South African Diamond & Precious Metals Regulator in terms of the Precious Metals Act, 2005. This overlap in jurisdictions is problematic, especially since some members of SAPS are bitter after some of their functions relating to precious metals were taken over by the SADPMR when the Precious Metals Act, 2005 was promulgated in 2007. For the scrap precious metal industry to be controlled better, the relationship and the co-ordination between the South African Police Services and the SADPMR need to improve as a matter of urgency The lack of co-ordination and the overlaps between the two pieces of legislation are being exploited by criminal syndicates.

Scrap precious metals are also used to camouflage illegally mined metal (laundering) when bought by refiners and beneficiators. This occurs by mixing of melted scrap precious metal and alloying with illegally mined metal, or simply as a metal accounting disguise (with accompanying fraudulent documentation). For this reason, holders of both the Refining Licences issued by the SADPMR and Second-hand Goods Licences issued by the SAPS are high risk and a joint effort in monitoring their activities is crucial.

ARE THERE CONTROLS TO PREVENT MONEY LAUNDERING?

Kumar and McTaggart (2014) found that the global gold market is significantly vulnerable to money laundering and terror financing risks as the gold market is still cash intensive in all its segments and it is easy for organised crime to harvest gold from society using cash generated from criminal activity. Such gold is then refined into investment quality and retained to build untraceable wealth. Cash for gold businesses are targeted by organised crime for this reason.

Kumar and McTaggart (2014) made the following finings that are of relevance:

- Gold value can be transferred easily because of concentrated value (small volume has large value;
- The relationship between cash and gold is a close one and the levels of interaction are high;
- Gold bullion trading is an established money laundering typology because of the ease with which the source of illicit funds can be concealed;
- There are significant informal markets for gold in many jurisdictions;
- Due to the global breadth of the gold industry, international gold trade provides a natural platform for the movement of the proceeds and instruments of crime;
- Mining jurisdictions have significant issues because of illicit sources of gold, and
- Other criminal activity is attracted to areas where illegal mining is conducted

South Africa is particularly vulnerable to money laundering through gold because of the documented involvement of organised crime in illegal mining and trading. Moreover, there has been a surge in cash-for-gold businesses over the last five years. Despite this, there is no anti-money laundering legislation in South Africa specific to the diamond and precious metals trades. This is a serious lacuna. The main legislation dealing with money-laundering is the Financial Intelligence Centre Act, 2001. This Act, fails to take into account the role that diamonds and precious metals play in money laundering activities. It is opined that the Financial Intelligence Centre does not have the knowledge or expertise to deal with money laundering in the diamond and precious metals trades.

Towards the end of 2014, the Department of State Security was tasked to look into this matter and develop guidelines to tackle this issue. These guidelines are currently in the draft and confidential stage and thus cannot be commented on. However, it is a start, and it is hoped that in the next few years this loophole in South Africa will be addressed.

SUGGESTED WAY FORWARD FOR REGULATING THE PRECIOUS METAL TRADE IN SOUTH AFRICA

Rightly or wrongly, deregulation of the Precious Metals Act, 2005 cannot begin in the next few years. This is because of the problem of illegal mining and trading. Therefore, it is likely that regulation will have to get tighter in the next few years before deregulation can be phased in. It would only be a brave man that would suggest that the provisions in the Precious Metals Act, 2005 discussed above, that assist in controlling illegal trading, can be done without at this point in time. However, deregulation is inevitable. It is proposed that the problem of illegal mining and trading be taken more seriously by government to allow for more resources to be devoted to eradicating the problem. It is not impossible for the problem to be virtually eradicated over the next two decades if a concerted and collaborative effort is made. In the light of this statement, the following suggestions and recommendations are made in the context of this Chapter:

(1) It is suggested that control of possession of precious metals as provided for in the Precious Metals Act, 2005 be phased out over the next ten to fifteen years (this is the estimated time it would take to bring problems such as illegal mining under control). It is outdated, not fitting in a modern world and has not been effective in eradicating the illicit precious metal trade in South Africa. Moreover, theft of precious metals, illegal trading and mining are crimes like any other crime and should be treated and controlled like other crimes are. Motaloata (2014), in fact, believes that preventing citizens from being in possession of gold in certain unwrought forms (bars for example) is unconstitutional – an infringement of a citizen's rights. He added that there is no need in the modern day and is not the case in other countries.

    In the light of this, further deregulation of the precious metals trade should be pursued in the medium term.

(2) Self-regulation of the precious metals trade as exemplified by the World Gold Council's Conflict Free Gold Standard is a better instrument to control the trade than statutory controls.

    Statutory controls tend to increase transaction costs, and stifle entrepreneurship and job creating activities.

(3) It is recommended that South Africa, introduce instead statutory hallmarking in lieu of controlling the possession, buying and selling of precious metals, together with self-regulation initiatives. This can be done in phases over the next ten to fifteen years.

CHAPTER FIVE:

SUSTAINABILITY AND MATERIALITY

INTRODUCTION

Sustainability is defined as the capacity to endure. Sustainable Development was best defined by the Brundtland Commission of the United Nations on March 20, 1987: *"sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* Materiality is an auditing term that relates to the significance/relevance the effect of an event, amount, transaction or discrepancy has on a company's value.

In the mining sector, sustainable development is relatively more important compared with most other sectors. This is not only because minerals are non-renewable resources but also because of the potentially detrimental impact that mining can have on surrounding communities. Mining is also essential for economic development and growth and improving the living standards of communities in and around mining areas. However, as is well known, the negative impact of mining on local communities (the social impact) and on the environment is well publicised. Hence, the recent drive towards responsible mining and mineral processing and for corporate social responsibility to focus on mitigating these risks in particular.

Sustainability becomes a materiality issue for companies when there is a significant risk relating to availability of energy, water, other resources, where the toxicity of products or manufacturing processes present risks in the supply chain, and where climate shifts can disrupt the availability of raw materials and threaten the well-being of employees and customers (Makover, 2012). Sustainability reporting is an important communication tool for achieving the social licence to operate which makes current and future projects possible, thus facilitating the longevity of an organisation.

The area that has received the most publicity is the disclosure and management of climate impacts. David Gardiner & Associates (2012) believe that this area will be one of the major materiality issues for many companies in the coming years. The consultancy suggests that almost every sector of an economy will face risks from the short and long-term effects of climate change. Climate change is not just about the carbon footprint of companies but other impacts ranging from worker health, safety risks, disruptions in transportation routes to fluctuating commodity prices. With regard to mining companies, the materiality issues in order of importance are: Local Communities, Health and Safety issues, Climate Change and to a lesser extent Corruption.

Quantitative information as opposed to qualitative information is becoming essential for sustainability reporting, as it's the best way for the reader such as an investor to understand the full impact and implication of Environmental Social Governance (ESG) on the company's triple bottom line.

KING III AND SUSTAINABLE REPORTING

The King Report on Corporate Governance is a trailblazing code on corporate governance in South Africa developed by the King Committee on Corporate Governance. Three reports were issued: in 1994 (King I), 2002 (King II), and 2009 (King III). Compliance with the King Reports is a requirement for companies listed on the Johannesburg Stock Exchange. The King Report on Corporate Governance can be described as a comprehensive summation of the best international practices in corporate governance (Institute of Directors, 2014).

King III advocates that all companies produce an integrated report that reports how the company has impacted on social and economic life of the community in which it operates. The King III Code on Governance (2009) defines an integrated report as "a holistic and integrated representation of the company's performance in terms of both its finance and its sustainability". In Integrated Reporting, the financial report is

not separated from the qualitative impacts made by an organisation on its surroundings, people and the planet.

The King III Code recommends that an Integrated Report contain the following characteristics, features or content:

■Be an annual report

■Statutory financial information and sustainability information should be integrated

■Should have sufficient information to record how the organisation has affected the economic life of the community - positively and negatively

■Should contain forward-looking information - on how the board feels it can enhance the positive aspects and negate the negative aspects

■Integrated reporting requires more than just an add-on of sustainability information - sustainability reporting should be integrated with other aspects of the business process and managed throughout the year. Sustainability should be embedded in the organisation.

■Integrated reporting should focus on substance over form.

■The board's audit committee must establish a formal process of assurance on sustainability reporting. It should recommend to the Board the need to engage an external assurance provider to provide assurance over material elements of the sustainability part of the integrated report. It should oversee sustainability issues in the integrated report; ensure the sustainability information is reliable, and that no conflicts or differences arise when compared to the financial results.

In the opinion of Cliffe Dekker, Hofmeyr, (2013), King III's requirements are more comprehensive and compiling an integrated report requires substantially more effort and cost. The integrated report should contain sufficient information to reflect how the company has impacted positively and negatively on the economic life of the community and the related environmental, social and governance issues.

SUSTAINABILITY AND THE VALUE CREATION LINK IN THE MINING SECTOR

It is a well-known fact that in the modern day, most mining takes place in developing countries (such as Chile, Zimbabwe, Peru, Ghana and Mali), and often under land that has or is being used for agricultural purposes and in some cases in environmentally sensitive areas. This makes for a challenging business environment and calls for strong management and performance in the social and environmental risk management areas. Faced with this challenge, mining companies were forced to confront the link between sustainability and economic performance. One consultancy that has done seminal work in the areas of social and environmental impact that are most linked to competitiveness is Sustainalytics. Sustainalytics (2011) identified a few areas in which mining companies should be proactive in their management efforts and transparent disclosures:

- **On the social front** mining companies should maintain strong relations with communities, as it ensures project-level licence to operate, and strong relations with employees, avoids labour stoppages and lowers recruitment and retention costs.
- **On the Environmental front**: it is crucial that water, tailings and climate change impacts are managed responsibly by mining companies as they have impacts on multiple business drivers including the leveraging of supply and demand trends, maintaining access to natural resources, influencing the political and regulatory environment, operational efficiency and reputation.

Sustainalytics (2011) concluded that when an organisation's most significant environmental and social issues are addressed, business value is created.

MATERIALITY IN THE CONTEXT OF REPORTING

Materiality became a topical issue recently in the context of integrated reporting for companies, including mining and mineral processing companies. GRI - Global Reporting Initiative (2013) recommends that relevant (or "material") topics for a reporting organization should include those topics that have a direct or indirect impact on an organization's ability to create, preserve or erode economic, environmental and social value for itself, its stakeholders and society at large.

The Global Reporting Initiative (2013) asserts that as sustainability impacts create both opportunities and risks for an organization, the ability of an organization to recognize opportunities and risks, and act effectively in relation to them, will determine whether the organization creates, preserves or erodes value. However, value must be thought of in financial and non-financial terms.

In financial reporting, materiality is commonly thought of as a threshold for influencing the economic decisions of those using an organization's financial statements, essentially investors. GRI suggest that the concept of a threshold is also important in sustainability reporting, but it is concerned with a wider range of impacts and stakeholders.

SustainabilitySA (2013) suggests that the material corporate risks and opportunities across economic, social and environmental spheres (for example, transformation, greenhouse gases, black economic empowerment, the impact of HIV/Aids) should guide the basic sustainability content of the integrated report, and that his should be augmented by considering broader industry issues as well as those raised by material stakeholders, which could be local or global in nature.

THE "NO DIRTY GOLD" CAMPAIGN AND ITS SIGNIFICANCE TO SUSTAINABILITY AND MATERIALITY

NGO's (non-governmental organisations) mentioned below contend that gold mining is one of the most destructive activities in the world, and has been linked to grievous environmental, social justice, and human rights violations. "Dirty" gold is a reference made by lobbyists (mainly NGOs) such as Earthworks and Oxfam USA, who aim to promote improvements in social and environmental aspects of gold mining (in other words, "Sustainable Development"). One of the major problems that has led to the "no dirty gold" campaign is the use, by some mining companies, of cyanide in the gold extraction process. With the smaller, mainly artisanal miners, mercury, which is a highly hazardous substance, is also used to recover gold.

While most of the third-party schemes that mining companies currently participate in are open to the corporate sector in general, there has been a trend towards the development of industry-specific schemes (Brereton, 2002). The most important of these is the international Cyanide Management Code which requires mining companies to have all their operations that use cyanide to recover gold audited by an independent third party. The operations that meet the Code will be certified as compliant. This Code can be applied to acid mine drainage in South Africa as well.

The gold mining industry (represented by larger players) insists it is taking Sustainable Development activities very seriously and that there are strict regulations and guidelines for mining of gold, and points to the fact that most mining companies, especially the larger ones, have robust environmental, social and ethical standards and report on these through their annual reports. However, because of the high rewards and the fact that gold can still be mined in the most unsophisticated manner artisanally makes the industry difficult to regulate.

In June 2006, a multi-stakeholder group conducted a dialogue in Vancouver to discuss options for developing a system of independent 3rd party assurance for mining. As a result of this dialogue, the "Responsible Mining Assurance Initiative" was established by a group of mining companies (including: Newmont and AngloGold Ashanti), retailers (e.g. Cartier, Tiffany, WalMart and Signet Group), non-government organisations (e.g. Earthworks, who helped establish the "dirty" gold campaign) and trade associations (e.g. Jewelers of America, ICMM and CRJP) to further develop options for independent third-party assurance in the mining sector. A coordinating committee drawn from the group facilitated the process of devising responsible mining standards and a governance model for the assurance system.

The seriousness of the environmental and social problems associated with gold production has generated an interest in finding alternatives to gold produced using harmful practices. This interest has come not only from environmental, human rights and social justice groups, but also from jewellery retailers, electronics producers, and individual consumers (See Chapter 2).

It is believed that some 100 000 consumers want jewellery retailers to stop “dirty gold” and have signed a Gold pledge asking retailers to work to ensure that the gold in their products was not produced at the expense of local communities, workers, and the environment. Conscious consumers are calling on jewellery and electronics retailers to insist that the gold one is buying or selling is responsibly produced.
All this pressure has played its role in the Responsible Jewellery Council setting up the RJC Code of Practices and RJC Certification based on independent, third party auditing of Members’ business practices. RJC membership and certification are a means to credibly demonstrate responsible environmental, social and ethical performance, according to Michael Rae, RJC’s CEO.

THE RESPONSIBLE JEWELLERY COUNCIL (RJC)

The Responsible Jewellery Council was established in 2005 with the participation of major mining and jewellery companies and associations, including Rio Tinto, Tiffany & Co, Zale Corporation, Cartier and BHP Billiton. It has more than 450 member companies at present. The RJC asserts that buyers of jewellery today are very interested in the origin of their jewellery, while banks, insurance companies and the government are turning transparency and conflict-free supply of jewellery raw materials into one of the mandatory requirements (RJC, 2013).

It adds that a company’s ability to demonstrate social responsibility of its business is needed as much as its financial statements verified by auditors. The Responsible Jewellery Council covers all parts of the jewellery supply chain from mine to store, has developed standards and provides certification to confirm the compliance of companies with social, environmental and ethical standards. According to its CEO, Michael Rae (2013), the RJC is focused on providing its Members with the capacity to demonstrate responsible environmental, social and ethical performance, through independent third-party certification against the RJC's Code of Practices (CoP). He adds that the RJC also offers a Chain-of-Custody standard, applicable to gold and platinum group metals, to assist Members seeking to utilise chain-of-custody as a voluntary, complementary element to the RJC Member Certification process.

One of the criticisms of the RJC is that although it's meant to be an international trade association, the majority of its members are European and North American businesses. That said, the number of its members has in fact increased by 20% over the past year. Michael Rae (2013) attributed the growth in the RJC's membership to the recognition by increasing numbers of companies in the international jewellery supply chain of the value of RJC membership and certification as a means to credibly demonstrate responsible environmental, social and ethical performance to their business partners and other stakeholders, e.g. customers, regulators, financial institutions, insurers, local communities and NGOs.

FAIRTRADE-FAIRMINED PRODUCER STANDARDS

Another initiative related to the issue of sustainability is the development of the Fairtrade & Fairmined standard, by the Alliance for Responsible Mining (ARM) and Fairtrade International (FLO), to create market access for gold products that support the social, environmental and economic development of Artisanal and Small-scale Mining (ASM) communities. The Standard is known as the Fairtrade and Fairmined Standard for gold from Artisanal and Small-Scale mining, including associated Precious Metals.

The Standard's purpose is to create opportunities for economically disadvantaged artisanal miners and their communities. In contrast to the Standard discussed above, this one is aimed at smaller operators and is also looking at the demand side for production. Its ultimate objective is to provide an incentive for organisation and formalisation of artisanal and small scale mining (ASM).

ACID MINE DRAINAGE AND GOLD MINING

Acid mine drainage (AMD) is the flow, or seepage, of polluted water from old mining areas such as on the Witwatersrand, which has been (for more than 120 years) and is still a gold mining area. This polluted water results from oxidation of sulphide minerals mainly pyrite (FeS_2) and the creation of SO_2^{2-} ions, caused by exposing

rocks containing such minerals to air and water. AMD caused by mining can occur within the mine, in waste rock dumps or in tailing dams.

The sulphides in waste water react with water to produce sulphuric acid. This presents serious health risks and has been linked with skin cancer, tumours, liver disease, nerve damage, and growth retardation in children

On the Witwatersrand, acid mine drainage has reached a crisis proportions, as apparently some mining companies allow acid mine water to flow into streams, dams and sources of groundwater.

ACID MINE DRAINAGE AND SUSTAINABILITY AND MATERIALITY

For operating gold mines on the Witwatersrand, Acid Mine Drainage is a sustainability and materiality issue, especially for those which have been operating for a while and have both closed mines and operating ones with numerous tailings deposits and dams. This therefore must be a materiality reporting issue for such mining companies. This is being done by mining companies on a voluntary basis in their sustainability reports, but it would be fair to say there is room for improvement. Acid Mine Drainage relates mainly to water use and treatment.

IS REGULATION OF SUSTAINABILITY AND MATERIALITY NECESSARY?

The above discussion has shown that several self-regulation efforts are underway in terms of sustainability reporting. This has resulted from pressure exerted by NGOs in particular, on companies, especially those in extractive industries like mining.

As you would expect, some companies have been creative and even innovative in this area. The creativity has been aimed at addressing the company's environmental and social issues whilst at the same time creating value for the company in the process. This would be the most sought-after solution as Sustainability departments in companies had to be boosted in terms of financial and human resources, and therefore shareholders would expect that such allocation of resources should

translate to value in terms of the triple bottom line. Consultancy, Sustainalytics (2011) also provides an advisory service to organisations relating to this area. This of course makes business sense, because no company goes into business to spend a huge amount of resources just attending to environmental and social issues. There are also efforts to create standards for materiality reporting, although there are as yet no international standards.

IS SELF-REGULATION ENOUGH?

As with any self-regulation on the part of industry, industry only becomes proactive if there is a threat to the company. In this regard, the campaigns by NGOs play a significant role in bringing about appropriate responses from industry. The “No dirty gold” campaign is an excellent example of this. However, one has to ask the question: Is self-regulation enough? The answer is similar to other self-regulation measures discussed in other chapters of this study: Only larger, well-resourced companies especially those operating in the northern hemisphere implement self-regulations measures adequately. Smaller companies most often do not. This implies that sustainability issues are seen as a luxury by small companies. Unless these companies start seeing sustainability as critically linked to longevity, they will not embrace self-regulation.

Self-regulation also means that much of what is done is voluntary. This means if the company fails to implement the self-regulation measure adequately, there are no penalties as such and the company is not in danger of losing its mining licence (in the case of mining companies) if it does not implement the self-regulation measure satisfactorily. This is especially so in the new concept of sustainability (and materiality) reporting. Some may even view it as a nice to have (to stand a stand of winning an award for reporting for example) and not compulsory.

It is also apparent that some companies just make generic, qualitative statements in the sustainability report in certain environmental areas such as water management. That is why the development of internationally accepted standards for materiality is a step in the right direction.

Haufler (2013) believes that voluntarily standards have significant positive influences on the behaviour of companies and are more flexible and easier to implement than government regulation but the problem with them is the often weak enforcement mechanisms. She added that some companies seek sources of low-cost production which often means countries with weak regulatory standards.

Brereton (2002) pointed out that traditionally, the mining industry did little to promote improved practices across the sector, but more recently, key players in the industry have shown willingness to take collective action to improve standards in the sector due to the concern that the public image of mining is shaped chiefly by the actions of the worst performers in the industry.

IS THERE A ROLE FOR LEGISLATION IN ENSURING GOLD IS MINED RESPONSIBLY?

It is suggested that there are many efforts, such as the efforts of the Responsible Jewellery Council, Responsible Mining Assurance Initiative and the FairMined producer initiative, that are promising as far as ensuring gold is mined, traded and used responsibly. These systems are not perfect; as the criticism from NGOs attests, but these carry promise of evolution in the right direction.

IS KING III SUFFICIENT TO ENFORCE SUSTAINABILITY (AND MATERIALITY) REPORTING?

King III is applicable to all entities, public, private and non-profit. As mentioned in the above discussion, King III recommends that organisations produce an integrated report instead of an annual financial report and a separate sustainability report and that companies create sustainability reports according to the Global Reporting Initiative's Sustainability Reporting Guidelines. More importantly, King III advocates that all companies produce an integrated report that reports how the company has impacted on social and economic life of the community in which it operates.

However, it is important to note that King III is not law. It is actually a collection of best practice and it is a set of recommendations for good corporate governance. Nevertheless, it is suggested that King III is adequate for regulating the precious metals industries in South Africa because the requirements of King III have been

incorporated into the listing requirements of the Johannesburg Stock Exchange, making compliance mandatory for all listed companies. Obviously, the major disadvantage is that non-listed companies fall outside the net of this requirement. So, one has to ask, should such requirements be enforced by legislation?

It is suggested that inserting such provisions in regulations would be too onerous, especially as it will have to be applied by small companies as well, who already complain about being over-regulated in South Africa through the Mineral & Petroleum Resources Development Act, 2002 (including its provisions for a Social and Labour Plan), the Precious Metals Act, 2005, and more red tape in other pieces of legislation relating to water, air emissions and waste management (National Environmental Management Act, 2008 in particular). It could also be prohibitively costly for small companies.

More important to note is the fact that, much of what is in in King III regarding sustainability reporting is also incorporated in the relatively new Companies Act, 2008 and Regulations made in terms of that Act.

CONCLUSIONS

(1) At this stage the formal and informal regulation of Sustainability and Materiality consists of King III and JSE listing requirements, environmental legislation (e.g., NEMA), occupational health and safety legislation, precedent where companies have been held liable for environmental and health impact (e.g., the asbestosis cases) and self-regulation through RJC, etc.
(2) It can be noted that it is currently a voluntary practice in most countries in the world to publish sustainability reports. However, efforts are underway that will render the development of some kind of international materiality standard inevitable.
(3) Although there is room for improvement in sustainability reporting in the precious metals sector, mining companies have begun to embrace this as a must, and not a nice to have.

The gold mining industry claims it is taking Sustainable Development activities very seriously and that there are strict regulations and guidelines for mining of gold, and points to the fact that most mining companies, especially the larger ones, have robust environmental, social and ethical standards and report on these through their annual reports.

(4) In South Africa, the King III Report on Corporate Governance and the Companies Act, 2008 are at this juncture sufficient to regulate sustainability reporting. Therefore, it is suggested that precious metals legislation such as the Precious Metals Act, 2005 need not tread in this area of regulation.

(5) Should it be needed, there is also the possibility for sustainability reporting through the requirement for holders of mining rights to submit Social & Labour Plans (SLPs) in terms of the MPRDA.

(6) The only areas that could see Regulation, is the area of climate change impacts, although this is not the main materiality area for precious metal mining companies.

CHAPTER SIX:

CALLS FOR GOLD-BACKED CURRENCY (GOLD STANDARD)

"Commodities such as gold have a world market that transcends national borders, politics, religion, and race. A person may not like someone else's religion, but he'll accept his gold."

Robert Kiyosaki

INTRODUCTION

Steve Forbes (2011), the CEO of Forbes Magazine, suggested in June 2011 that the USA should return to a gold-backed currency to prevent further debasement of the U.S. dollar. The campaign to preserve the value of the U.S. currency and curb the Federal Reserve has long been championed by Republican Ron Paul. In an article published on his website entitled "The Keys to Economic Growth", Ron Paul (2012), argued that the U.S. economy was in "terrible shape" and that the trillions of dollars borrowed and printed by the U.S. government have done nothing to turn things around. According to Ron Paul (2012), the U.S. economy cannot be restored, until we "prohibit the Treasury and Federal Reserve from essentially creating money and credit from thin air." According to Ron Paul (2012), in order to ensure a sound currency, the dollar should have its value legitimatized via gold or commodity convertibility. However, it should be noted that most Americans believe his proposal has very little chance of succeeding.

SUMMARY: WHAT IS TO BE EXPLORED IN THIS CHAPTER

In this study the impact of a possible return to a gold-backed currency on the regulation of the gold industry in South Africa is speculated on and recommendations are made for regulation in South Africa, should such a scenario ever materialise. To this end, the pros and cons of a return to a gold-backed currency or gold standard are first examined. Secondly, the new phenomenon of cryptocurrency or digital currency is also looked at, with particular emphasis on the impact it could have on regulation of the gold industry and currency controls.

GOLD STANDARD

A gold standard is a monetary system in which the standard economic unit of account is based on a fixed quantity of gold (Bordo, 2008). Essentially, three types can be differentiated: specie, exchange, and bullion. In terms of the gold specie standard, the monetary unit is associated with the value of circulating gold coins or the monetary unit has the value of a certain circulating gold coin, but other coins may be made of less valuable metal (Bordo, 2008). The gold exchange standard usually does not involve the circulation of gold coins and its main feature is that the government guarantees a fixed exchange rate to the currency of another country that uses a gold standard (specie or bullion), regardless of what type of notes or coins are used as a means of exchange (Bordo, 2008). This creates a type of gold standard, where the value of the means of exchange has a fixed external value in terms of gold that is independent of the inherent value of the means of exchange itself (Bordo, 2008). Lastly, the gold bullion standard is a system in which gold coins do not circulate, but the government authorities agree to sell gold bullion on demand at a fixed price in exchange for currency (Bordo, 2008).

GOLD-BACKED CURRENCY AND HOW IT WORKED

In the 19th and early 20th centuries, gold played a central role in international monetary transactions. Gold was used to back currencies; the value of currency was determined by its fixed relationship to gold, and gold was used to settle international accounts. The gold standard maintained fixed exchange rates, which was seen as advantageous because they reduced the risk when trading with other currencies (Dick, 2004).

Imbalances in international trade were theoretically rectified automatically by the gold standard (Bank of England, 2011). A country with a deficit would have depleted gold reserves and would therefore have to reduce its money supply (Bank of England, 2011). The resulting fall in demand would reduce imports and the lowering of prices would boost exports – in this way the deficit would be rectified. A country experiencing inflation would “lose” gold and therefore would have to decrease the

amount of money available to spend (Bank of England, 2011). The decrease in the amount of money would in effect act to reduce the inflationary pressure.

HISTORY OF GOLD-BACKED CURRENCY

As of 2013 no country uses a gold standard as the basis of its monetary system, although some hold substantial gold reserves (Encyclopedia.com, 2013). The use of gold as money began thousands of years ago in Asia Minor (Ancients.info, 2014).

The gold specie standard arose from the widespread acceptance of gold as currency (Lipsey, 1975). Various commodities have been used as money; typically, the one that loses the least value over time becomes the accepted form (Bordo et al, 2003). During the early and high Middle Ages, the Byzantine gold Solidus, commonly known as the Bezant, was used widely throughout Europe and the Mediterranean. However, as the Byzantine Empire's economic influence declined, so too did the use of the bezant (Lopez,1951). In its place, European territories chose silver as its currency over gold, leading to the development of silver standards.

Silver pennies based on the Roman Denarius became the staple coin of Mercia in Great Britain around the time of King Offa, circa CE 757–796 (Keary, 2005). Similar coins, including Italian denari, French deniers, and Spanish dineros circulated in Europe. Spanish explorers discovered silver deposits at Potosí in Bolivia (1545) and in Mexico (1522) during the 16th century (Rothwell, 1893). International trade came to depend on coins such as the Spanish dollar, the Maria Theresa thaler, and later, the United States trade dollar (Encyclopedia.com, 2013).

In modern times, the British West Indies was one of the first regions to adopt a gold specie standard (Andrei, 2011). Following Queen Anne's proclamation of 1704, the British West Indies gold standard was a de facto gold standard based on the Spanish gold doubloon (Andrei, 2011). In the year 1717, the master of the Royal Mint Sir Isaac Newton established a new mint ratio between silver and gold that had the effect of driving silver out of circulation and putting Britain on a gold standard (Andrei, 2011).

A formal gold specie standard was first established in 1821, when England adopted it following the introduction of the gold sovereign by the new Royal Mint at Tower Hill in 1816 (Encyclopedia.com, 2013). The United Province of Canada in 1853, Newfoundland in 1865, and the USA and Germany (de jure) in 1873 adopted gold. The United States used the Eagle as its unit, Germany introduced the new gold mark, while Canada adopted a dual system based on both the American Gold Eagle and the British Gold Sovereign (Encyclopedia.com, 2013).

Australia and New Zealand adopted the British gold standard, as did the British West Indies, while Newfoundland was the only British Empire territory to introduce its own gold coin. Royal Mint branches were established in Sydney, Melbourne and Perth for the purpose of minting gold sovereigns from Australia's rich gold deposits (Encyclopedia.com, 2013).

The gold specie standard came to an end in the United Kingdom and the rest of the British Empire with the outbreak of World War I (Encyclopedia.com, 2013).

GOLD RESERVES HELD BY CERTAIN COUNTRIES

Most countries still value gold as a reserve asset, and purchases by central banks continued in 2013 especially by Asian countries and Russia who view that view gold as the chief means of diversifying their reserves.

Table 6.1 below shows gold and other reserves holdings by a selection of countries. It is interesting to note in the Table that South Africa only holds about 125 tons of gold and this figure has been static for a few years (GFMS, 2012). It would seem therefore hat South Africa is not buying gold in the open market or in South Africa (from gold mines) these days, and is apparently accumulating US dollars and Euros as reserves.

Table 6.1- Gold and other reserves held by certain countries as at end of 2013

COUNTRY	GOLD RESERVES (tons)	TOTAL RESERVES (US$ bn)	% Held in Gold
United States	8 134	448.51	70.2%
Germany	3 387	198.54	66.1%
IMF	2 814	Na	na
Italy	2 452	145.74	65.1%
France	2 435	145.16	65.0%
China, PR	1 054	3 880.37	11.0%
South Africa	125	45.0	11%

Source: IMF, 2014

ADVANTAGES OF A GOLD-STANDARD / GOLD BACKED CURRENCY

The last country to back its money with gold was Switzerland (40% of its value until 1999). There are several advantages of gold to back up a currency. These include the following:

(1) As early as the Byzantine Empire gold was used to support fiat currencies.

(2) Gold was used as the world reserve currency through most of the 20th century. The United States of America, in fact, used it until 1971 when President Nixon discontinued it.

(3) One of the advantages of its use, is that it limits the amount of money nations are allowed to print – due to the limited gold holdings. The gold advocates suggest that a gold standard would prevent a government from being unreasonable in its budget, and would not run up large deficits and increase a national debt – thereby providing economic stability and growth.

(4) Gold's greatest advantage over paper money is its intrinsic value created in human society and traditions over thousands of years.

(5) Gold is and was used to hedge against inflation due to its inherent value and due to the fact that it has retained its value over time better than most currencies.

(6) Countries like South Africa that export gold and have significant gold reserves see currency strength when the gold price rises. An increase in the gold price can thus create a trade surplus.

(7) Gold prices are sometimes used to measure the value of a local currency.
(8) There is still a strong correlation between the value and strength of certain currencies traded on foreign exchanges and the value of gold (Bank of England, 2011). Gold will continue to play an integral role in foreign exchange markets. Its market is followed by analysts because it can be an indicator of the health of international economies.
(9) Gold was used as a medium of exchange throughout history together or in lieu of other minerals, such as silver, salt, and copper (Encyclopedia.com, 2013). At the beginning of World War I, the warring nations went onto a fractional gold standard, inflating their currencies to finance the war effort. After World War II, gold was replaced by a system of convertible currency with the advent of the Bretton Woods system discussed below (Encyclopedia.com, 2013).

DISADVANTAGES OF A GOLD-STANDARD / GOLD BACKED CURRENCY

The price of gold would have to rise about 25 times in order for the US and British governments' gold assets to equal the supply of gold in circulation. There is therefore not enough gold in circulation for a return to the Gold Standard or a gold-backed currency. Beside this practical issue, there are other disadvantages of the gold standard or a gold-backed currency:

(1) Opponents of the gold standard argue that it would create economic instability, induce economic deflation and contraction, and hinder a government's ability to stimulate the economy and reduce unemployment during recessions and financial crises.
(2) Gold is a weighty commodity and is far less portable than money.
(3) Gold has to be stored in vaults, and its movement across borders is a considerable security and logistical issue
(4) Many metals can be made to look like gold to the naked eye. These include tungsten, lead painted gold in colour or plated with gold.
(5) The purity of gold can be varied by alloying with other metals such as copper.
(6) Gold does not earn interest like money does.

(7) The purity of gold has to be tested in a lab or by an instrument like a portable XRF analyser, and therefore cannot be verified as simply as checking the authenticity of a bank note.
(8) Gold is a commodity and is used in jewellery and industrial applications, thus complicating its use as money.

BRETTON WOODS SYSTEM

The Bretton Woods system was a landmark system for monetary and exchange rate management established in July 1944 through an agreement developed at the United Nations Monetary and Financial Conference held in Bretton Woods, New Hampshire (Investopedia, 2014). The main goal of the system was to achieve exchange rate stability.

The major outcomes of the Bretton Woods conference included the formation of the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development. Most relevant to this study, it also led to the introduction of an adjustable pegged foreign exchange rate system. Its rationale was a regulated market with tight controls in which currencies were pegged to gold and the IMF was given the authority to intervene when an imbalance of payments arose (Investopedia, 2014). One of the most important proposals of the Bretton Woods conference was that currencies should be convertible for trade and other current account transactions (Investopedia, 2014).

After the end of World War II in 1945, Europe and the rest of the world embarked on an extensive period of reconstruction and economic development to recover from the destruction caused by the war. Although gold initially served as the base reserve currency, the US dollar gained momentum as an international reserve currency that was linked to the price of gold.

The US dollar was in fact better than gold as it earned interest and it was more flexible than gold. It thus became what is known today as the “reserve currency”.

Other countries would peg their currencies to the US dollar to restore convertibility; buy and sell US dollars to keep market exchange rates within 1% of parity (Prestowitz, 2003). In this way the US dollar took over the role that gold played under the gold standard in the international financial system.

Bretton Woods established a system of payments based on the US dollar, in which all currencies were defined in relation to the dollar, itself convertible into gold, and "as good as gold". The Bretton Woods system (1944-1971) came to an end when the United States stopped allowing dollars to be converted into gold. The "gold window" was shut in 1971 and foreign governments could no longer trade dollars for gold at $35/ounce. The US dollar then became a fiat currency and the world currency, the standard, to which every other currency was pegged. Most international transactions in the modern day are denominated in US dollars.

NOTE ON THE SOUTH AFRICAN RAND

In the South Africa of the 19th century, gold was actually money (Becker, 2014). During the period of the Gold Standard from 1814 to 1914, the pound sterling was by legal definition, a certain quantity of gold (a little over seven grams of gold). It was an actual coin with gold content (Becker, 2014). In 1817, the sovereign was introduced. Struck in 22-carat gold, it contained 7.3g of gold and was equivalent to one British pound (Becker, 2014).

The South African pound was equal to the British pound, which equalled 7.3g of gold or 113.1g of silver. For over a century, money was a certain weight of gold. Banks in South Africa issued South African pounds freely to the extent they had gold in their vaults to make good on their "Promise to pay" the equivalent grams of gold or silver.
The South African Reserve Bank was established in 1921, and it also introduced bank notes that were a claim on the pound sterling (Becker, 2014). The South African pound endured from 1825 to 1961, linked to the value of the pound sterling which in turn was lined to a certain weight of gold or silver. The current South African currency, the Rand, was introduced in 1961 (Reserve Bank, 2014). After 1961, the

Reserve Bank could print as much Rands as it thought appropriate and the amount of Rands in circulation increased steadily.



Figure 6.1: "Promise to pay the bearer on demand at their office in Durban, ten shillings."

(Source: banknotes.com, 2014)

An ounce of gold was worth 4.50 South African pounds from 1821 to 1914 (Becker, 2014), and following the debasement of paper money by central banks during World War I and II, the South African price of gold was fixed at about R30 in 1971. Since the delinking of bank notes from gold in 1971, money printing became the order of the day (see image of an old South African bank note above).

The link to gold was phased out and the South African Rand became a fully-fledged fiat money. In 1997, the Reserve Bank saw no need to buy all gold mined in the country, and from 1998 allowed gold miners to market their gold privately, either though the Rand Refinery or independently.

COUNTRIES OR STATES USING OR CONTEMPLATING INTRODUCING GOLD AS LEGAL TENDER

Despite the disadvantages of gold as money or legal tender, some countries and states still have legal tender gold coins while some states have even introduced legislation that allows gold to be used as money. These are discussed below by country and/or state.

Oklahoma City, Arizona, and Utah in the USA

In March 2014, the Oklahoma State Senate passed a Bill (Senate Bill 862 – SB862) that would legalise gold and silver as legal tender. Currently, gold and silver coins issued by the US government are legal tender in the State of Oklahoma, but a person may not compel another person to tender or accept such gold or silver coins, except as agreed upon by contract (Greene, 2014). If the Bill ever becomes law, Oklahoma could become another State to recognise gold and silver as legal tender authorised for payments, following the Arizona senate which passed a similar Bill in 2013 (Greene 2014) and Utah in early 2014. In 2014, the governor of Utah signed a Bill that made gold bullion and silver bullion legal tender. The Utah Sound Money Act was designed to take on the fiat money system, which is the printed money such as the US dollar, backed only by the promise of the government (Utahsoundmoney.org, 2014). While US States are not allowed to create their own currency under the US Constitution, they are allowed to use gold bullion and silver bullion as legal tender. The Utah law states that gold bullion and silver bullion coins issued by the US Mint can be used as payment with any merchant in the state of Utah for the purchase of all goods and services.

These Bills in the US were the result of the massive debt crisis and general economic problem in the US, in 2013[18]. Conservative politicians in States such as Arizona feared that the US was headed for financial ruin and that the US economy was going to collapse resulting in the debasement of the US dollar. Distrust in government-backed money by conservatives drove the move towards using “real

[18] *Since elections much of this talk for gold as money has subsided. The debt crisis has been averted for now*

money" i.e., gold and silver, as legal tender. As is well known, when the US dollar declines, gold prices rise.

Australia

The Australian Constitution, section 115(4) states: *"A State shall not coin money, nor make anything but gold and silver coin a legal tender in payment of debts"*. Under this provision, the Perth Mint still produces gold and silver coins.



Figure 6.2: Australian gold nugget one ounce coin
(Source: Australian Mint, 2014)

In Australia, the Australian Gold Nugget gold coin (see image above) and the Australian Silver Kookaburra silver coin enjoy legal tender status but are almost never circulated or used in the payment of debts.

South African gold coins

Through the Reserve Bank Act, 1990, gold coins such as Krugerrands (see image below) and the *Protea* and *Natura* series are declared as legal tender but these are never used to buy goods and services. The amounts printed on the face of the coins are in fact nominal values (R2 or R5) and are a fraction of the intrinsic (gold) value of the coin.



Figure 6.3: Krugerrand gold coin
(Source: RandRefiney.com, 2014)



Figure 6.4: Protea series gold and silver coins
(Source: SAMint.co.za, 2014)

BITCOIN

What is bitcoin?

Bitcoin is referred to as a cryptocurrency or digital currency (Joyner, 2014), although governments, especially the United States and China, refuse to accept it as a currency. In layman's terms it can be described as a virtual currency, with acceptance by some, especially tech-savvy persons or those that are simply anti-establishment (see image of Bitcoin logo below). It is in a sense an internet protocol. There are many users of Bitcoin in the United States despite the government there not accepting its currency status.

Kostakis and Giotitsas (2014) define Bitcoin as a peer-to-peer payment system introduced as open-source software in 2009 by developer Satoshi Nakamoto. The payments in the system are recorded in a public ledger using its own unit of account, which is also called Bitcoin. The Bitcoin system has no central repository and no single administrator. As bitcoins can be transferred directly from one person to another they are sometimes described as digital cash (Murphy, 2013).



Figure 6.5: Bitcoin logo on a sign for its acceptance
(Source: Bitcoin.com, 2014)

Bitcoin Mining is the process of adding transaction records to Bitcoin's public ledger of past transactions which is called the block chain (Kroll et al, 2013). The block chain serves to confirm transactions to the rest of the network as having occurred. Bitcoin nodes use the block chain to distinguish legitimate Bitcoin transactions from attempts to re-spend coins that have already been spent elsewhere.

Bitcoin mining is deliberately designed to be resource-intensive and difficult so that the number of blocks found each day by miners remains steady (Kroll et al, 2013). Individual blocks must contain a proof of work to be considered valid, and this proof of work is verified by other Bitcoin nodes each time they receive a block. Bitcoin uses what is known as the “hashcash” proof-of-work function (Kroll et al, 2013).

The main purpose of Bitcoin mining is to allow Bitcoin nodes to reach a secure, tamper-resistant consensus. It is also the mechanism used to introduce Bitcoins into the system: Miners are paid any transaction fees as well as a "subsidy" of newly created coins (Kroll et al, 2013). This serves both the purpose of disseminating new coins in a decentralized manner as well as motivating people to provide security for the system.

Besides through “mining”, bitcoins can be obtained in exchange for fiat (paper) money, products and services. Users can send and receive bitcoins electronically for an optional transaction fee using wallet software on a personal computer or mobile device (Kroll, et al, 2013).

Bitcoin as a form of payment has grown in recent years, because it is digital, and fees are lower (The Economist, 2014). Fundamentally, however, it does not conform to the widely used definition of money, which is a thing that is a store of value, a medium of exchange, and a unit of account. It can qualify as a medium of exchange (albeit limited) however, because of its significant volatility it does not pass as a store of value. Lastly, although it’s a unit of account in the block chain, it is not used as a unit of account outside it (The Economist, 2014).

Should Bitcoin be backed by gold?

Some commentators, including Jim Rickards (2013) propose that Bitcoin should be backed by gold, so that it is backed by something tangible. Others believe this would be defeating its purpose, because Bitcoin is supposed to be the digital equivalent of gold and backing it with anything tangible would serve to centralize it, which is against the protocol of the Bitcoin. This therefore seems unlikely at present, but this could change in future if the Bitcoin starts to falter by becoming unsustainably volatile.

E-GOLD: NoFiatCoin

E-gold is a cryptocurrency that takes the Bitcoin concept a step further by being backed with gold, and addresses the main concern of not being backed by anything “real”.

NoFiatCoin (XNF) is a digital currency backed by gold and silver bullion. The rationale for it is to combine the benefits of digital currency with the accepted security of gold and silver.



Figure 6.6: E-Gold logo
(Source: e-gold.com, 2014)

About a third of every batch of XNF released into the market is backed by gold and silver coins (E-gold.com, 2014). Transactions occur through Ripple – an open payment system. One can create a Ripple wallet and buy XNF with US dollars through Bitstamp, or exchange Bitcoins for XNF through Ripple (XNFTrading.com, 2014).

Advantages of E-gold and its potential impact

E-gold also has an advantage because it is easier to transfer than the commodity gold itself. It also addresses the store of value concern of the Bitcoin but it is facing legal issues, so has not achieved appeal sufficiently yet.

If E-gold was to succeed, it will obviously be good for gold, as it will create demand for gold which will have to be stored in an allocated account to back the currency. This will be good for gold miners, as it will lead to rising prices and a new demand component within the investment sector.

CONCLUSIONS ON THE GOLD STANDARD AND A GOLD-BACKED CURRENCY

The above discussion shows that calls for a return to the Gold Standard, especially in the United States, arose during the time when the debt crisis in the United States reached a stage where government in the US actually shut down. No agreement could be reached at that time on raising the debt ceiling which stood at a staggering $17 trillion in early 2013.

When an agreement was reached on raising the debt ceiling in the US, such calls subsided. However, in 2012 and 2013 several States in the US had introduced bills in the Senate or were debating the introduction of such legislation. It was apparent that the States that did managed to do this because of impetus from certain conservative politicians in those States. These conservative politicians believed that the US economy would collapse, and the US dollar would eventually lose its value. Of course this has not happened thus far, but it is an almost certainty that the calls for a return to a Gold Standard would re-emerge if US debt spirals out of control.

It is also clear from the discussion above that a return to the Gold Standard would not be practical due to the limited amount of gold in circulation. However a gold-backed currency is not impossible in the future if the US economy weakens significantly to affect the US dollar. This would lead to dramatic rise in the price of gold which has been capped by the success of the US dollar as a reserve currency.

It can also be concluded from the discussion above that world wars were good for gold and it is quite probable that a third world war, if such ever occurs, could return the World to a Gold Standard or gold-backed currency. As the old adage goes; “history often repeats itself”.

IMPACT OF A HYPOTHETICAL GOLD-BACKED CURRENCY ON THE REGULATION OF THE GOLD INDUSTRY IN SOUTH AFRICA

If there was any move towards a gold-backed currency whether in South Africa or in a major economy in the world, the price of gold would increase considerably. This would benefit a significant gold-mining and gold-reserves hosting country like South Africa. In this scenario, history would repeat itself in terms of legislation. South Africa would return to the strong exchange controls of the 1960s as far as gold possession, export and import are concerned. The Reserve Bank would probably become the sole purchaser of gold mined in the country as it was until 1997.

Effectively, the export of gold would be banned, and all gold would be sold to the Reserve Bank which would manage how much gold it kept as reserves and how

much gold it would use for financial transactions in lieu of transactions in foreign currencies such as the US dollar. Gold reserves would thus climb upward in-step with mine production increases.

Gold ownership by ordinary South Africans would be outlawed, and there would be strict controls as in the past on the use of gold by manufacturing jewellers. Only one or two designated refiners of gold would be permitted in South Africa, like the Rand Refinery was pre-1997. Investment products such as minted gold bars and Exchange Traded Funds (ETFs) and certain gold coins would be struck out from legislation and the gold in circulation would eventually be bought back by the Reserve Bank.

The import of gold would probably also be banned, except by the Reserve Bank itself. The only imports that would be allowed would be for refining purposes at the designated refiners. The rise in the gold price would make marginal or sub-economic mines very profitable again and South Africa's gold production could triple or quadruple in a short space of time. South Africa has the reserves but its cost of production at the current gold price makes much of the reserves uneconomic to mine.

Perhaps one of the most peculiar advantages of this scenario will be the total eradication of illegal gold mining. If gold is money of the country, it would be in the interest of the State to invest vast resources to ensure mines are protected, mined gold is transported securely and only persons of very high calibre and competence are involved in gold mining and the gold trade. Any illegal trade would be swiftly dealt with as it was in the days when gold contributed more than 50% of foreign exchange revenue. We could see the re-introduction of the Gold & Diamond Branch of the South African Police, or the Gold component of it at least. Such controls would be comparable to the current controls and security on the printing of bank notes as is currently in place at the South African Bank Note Company – a subsidiary of the Reserve Bank.

Commercial banks would have to cease their activity in gold markets as buyers or sellers of physical gold. Most gold would be converted into bullion bars and stored by the Reserve Bank, in any case. Recycling of gold-bearing products would also be restricted, probably to the one or two designated refiners. This will allow for the control needed. Assaying by the private sector would not be allowed, and only designated official assayers would be allowed in such a system. This also happens in certain countries like Zimbabwe currently where gold is a crucial reserve asset and in Russia.

With the gold price rising significantly, the Rand would strengthen and perhaps be on par with other foreign currencies. This correlation has been prevalent in general throughout history of the Rand and gold mining in South Africa.

Legal tender gold and platinum coins

Although there are legal tender gold coins in South Africa, these are used currently as an investment product only, and is one of only three avenues for gold ownership in South Africa (the other two being gold jewellery and the recently deregulated minted gold bars). These are not used to buy or pay for goods and services due to their nominal face value and most importantly due to currency controls in existence in South Africa for decades.

Personal communication with a Reserve Bank official who declined to be named in this work, suggests that it is unlikely that gold either in the form of coins or as bullion will be allowed to pay for or buy goods and services in South Africa. It would take a very dramatic shift in policy for the Reserve Bank to ever change its stance on this matter.

POTENTIAL IMPACT OF GOLD-BACKED DIGITAL CURRENCY ON REGULATION IN SOUTH AFRICA

It can also be deduced from the discussion above that if a gold-backed, digital currency like e-gold were to succeed, it would have a powerful impact on demand for gold and, consequently, a hugely positive impact on gold mining in South Africa.

In terms of regulations, such a currency would prompt the amendment of legislation such as the Precious Metals Act, 2005 and the Currency & Exchanges Act, 1933.

In terms of the Precious Metals Act, 2005, there would be prohibitions on trading of precious metals within South Africa, and tighter export and import controls. In terms of the Currency & Exchanges Act, 1933, stronger Exchange Controls would be introduced as far as gold is concerned and there would be consequential amendments to legislation dealing with electronic transactions, such as the Electronic Communications & Transactions Act, 2002.

However, firstly, such a currency would have to be allowed by the Reserve Bank in South Africa. History and its conservative nature would suggest that the Reserve Bank would be reluctant to allow a digital currency to flourish in South Africa. The Reserve Bank would most probably amend the Reserve Bank Act, 1989 to specifically prohibit the use of digital currency in South Africa, even though it would be good for the gold mining industry in South Africa which is on a declining trend.

The failure of the Reserve Bank to intervene in the gold crisis of the period from 1997 to 2002, and the platinum crisis in 2013 probably suggests that the Reserve Bank's policy is not to intervene in commodity markets because of their notoriously cyclical nature.

So far, digital currency use by South Africans is negligible and limited to a few Internet geniuses – more as a novelty than anything else. This is most likely the only reason, the Reserve Bank has not moved on this matter yet. It is quite probable that decision-makers at the Reserve Bank think that this is a fad that will be fleeting and would probably end in disaster for those heavily invested in digital currency. Attempts to obtain an official view from the Reserve Bank were unsuccessful.

CHAPTER SEVEN:

NEW MINING FRONTIERS: URBAN MINING AND MINING THE SEA

INTRODUCTION

The general upward trend in gold prices from 2002 to 2012 has had an impact, inter alia, allowing for new frontiers to be explored. Of these, Urban Mining and the sea are the most noteworthy in the context of this research.

Perhaps the ultimate new frontier is extra-terrestrial mining, but it's a long way off and is quite literally unchartered territory as far as regulation is concerned. Therefore only brief comments are made in this chapter, whereas the focus will be on urban mining and sea mining.

URBAN MINING (MINING E-WASTE)

Urban mining is defined as the process of reclaiming compounds and elements from products, buildings and waste (Urbanmining.org, 2011). It is a new global industry that encompasses essentially any metal or other material that is recyclable.

As far as precious metals are concerned, urban areas represent rich "veins", richer than natural deposits because of the amount of precious metal contained in consumer electronics and electrical contacts in buildings. Cell phones in particular are a source of gold, palladium and silver in economically significant amounts. Other electronics contain platinum and iridium as well. It is believed that there is fifty times more gold per ton of waste cell phones lying in dumps in South Africa and elsewhere than there is on average in gold mines in South Africa (Erdmann, 2014). Gold is used in the circuit boards of cell phones because gold conducts electricity much better than copper.

Areas in a city that can actually be mined are city garbage dumps or landfills where garbage was burned or buried for many years. An estimated 85% of the developed world's e-waste ends up in dumps or landfills but only about 15% of the world's e-waste is recycled each year (Associated Chamber of Commerce and Industry of India, 2014).

E-WASTE

E-Waste, or Waste Electrical and Electronic Equipment (WEEE), is the term used to describe old, end-of-life (obsolete) or discarded appliances using electricity (ewasteguide.info, 2014). It includes computers, mobile phones, other consumer electronics, household appliances etc., which have been disposed of by their original users.



Figure 7.1: Example of an e-waste dump in South Africa
(Source: ITWeb Africa, 2013)

The term is used as a generic term embracing all types of waste containing electrically powered components. Importantly, e-Waste contains both valuable materials as well as hazardous materials which require special handling and recycling methods (ewasteguide.info, 2014).

E-waste is regarded as the fastest growing solid waste stream in the world (Shegerian, 2011) and urban mining is a viable solution to the problem. It is estimated that over 60 million tons of e-waste is generated in the world each year (Mining Weekly, 2013), and with the fast growing use of technology in our daily lives, this amount will increase annually in the foreseeable future.

As environmentally responsible waste management is highly technological and highly capital intensive, there is currently a significant amount of trans-boundary, sometimes illegal, movement of e-waste into developing countries. The United Nation's Economic Commission for Africa (2010) suggested that most African countries require policies and infrastructure to implement efficient and sustainable recovery systems for secondary materials from e-waste as a new market and job creation opportunity.

This Chapter will look at the potential / economics of urban mining and new policies and technologies that are making it viable. However, e-waste is classified as hazardous (about 40% of heavy metals found in landfills comes from electronic waste) and as such health and environmental issues must be incorporated into its regulation.

SUMMARY OF THIS SUB-CHAPTER:

If this new mining frontier is pursued in South Africa, it will affect regulation of the precious metal mining, recovery and recycling in South Africa. The impact on regulation of the industries is studied and recommendations are made in this Chapter.

CURRENT STATUS AND POTENTIAL (GOLD, PLATINUM)

URBAN GOLD MINING

Urban gold mining in its literal sense is not taking place in South Africa at present, i.e., there is at present no mining of city landfills and dumps to recover metals. However, the potential is there for such mining to take place in the future, because

as mentioned above, most of our e-waste is discarded and ends up in city dumps and landfills.

However, there are concerted efforts especially under the auspices of the E-waste Association of South Africa (EWASA) to manage the establishment of a sustainable, environmentally-sound e-waste management system for the country. Of relevance to this study is the system being established for the collection of e-waste from businesses, government departments, hospitals, schools etc. EWASA has also been endorsed by the Department of Environmental Affairs and the Department of Trade & Industry as best-placed to manage the E-waste Take-back system under the Extended Producer Responsibility requirement in the National Environmental Management: Waste Act, 2008.

Another development, which occurred in November 2013, is worth mentioning in the context of this chapter: EWASA and Mintek announced a partnership to jointly tackle the growing challenges of e-waste which is the fastest growing waste stream in the world and to unlock potential for the creation of local “Green” jobs as well as provide sustainable solutions in support of SMMEs and the Youth. Makhafola (2013) stated that the collaboration with EWASA will allow the two parties to develop technologies that will not only change the way e-waste is collected and treated in South Africa, but the technology developed could be exported to Africa and the world.

One of the main outcomes of this joint Urban Mining Project is to create a mobile solution that is locally developed and that can be deployed to urban as well as rural areas to treat waste on site. This will provide employment opportunities, training and education and sustainability (Anderson, K., 2013).

URBAN PLATINUM-GROUP METAL MINING

Computer hard disks are also a source of platinum and ruthenium and hence urban mining is also a way of recovering platinum. However, platinum and ruthenium are less abundant in landfills and dumps because they are present mainly in computer hard drives while gold is used in electronic and electrical circuit boards and wires much more intensively because of its better electrical conductivity and ease of use

(its softer and gold is the most malleable and ductile of all known metals and less expensive). The quantity of platinum and ruthenium used in each hard disk is also quite small (less than 0.1g). It would be fair to say then that platinum and ruthenium would be by-products of urban mining.

The single largest application for palladium is as an electrode material in the electronics sector - in multi-layer ceramic capacitors (MLCC) for computers, mobile phones and automotive electronic components. However, palladium would also be a by-product due to its lower intensity of use in the electronics sector, mixing will silver in electrodes and in some cases displacement by cheaper alternatives such as nickel.

THE VIABILITY OF URBAN (PRECIOUS METAL) MINING

The mining of landfills and waste dumps for precious metals is not taking place in South Africa at present, because the viability of such an operation is influenced by economies of scale and the availability of alternatives. Mine dumps, which are the result of over 100 years of mining in and around Johannesburg, present a more attractive mining option in terms of economics.

It should also be added that the hundreds of abandoned and closed mines are also being mined, albeit illegally in South Africa. These illegal mines, as discussed in other chapters provide up to 16 tons of gold in one form or another. Such economics and scale cannot be matched by urban mining at present. However, with time the prognosis for urban mining, in its literal sense, in South Africa will improve as electronic waste generation increases exponentially.

CURRENT REGULATION (GOLD AND PLATINUM)

MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA)

To answer the question of whether current minerals legislation, in particular the Mineral & Petroleum Resources Development Act, 2002, caters for Urban Mining in its true sense (i.e., the mining of urban dumps or landfills in which metal containing

material has been dumped or buried) one must pose the question: If a person applied for a mining permit in terms of the MPRDA, would such a permit be granted?

Pieter Alberts (2014), Chief Director of Legal services at the Department of Mineral Resources opined that the answer would be “no”. The reason for this he said was that city dumps or landfills are in most cases privately owned, or the owner will at least be traceable; therefore, to “mine” or “recover” minerals from such sites, the permission of the owner would be a prerequisite, but not the issuing of a mining right or permit. He added that the activity would however, not be unregulated, and would probably be subject to the National Environmental Management Act, 2008 and other national and subordinate legislation.

It is clear from the above that the MPRDA does not currently apply to Urban Mining in its true sense. In fact, the MPRDA does not apply to any dump material, even that resulting from mining or prospecting activity pre-MPRDA. The terms used in the MPRDA for dumps are residue stockpiles or residue deposits (depending on whether the operation has terminated or not). “Historic dumps” or pre-MPRDA dumps, are not included in the definition of residue deposit or residue stockpile as per the MPRDA, because the definition only relates to a residue stockpile or deposits created by virtue of a “prospecting right” or “mining right” which are defined as a right in terms of sections 17 and 23 of the MPRDA (Alberts, 2014). Thus it does not apply to dumps resulting from mining or prospecting authorisations under the Minerals Act, 1991 or earlier minerals or mining legislation.

Authority for the above is found in the court judgment of De Beers Consolidated Mines vs Ataqua Mining (Pty) Limited, DMR and Others (Orange Free State Provincial Division, 13 December 2007), where it was held that such pre-MPRDA dumps are movable property which is subject to private ownership (Bloemfontein High Court, judges: Kruger, A and Beckley, AP, 2007).

PRECIOUS METALS ACT, 2005

To answer the question of whether the Precious Metals Act, 2005 as it currently stands caters for urban mining in its true sense (mining of urban dumps or landfills in

which metal containing material has been dumped or buried) the definition of precious metals needs to be examined:

Definition of unwrought or semi-fabricated precious metal

Precious Metal contained in e-waste in city dumps and landfills does not fall easily within the definition of either unwrought or semi-fabricated precious metal in the Precious Metals Act, 2005. Such metal is not "unwrought" (within the definition of the Act) because it cannot be classified as ore, concentrate, matte, a bar, granule, ingot, a button, plate, sponge or powder; nor is such metal "semi-fabricated" because it cannot be classified as sheet, tube, wire, strip, rod or sponge.

Such precious metal is in fact waste and waste is not included in the definition of either unwrought or semi-fabricated precious metal. However, as discussed above this waste does contain precious metal in not insignificant quantities, which means that the Precious Metals Act, 2005 would need to be amended to cater for urban mining in the near future. Recommendations in this regard are made below.

WASTE ACT, 2008

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) seeks to regulate waste management in order to protect health and the environment. It *inter alia* provides for the licensing and control of waste management activities and the remediation of contaminated land. It is important to note that the Act classifies e-waste as hazardous waste because it contains inorganic and organic elements or compounds that can have a detrimental impact on health and the environment.

In terms of the Act, the Minister of Environmental Affairs is the licensing authority for Waste Management Activities such as the storage, treatment or disposal of hazardous waste; whereas, the MEC of the province in which the waste management activity is to be carried out, is the licensing authority for other waste management activities in that province.

PROPOSALS FOR FUTURE REGULATION OF URBAN MINING (GOLD AND PLATINUM)

MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA)

Before one can make proposals regarding the future regulation of urban mining, one has to consider whether it would it be a good idea for the MPRDA to also regulate Urban Mining? This question boils down to whether the MPRDA should regulate the recycling of substances, materials or solutions. Presently it does not, and considering the legal debate regarding dumps created from mining activities, this would further complicate the Act. More importantly one has to look at the scope of the MPRDA. In this regard, one definition is instructive: that of the term "mineral". The definition in the Act is as follows:

> *"mineral": means any substance, whether in solid, liquid or gaseous form, occurring naturally in or on the earth or in or under water and which was formed by or subjected to a geological process, and includes sand, stone, rock, gravel, clay, soil and any mineral occurring in residue stockpiles or in residue deposits, but excludes*
> *a) water, other than water taken from land or sea for the extraction of any mineral from such water; …*

So the MPRDA refers to a "mineral" as something occurring naturally in or on the earth and which was formed by or subjected to a geological process. This therefore excludes metals found in e-waste in city dumps or landfills because their occurrence is not natural and they are certainly not formed by a geological process. In layman's terms, the MPRDA is not concerned with waste unless it is beneficiation plant waste, waste rock, slimes, derived from or incidental to a mining operation for a mineral as defined (see definition of residue stockpile, MPRDA, 2002).

The definition of the term "mine" also reinforces the fact that the Act's scope is the mining of "minerals" as defined.

"mine" means, when used as a verb, is the mining of any mineral, in or under the earth, water or any residue deposit, whether by underground or open working or otherwise and includes any operation or activity incidental thereto, in, on or under the relevant mining area"

Due to the complexity it will cause, it is not recommended that Urban Mining be included for regulation under the MPRDA. In fact, the term urban mining is misleading in the context of the MPRDA because it is actually the recycling of e-waste but would in the literal sense involve excavation of the earth to recover metals, but not "minerals" as defined.

PRECIOUS METALS ACT, 2005

As mentioned above, waste is not included in the definition of either unwrought or semi-fabricated precious metal in the Precious Metals Act, 2005, but e-waste does contain precious metal. However, it is proposed that if the definition of "unwrought precious metal" is amended to cover waste-containing precious metals, the Precious Metals Act, 2005 is the appropriate legislative instrument to regulate Urban Mining in the literal sense (mining of urban dumps or landfills in which metal containing material has been dumped or buried for many years).

Therefore, it is a relatively simple matter to include urban mining under the Precious Metals Act, 2005. Amendment of the definition of "unwrought precious metal" would allow a refining licence (provided for in the Act) to be used for urban mining in terms of the following entitlement of such licence: *"to extract precious metal from any material, substance or solution in his or her lawful possession and to dispose of such precious metal…"*

It is proposed further that compliance measures, in terms of the refining licence, relating to health and the environment, would need to be augmented to cater for the fact that we are dealing with a hazardous substance and in locales that are close to cities or within city precincts. It is suggested that a Compliance Certificate in terms of the National Environmental Management: Waste Act, 2008 should be a prerequisite

to apply for a refining licence to conduct urban mining. An Environmental Impact Assessment should be an essential item to obtain such a Compliance Certificate. To ensure that the Urban Miner stays compliant after licence issue, it would be necessary to conduct periodic inspections and for the Certificate to be valid for 6-months to a year only, and therefore renewable semi-annually.

In terms of health and safety, inspections would need to include health and safety checks similar to those in a mining environment but with emphasis on how toxic elements and compounds are handled, transported and disposed of.

MINING GOLD FROM THE OCEAN / SEAWATER

As the gold grades of the older, larger land deposits continue to decline to low levels, the seas which comprise 70% of the Earth's surface become the object of exploration and research into gold reserves. Concentrations of gold are much higher where rivers have carried significant quantities of gold into the sea after eroding continental rocks along the way over thousands or millions of years. Significant quantities of gold have been commercially mined from ocean beach placer deposits and estuaries near the mouths of rivers.

Gold ores have also been located along the mid-oceanic ridges of the Atlantic and Pacific Oceans. The gold ores in such locations are associated with sulphide deposits formed by hydrothermal vents. These vents occur when the spreading seafloor allows water to percolate down into the crustal rocks and reach hot regions deep beneath the seafloor (Hertzig, 1991). The heated seawater dissolves minerals (such as sulphur, copper, iron and a little gold and silver) in much higher concentrations relative to the normally cold water.

Some scientists believe that certain bacteria have been involved in the precipitation of gold out of dilute hydrothermal solutions in the creation of certain known gold deposits. McNulty, (1994) proposed that a possible avenue for commercially viable gold recovery from seawater might involve such a bacterium, or a specifically

engineered microbe. In 2006, Nautilus Minerals Inc. became the first company to commercially exploit the ocean floor for gold and copper sulphide deposits in waters off Papua New Guinea.

However, the greatest accessible reserve is the ocean itself (Goldfever.com, 2011). Seawater contains vast amounts of dissolved gold, worth many billions of dollars, although in dilute concentrations. It was S. Sonstadt in 1872 that was first to establish the presence of gold in solution in seawater (McNulty, 1994), but the precise measurement of its concentration is still controversial because of extreme dilution. Values for the concentration of gold in seawater typically range from 5 to 50 parts per trillion (ppt), and average around 13 ppt (Lucas, 1985). Burk (1989) estimated that seawater of the Earth's oceans contain about 800 000 tons of gold.

SUMMARY OF THIS SUB-CHAPTER:
In this section, gold exploration in the oceans is reviewed and analysed and an assessment is made as to whether this will be a viable mining environment in the coming decades, and if so how this will affect regulation of gold mining and recovery in South Africa. Recommendations are also made for the eventuality that this becomes viable in South African waters.

GOLD EXPLORATION IN THE OCEANS

Along the coast of South Africa and Namibia, diamonds have been mined for over twenty years, in particular by De Beers Marine. Great advances in mining technology from existing offshore industries have made mining the seafloor possible. It is, however, only since the year 2001 that deep sea mining for copper and gold, which occur in a rocky ore deposit on the sea floor called seafloor massive sulphides (SMS), has attracted interest.

Seafloor massive sulphides deposits are located around 1.2 km under the sea and appear like giant rock formations some 200m long and wide and tons of metres thick and contain high concentrations of the valuable metals copper and gold together with

zinc, lead, silver and sulphur (Mining-technology.com, 2014). The deposits are found in under-seawater volcanic areas around the world and are created by hydrothermal plumes known as “black smokers”. Mining Technology (2014) explains how these are created as follows: When seawater seeps through into the porous seabed, the water is heated deep below and is then ejected back up into the ocean through the black smokers. The fluids ejected by these deep-sea vents like geysers are rich in metals and very hot (between 300 to 500 °C), therefore when the fluids hit the icy cold water, the metals precipitate and form chimneys around the plumes. Over time, these chimneys collapse and form the polymetallic sulphide deposits that can be mined today. It is believed that these deposits or seams can yield as much as ten times the precious minerals than a seam that’s mined on land (National Geographic, 2014).



Figure 7.2: Metal rich black smoker
(Source: Nautilus Minerals, 2010)

The International Seabed Authority, which regulates the use of the seafloor in international waters pursuant to the United National Convention on the Law of the Sea, has granted twelve exploratory permits to various governments, including India, France, Japan, Russia, China, Korea and Germany. In terms of exploration with a view to SMS mining, two companies are well advanced. These are Nautilus Minerals from Canada and Neptune Minerals from Australia. Nautilus’ flag ship project is an SMS mine in Papua New Guinea called Solwara 1, while Neptune’s main project is Kermadec in the northern waters of New Zealand.

Nautilus (2013) plans to use three remote-controlled construction tools that resemble underwater lawn mowers to cut the hard mineral ore from the seafloor and pump it over a kilometre up to a surface vessel. The vessel would be equipped with machinery that removes excess water and rock and return it to the mining area via pipeline to avoid contaminating surface waters with residual particles as much as possible. The ore mined will then be shipped to a concentrator facility for processing.

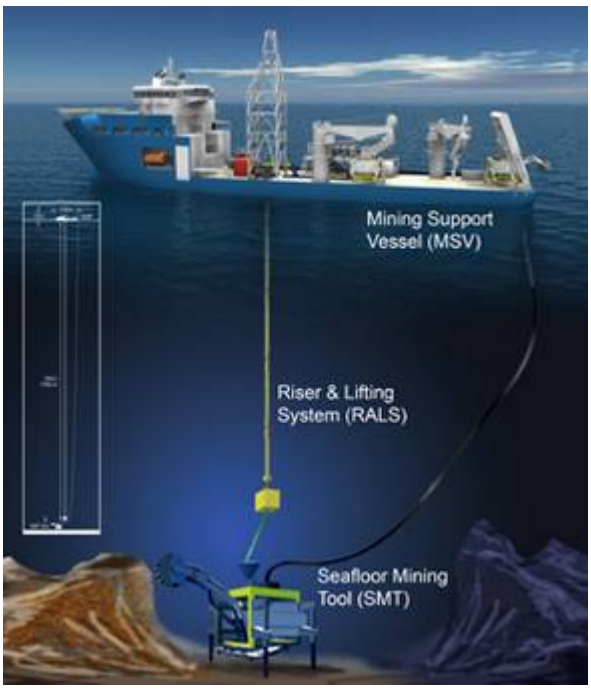


Figure 7.3: Illustration of seafloor mining tool deployment from mining vessel
(Source: Nautilus Minerals, 2010)

Exploring and Mining in the deep sea comes with environmental issues. Therefore companies intending to mine there must work with marine research institutions to assess environmental conditions of the mining area to ensure that impact on ecosystems is, or will be, minimised. In doing this, they have to also deal with the concerns of conservationists, fishers and coastal residents. Deep Sea Mining Campaign, an activist group in Australia that is campaigning against mining the Solwara 1 site, is concerned about the impacts of toxic heavy metals from the mining activity on local communities and fish.

Nevertheless, indications are that mining will begin within 1 to 3 years. Nautilus has since been granted its environmental permit for the Solwara 1 site. The company reported recently that assembly of its seafloor mining tools is close to completion and will soon be ready for acceptance testing (Nautilus, 2014)

Neptune Minerals, Inc. was founded in 2011 to explore and develop Seafloor Massive Sulphide deposits. The company is currently busy with exploration in its tenements in New Zealand, with the goal of identifying and validating future mining deposits (Neptune Minerals, 2014). Exploration entails *inter alia* the use of Remotely Operated Vehicles, Acoustic Multibeam mapping, spot sampling using hydraulic grabs and robotic drills that sit on the seafloor. The company is seemingly still at least 5 years away from commercial mining.

VIABILITY OF MINING GOLD FROM THE OCEAN / SEAWATER

It is currently not commercially viable to mine gold from seawater, but given the affinity that certain bacteria have for concentrating gold, it might be feasible in the future to employ such a bacterium or one specifically engineered for the task, to scavenge gold directly from the dilute concentrations in seawater. Innovation in artificially promoting or enhancing the scavenging abilities of such bacteria will be required to make recovery of gold from seawater economically viable.

CURRENT REGULATION (GOLD AND PLATINUM)

MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA)

The following definitions in the MPRDA indicate that sea mining was considered in the drafting of the Act:

"mineral": means any substance, whether in solid, liquid or gaseous form, occurring naturally in or on the earth or in or under water and which was formed by or subjected to a geological process, and includes sand, stone, rock, gravel, clay, soil and any mineral occurring in residue stockpiles or in residue deposits, but excludes

a) water, other than water taken from land or sea for the extraction of any mineral from such water; …

The definition of “mineral” includes minerals occurring in water and under water and covers the forms of sea mining described above.

The definition of mine (below) includes excavation under the sea or under other water, and is also cognizant of sea mining.

"mine": means, when-

a) used as a noun-

i) any excavation in the earth, including any portion under the sea or under other water or in any residue deposit, as well as any borehole, whether being worked or not, made for the purpose of searching for or winning a mineral;
ii) …

b) used as a verb, in the mining of any mineral, in or under the earth, water or any residue deposit, whether by underground or open working or otherwise and includes any operation or activity incidental thereto, in, on or under the relevant mining area

It is interesting to note that the owner of “the sea”, as defined below, in terms of the law, is the State. See definition of owner below:

"owner": in relation to -

a) land -

i) means the person in whose name the land is registered; or
ii) if it is land owned by the State, means the State together with the occupant thereof; or

b) the sea, means the State

The definition of “prospecting” in the MPRDA is also inclusive of prospecting in the sea environment and seawater itself.

"prospecting": means intentionally searching for any mineral by means of any method -

a) which disturbs the surface or subsurface of the earth, <u>including any portion of the earth that is under the sea or under other water</u> or
b) …
c) <u>in the sea or other water on land</u>

The definition of "the sea" also caters for sea mining and prospecting, except for mining Seafloor Massive Sulphide deposits which are in international waters and controlled by the International Seabed Authority - pursuant to the United National Convention on the Law of the Sea.

"the sea": means the water of the sea, as well as the bed of the sea and the subsoil thereof below the low-water mark as defined in the Seashore Act, 1935 (Act No.21 of 1935), and within -

1) *the territorial waters as contemplated in section 4 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), of the Republic, including the water and the bed of any tidal river and of any tidal lagoon;*
2) *the exclusive economic zone as contemplated in section 7 of the Maritime Zones Act, 1994 (Act No. 15 of 1994); and*
3) *the continental shelf as contemplated in section 8 of the Maritime Zones Act, 1994 (Act No. 15 of 1994);*

PRECIOUS METALS ACT, 2005

As the MPRDA is essentially an upstream Act, and the Precious Metals Act, 2005 more of a downstream Act, mining – including sea mining is not the jurisdiction of the Precious Metals Act, 2005.

PROPOSALS FOR FUTURE REGULATION OF SEA MINING (GOLD AND PLATINUM)

Unlike with Urban Mining, sea mining is considered adequately in the MPRDA. This is due to the fact that mining for diamonds along the west coast of South Africa has been taking place for more than two decades and thus predates the MPRDA. De

Beers, a South African company in the Anglo American fold is a world class marine prospector and miner.

Aurimar, an AngloGold Ashanti company, explored for gold off the west coast of South Africa from 2011 to 2013. Vaughan Chamberlain (2014), Senior Vice President at AngloGold said that the process of obtaining prospecting licences was not onerous and the company was assisted by its joint venture partner De Beers, which has extensive experience in securing licences for diamond exploration and mining off the West Coast. However, the company did not progress to mining as it shut down operations in 2014.

Nevertheless, it is suggested that there is room for improvement in the environmental regulation aspect of sea mining. Due to the fact that deep sea mining is a relatively new field, the complete consequences of full-scale mining operations are still not known (Halfar, J. and Fujita, R.M; 2010). More work needs to be done in this area. Halfar, J. and Fujita, R.M (2007) in their paper "Dangers of Deep Sea Mining" published in Science Magazine, elaborate on the dangers posed by mining to the benthic layer of the sea floor, increased toxicity of the water, sediment plumes and corrosion.

It is proposed that environmental regulations under the MPRDA specific to prospecting and mining in the deep sea environment would be required for better environmental control of deep sea mining off the coast of South Africa. As far as the Precious Metals Act, 2005 is concerned, there is no need for additional legislation to support sea mining, due to the fact it is an upstream activity which is not within the jurisdiction of the Precious Metals Act, 2005.

MINING IN SPACE – THE ULTIMATE MINING FRONTIER

Mining in extra-terrestrial environments, i.e., in space, is the ultimate of mining frontiers. The landing of the Philae Lander on Comet 67P in November 2014, took the prospect of space mining from science fiction to the realms of possibility. It's just a matter of time for technology to advance sufficiently to allow for mining in space.

It is well known that certain meteorites and asteroids for example contain high concentrations of platinum-group metals especially, and some gold. In fact, some scientists believe that all the gold, osmium, palladium, platinum, rhenium, rhodium and ruthenium mined from Earth's crust, came originally from the rain of asteroids that hit Earth after the crust cooled (University of Toronto, 2009). However, it is a very long way off for commercial mining to take place in space as it costs billions of dollars to put machines and men in space and is thus not viable at present.

Nevertheless, some work in the area of considering how policy and legislation will evolve has been done, most significantly by Ricky Lee in his book: *Law and Regulation of Commercial Mining of Minerals in Outer Space*. In this book he discusses and makes proposals on balancing policy interests within existing treaty frameworks. The author discusses at length the content of “the common heritage of mankind doctrine”.

Since commercial space mining is perhaps some hundred years away, it is beyond of the scope of this study.



Figure 7.4: Philae Lander on the comet
(Source: European Space Agency, 2014)

CHAPTER 8:

CONCLUSIONS, RECOMMENDATIONS & PROPOSALS

In this study over twenty topical issues, developments and proposals impacting on the precious metals industries were explained, commented on, discussed, analysed, or debated. In this, the concluding chapter, closing remarks and/or conclusions are made on these issues and developments. To end this work, recommendations or proposals are made for the future regulation of the South African precious metals industries.

CONTROLLING ILLEGAL MINING BETTER?

One of the biggest, if not the biggest problem facing the South African precious metals industries (in particular the gold mining industry) is illegal mining. Between 8 and 15 tons are mined illegally mainly by illegal immigrants and sold to illegal and legal refineries - which launder the illegal metal.

It was argued in this study that the problem of illegal mining should be controlled at source. Once gold mined illegally gets to refiners/traders, it is difficult to trace its source. The legislation that controls mining and prospecting in South Africa, the Mineral & Petroleum Resources Development Act, 2002 (MPRDA) should have had as one of its chief objectives the control of illegal mining and prospecting.

It is proposed that illegal mining can be controlled, but it requires the DMR's on-the-ground and daily involvement in enforcing the provisions of the MPRDA together with support from the South African Police Services (SAPS) and the National Prosecuting Authority (NPA). Amendments to the Act and Regulations under the Act, setting out more clearly the responsibilities of the DMR especially with a view to practical implementation are also necessary.

It is proposed further that illegal mining in certain hot spots (such as Welkom) is so serious that military intervention is warranted. The army should get involved together with a dedicated team from the South African Police Services and the NPA. The Gold and Diamond Branch of SAPS that existed prior to 2002 was very effective because it was focussed on illegal gold, platinum and diamond trading and was staffed by experienced officials. It is time to revive such a unit of the SAPS which together with the army could play a huge role in combatting illegal mining and illegal trade in precious metals. Training would be needed for the combating of illegal mining in the underground environment. Such expertise is currently with mine rescue personnel on the mines, but it could be transferred to army personnel and the proposed new Gold and Platinum Branch of the SAPS.

COMBATTING PRECIOUS METAL ILLICIT TRADE AND SMUGGLING

This study has found that the Precious Metals Act, 2005 has two very important provisions to control the illicit trade: Firstly, the prohibition of the possession of unwrought precious metal and secondly, the provision for the geochemical fingerprinting of unwrought precious metal mine production and imports.

The prohibition against possession of unwrought precious metal (unwrought precious metal can only be possessed by a licence, permit or certificate holder) has been used to successfully prosecute many cases involving illegal mining or illegal trade where the transgressor was caught in possession of such metal. For this reason, the provision and indeed the Precious Metals Act, 2005 itself in some form or other will remain in the short to medium term.

It was mentioned in Chapter 4 that the Forensics Science Laboratory has a huge backlog of samples yet to be analysed. The organisation also suffers from a lack of human resources with the specialised skills to perform the function of analysing these samples for the purpose of fingerprinting and provenance determination. It is therefore suggested that the gold and PGM miners fund a specialised Laboratory for the Fingerprinting of precious metals. It is in the interest of the industry to have illegal mining and the illicit trade controlled and it was argued in this study that industry would be prepared to take over the funding of this facility. Such funding would attract

the skills and expertise required to make this a world class tool in the fight against illegal mining and theft of precious metals from mines. Secondment of staff from mining companies to the Forensics Science Lab may also be an option. As chain-of-custody is important for analysis of such samples, appointing such staff as police reservists may also be required. The author believes that this suggestion would be realistically implementable.

It is also suggested that it would be in the country's interest to have assay facilities at the ports of entry/exit. This will allow Customs officers and SAPS official to have samples of exports and imports assayed to determine precious metal content. Anecdotal evidence from SARS (2009 – 2012) suggest there is some precious metal that is being illegally exported or imported under the steel and copper customs tariff codes; often mixed with such metals. The Assay facility will also allow for quick identification of precious metal, because in certain forms precious metal does not look like precious metal at all. It is further proposed that there is a role for the unit of the South African Bureau of Standards dealing with testing services at ports of entry/exit.

Training of Customs and SAPS official who operate at the border posts and ports of entry/exit is essential especially in matters such as identification of precious metals, use of portable XRF analysers and other assay equipment. It is suggested that as minimum each border post or port of entry should have at least one portable XRF for quick identification of metals.

It should also be noted that South Africa is attracting illicit trade and smuggling of precious metals from other African countries in particular. This may seem at odds with the fact that South Africa has such stringent controls on precious metals. However, paradoxically it would seem that the fact that South Africa has such stringent controls means that illicit metal brought into the country can be "legitimised" for legal export by licensed exporters. It seems that once illicit metal is brought into the formal system in South Africa i.e., legitimised, the stringent controls (on possession in particular) seem to insulate it.

It is further proposed that if the capturing of transactions of buying, selling, import and export of unwrought precious metal, which are submitted by licensees and

permit holders (in prescribed registers quarterly in terms of the Precious Metals Act, 2005) is outsourced to a data management company, such registers could be a powerful tool in monitoring the precious metals trade in South Africa. A computer programme can be used to cross-check between buyer and supplier transactions in their respective registers (a licensed seller would record in his/her register that, for example, he sold 10kg of gold in granule form to a licensed buyer on a certain date, while the licensed buyer should also record that he bought 10kg of gold granule from that seller on that same date). If transactions are not "balanced off" in this way, then it's an anomaly that has to be investigated. The organisation that it should be outsourced to must have expertise in metal accounting. The South African Diamond and Precious Metals Regulator (SADPMR) does not have the human resource capacity to capture the thousands of transactions contained in registers of the some 2 000 licence and permit holders. The SADPMR can however, play the leading role in investigating anomalies.

CONTROLLING THE SCRAP PRECIOUS METAL INDUSTRY BETTER

It was discussed in this work that the relationship and the co-ordination between the South African Police Services and the SADPMR need to improve as a matter of urgency for the scrap precious metal industry to be controlled better. It was found that this lack of co-ordination and the overlaps between the two pieces of legislation are being exploited by criminal syndicates. To deal with this, the two organisations should be conducting joint inspections, especially of refiners and beneficiation licence holders on a monthly basis. There should also be a mechanism (including the outsourcing of data capture mentioned above) that would allow the registers submitted by holders of licences under the Second-hand Goods Act, 2009 and those under the Precious Metals Act, 2005 to be reconciled and anomalies investigated by inspectors of the SADPMR and the SAPS.

The matter of statistics: capturing of the transactions in registers, cross-checking of buyer and seller transactions, metal accounting and reconciliation has been mentioned a few times in this work. It is suggested that this begs for computer

programme developers to develop a programme that can automate this process and allow for the monitoring of the trade and follow-up on anomalies.

It was also discussed in this study that scrap precious metals are used to camouflage illegally mined metal (laundering) when bought by refiners and beneficiators. This occurs by mixing of melted scrap precious metal and alloying with illegally mined metal, or simply as a metal accounting disguise (with accompanying fraudulent documentation).

It is suggested that there could be merit in the clear and physical separation of refining of scrap precious metal from primary precious metal (newly-mined precious metal) refining. If the two are allowed to mix, it complicates control. If a person wishes to be engaged in both, he or she has to be compelled to have separate licensing for each and a physical separation of the refineries/smelters using primary metal as feedstock from that using scrap precious metal as feedstock. The melting and refining of scrap precious metal should be restricted to accredited refineries only. These accredited refineries should be accredited by an organisation such as the South African Bureau of Standards (SABS) and accredited refineries should be subject to periodic testing of metal feedstock, metal in process and metal to be sold. These accredited refineries should also abide by a code of conduct and acceptable "good delivery" guidelines similar to those enforced by the LBMA for the London Market. It should be a requirement that such accredited refineries should only purchase metal in original scrap form (such as old jewellery, broken jewellery, spent auto-catalysts etc.). This is because once melted, tracing source as scrap or illegally mined metal becomes difficult. Coupled with this, there should be a ban on exports of scrap metal in original form, melted scrap metal bars or as refined bars by any person except an accredited refiner. There could be merit also in banning exports of scrap platinum-group metals to encourage recycling of platinum-group metals in South Africa.

THE WORLD GOLD COUNCIL'S CONFLICT-FREE GOLD STANDARD

The World Gold Council's Conflict-free Gold Standard discussed in Chapter 2 of this study is one of the most important developments in the precious metals industry in recent years. From the discussion in Chapter 2, several lessons were learnt and

allowed for some recommendations to be formulated for the future regulation of the South African precious metals industries.

Lessons of note from the Conflict-Free Gold Standard include the following:

- The Conflict-free Gold Standard provides some practical guidance on a way to work responsibly in conflict-affected and high risk environments.
- There is definitely a place for self-regulation by industry. When regulation is voluntary, companies embrace it as part of business and essential to good business knowing that ultimately it will translate to consumer confidence in the product that the company produces. A system of such voluntary self-regulation by industry does contribute to an effective internal control system.
- The use of voluntary and market mechanisms to achieve greater levels of governance and accountability are progressing operating standards and transparency significantly (Price Waterhouse Coopers, 2012). Legal compliance requirements still have a role to play, nevertheless (PWC, 2012).
- Self-regulation if implemented by all players in the value chain can close loopholes in a government-implemented certification scheme.
- The Conflict-free Gold Standard also shows that external assurance from an independent third party provides a measure of confidence in such a system.

These lessons from the Conflict-free Gold Standard suggest that three different approaches can be used in dealing with conflict minerals like gold and diamonds:

(1) Government Regulation backed by industry self-regulation (co-regulation with government as lead);
(2) Industry self-regulation (including self-certification), backed by government oversight (co-regulation with industry as lead); or the more free-market approach:
(3) Deregulation, because no system is perfect, and well-resourced criminal syndicates will exploit weaknesses.

In South Africa, the trend is towards more regulation, judging from government's approach in the last two decades, and therefore deregulation is unlikely in the short term. In this study, Government regulation backed by self-regulation was explored to

gauge its feasibility and then to make proposals for the future regulation of the gold industry in South Africa.

CONTROLLING MONEY LAUNDERING

In Chapter 4 it was stated that there is no anti-money laundering legislation in South Africa specific to the diamond and precious metals trades and that this is a worrying lacuna (loophole). The Financial Intelligence Centre Act, 2001 fails to take into account the role that diamonds and precious metals play in money laundering activities. It is also opined in this study that the Financial Intelligence Centre does not have the knowledge or expertise to deal with money laundering in the diamond and precious metals trades.

Realising this gap, the Department of State Security was recently tasked to look into this matter and develop guidelines to tackle the issue. In 2015, these guidelines were still in the draft and confidential stage. It is hoped, however, that this effort will eventually culminate in this loophole in South Africa being addressed.

HALLMARKING

This study found that there are significant benefits to introducing a statutory hallmarking system in South Africa. The chief benefit of hallmarking is consumer protection against misrepresentation of the precious metal content of products such as jewellery. An internally recognised hallmarking system would boost South Africa's reputation as a high quality manufacturer with the guarantee factor associated with hallmarking. It also reduces red tape associated with the import/export process and requirements for entry into certain export markets.

However, hallmarking requires significant infrastructure, the biggest cost-component of which would be assay offices in the main centres throughout the country and the human resources and equipment to run them (which would cost in excess of R10 million per centre). It was therefore concluded in the study that although beneficial, statutory hallmarking should be delayed by perhaps a decade, during which more

fundamental problems in the industry must be dealt with. Voluntary hallmarking administered by the Jewellery Council should continue in the interim.

PRODUCER PRICE FOR GOLD, PLATINUM

It was concluded in this study that a Producer Price for gold would not be favourable for South Africa in terms of cost/benefit and would actually serve no economic purpose. This is especially so because South Africa is no longer the largest producer of the metal, not even in the top 5 and we are minnows when it comes to fabrication of gold. The above-ground stocks of gold and the fact that arbitrage opportunities will nullify any South African price were also factors considered in coming to this conclusion.

With platinum, the difference is that South Africa is by far the largest producer in the world, so technically a South African producer price for platinum is possible. However, the biggest disadvantage would be that the cost/benefit analysis of establishing such a price would hardly be compelling. It requires supply/demand management, producers to want to buy into the concept (and some don't see the benefit) and balancing the interests of all producers and fabricators of precious metals in South Africa. Producers want a high price, fabricators a low price. It should also be noted that smaller players would be reluctant to cut production in times of low demand. It was also noted that South Africa earns far more in revenue from mining and exporting precious metals than it does from manufacturing products from them and exporting these. The main markets for platinum-group metals are outside the country, so a producer-determined price would affect relationships with end-users in Europe, Japan and the USA. The high labour cost component of South African mine production cost and the power of labour unions in South Africa would also complicate a price setting mechanism in South Africa. It was also argued in this study that price determination by the producers in a country would be seen as collusion and anti-competitive by anti-trust authorities in South Africa, the EU and the USA.

It is also contended that government involvement in the pricing of metals is in contravention of the South Africa's Mineral Policy. The *Minerals and Mining Policy for South Africa* states the following as government policy:

i) *"The marketing of South African minerals will be determined by market forces. State intervention will generally be limited to addressing market failures.*

ii) *Barriers, economic and otherwise, to mineral exports will be identified and appropriate strategies for their removal will be devised. All measures which restrict the sale of South African minerals on foreign markets will be opposed.*

iii) *Government will encourage and support market development by producers."*

Paragraph i) states clearly that the marketing of South Africa's minerals will be determined by market forces. State Intervention can only be justified by market failures, but neither the gold market nor the platinum market has suffered a market failure. Markets and prices are cyclical as is the nature of such metal markets.

PRECIOUS METALS EXCHANGE

It was argued in this study that in its favour, South Africa has the legal infrastructure that can support a precious metals exchange, well established and functioning credit systems, good financial regulation, sufficient financial resources and banking skills, and in the Rand Refinery, a world-class gold depository (Virtual Metals, 2005; Damarupurshad, 2005). However, against the country, are its limited cash markets in gold and platinum, capital controls, and the lack of first-mover advantage. Virtual Metals (2005) found that strong metals production is not a particular advantage for establishing a precious metals exchange because a small percentage of futures contracts (the overwhelming bulk of an Exchange's business) come to physical delivery. Most importantly, the bulk of South Africa's production of precious metals is exported and thus crucially there is very little metal circulating in local markets whence a physical market could develop into a derivatives one. Access to, and

association with, secure and reliable warehousing and safe transportation to and from warehousing, which are found in terminal markets, are absent in South Africa.

GEM & PRECIOUS METAL BOURSE PROPOSAL

It was argued in Chapter 3 that while the Diamond Exchange and Export Centre enjoys some degree of success because it is the only facility through which rough diamonds can be exported – its extension to semi-precious stones and precious metals would not enjoy success (according to 95% of people interviewed). This is mainly because South Africa does not produce sufficient semi-precious stones to sustain an exchange; much of the production of semi-precious stones (such as sugilite, tiger's-eye, rose quartz, amethyst and agate) in South Africa is illegal and the bulk of this production is smuggled out of the country to China and India.

It was argued that successful bourses are created by association of commercial traders who form such a bourse because of a market need for a trading platform. There is no need for a trading platform for gold and platinum in South Africa because producers have established their own marketing arrangements directly or via agents such as Rand Refinery. There is therefore no market need for a State Bourse trading precious metals or semi-precious stones based on the views of the overwhelming majority of people interviewed.

OPEC FOR PLATINUM?

At a BRICS meeting held in South Africa in 2013, South Africa and Russia announced that they plan to set up an OPEC-type trading bloc to coordinate exports of platinum and palladium. It was argued in this work that although feasible (see Chapter 3), this would create a cartel and could break international trade law and bi-lateral agreements and fall foul of competition authorities in chief-market regions such as Europe and the USA. In addition, this, like the Producer Price for Platinum concept requires supply and demand management that South Africa does not have expertise or experience in.

STATE PLATINUM TRADER

It was concluded in this study that a State Platinum Trader (in the mould of the State Diamond Trader, which is mandated by legislation to buy 10% of production and sell this to beneficiators) is technically feasible, but its major obstacles would be safe and secure warehousing of a much bulkier commodity, lack of systems for global supply/demand monitoring and the lack of expertise and experience in the logistics of transport, insurance and distribution. However, it is proposed that it would not be necessary to have a State Platinum Trader. Creating a middleman between the miner and the fabricator is not warranted. Supply of platinum to autocatalyst fabricators is not a problem in South Africa. It should also be noted that the State Diamond Trader model has failed if promotion of beneficiation (its major objective) is to be used as a metric, because beneficiation of diamonds in South Africa has declined over the last seven years. State intervention in the supply of platinum to autocatalyst fabricators is not necessary

RE-REGULATING SILVER?

It was opined by Mahlangu (2014) that it was a mistake to deregulate silver in South Africa. In this study, this notion was rebuffed because silver does not satisfy the criteria to justify regulation, especially the regulation of possession and trade as with other precious metals: Firstly, South Africa produces very little silver (6 tons), with production having declined drastically over the last decade, and all of this production is a by-product of lead/silver, gold, copper and PGM mining. Secondly, there is no theft of silver from mines as is the problem with gold, no illegal mining and it is not a high value commodity (generally less than 2% of the price of gold). Moreover, the deregulation of silver has given the jewellery industry and small-scale recycling of silver scrap a huge boost in South Africa.

PLATINUM RECYCLING AS A GROWING SOURCE OF PLATINUM SUPPLY

Statistics discussed in this study have shown that recycling of platinum and palladium is on the rise, so much so that recycling is the second largest contributor

(20-25%% of total supply), after Anglo Platinum, to the supply of platinum annually. This together with a drop in demand has resulted in the platinum market being in surplus putting downward pressure on platinum. In fact, the platinum price has spent 2015 (to date) below the gold price (ranging from $1 050/ozt to $1 180/ozt). It is proposed that South African refiners be incentivised (tax incentive for example) to increase platinum recycling or extend their operations to platinum scrap (in particular spent autocatalyst) recycling. This would serve to increase the country's dominance in platinum supply.

Currently platinum recycling is correlated with prices (i.e., recycling is price elastic) but this trend could change if any controls on supply (discussed in Chapter 3) are instituted by South Africa.

PLATINUM COIN CONCEPT

It was discussed in Chapter 4 that although South Africa dominates world production of platinum and has for many years; and despite the overwhelming success of the Krugerrand, South Africa has never issued a legal tender platinum coin. It is proposed in this study that a legal tender platinum coin, in the mould of the Krugerrand, is long overdue in South Africa and should have been launched during the FIFA Soccer World Cup in South Africa in 2010, which was the best marketing opportunity the country has ever had. A legal tender coin would have the benefit of being VAT-free, and the same restrictions as to export of Krugerrands could apply for exchange control purposes. In the current market conditions of excess supply and low demand, a platinum coin could provide a new demand sector and reduce the excess supply in the market and stockpiles held by producers.

CONCLUSION ON GOLD-BACKED DIGITAL CURRENCY

It was concluded in Chapter 6, that if a gold-backed digital currency like e-gold were to succeed, it would have a positive impact on demand for gold and consequently gold mining in South Africa. In terms of its impact on regulation of the gold industry in South Africa, it is likely that success of a gold-backed digital currency will be the

same as the impact any gold-backed currency in South Africa would have: greater control on gold possession, restriction on local trading, tighter export, import and exchange controls.

However, it was pointed out that the Reserve Bank of South Africa would most probably be reluctant to allow a digital currency to take root in South Africa, based on the conservative nature of the central bank and its actions over the past 60 years. To date, the use of digital currency in South Africa is negligible – limited to a few Internet-savvy "computer geeks" and more for its novelty appeal.

RESIDUE STOCKPILES AND RESIDUE DEPOSITS: HISTORICAL DUMPS

The judgment in the De Beers Consolidated Mines versus Ataqua Mining and Others case in relation to tailings dumps has had a major impact on the implementation of the MPRDA since it was delivered in December 2007. In short, the judgment was as follows: Firstly, tailings dumps are movables (movable assets); Secondly, the diamonds occurring in them (the sought mineral in this case) do not occur "naturally in or on the Earth" and therefore does not fall under the definition of mineral in the MPRDA; and thirdly, the MPRDA does not regulate tailings dumps created before implementation of the MPRDA because "residue stockpile" (which tailings are) is defined in the MPRDA as follows: *"any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, beneficiation plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or production right*". This meant in simple terms that the MPRDA does not regulate tailings dumps that predate the implementation of the MPRDA (May 2004).

ADVANCING BENEFICIATION BETTER IN LEGISLATION?

It was concluded in Chapter 3 that legislating for local beneficiation of precious metals has not had a positive effect on beneficiation of precious metals in South Africa because it has not addressed the factors that prospective beneficiators

consider before investing in large scale fabrication projects, which are lowering the cost of production, market development and markets access.

It is suggested that promoting beneficiation by legislation is not a simple task and sometimes legislation actually has the opposite effect. This is especially in the case of precious metals where it is a known fact that there is no clear advantage of the beneficiation taking place in proximity to mine production (i.e., in a producing country).

It was also argued in Chapter 3 that the Broad-based Socio Economic Charter (Mining Charter) was not designed and should not be applicable to the downstream industry but to the mining industry in particular. The downstream industry (which the Precious Metals Act, 2005 regulates) involves trading and manufacturing and the players in these sectors were not involved in the negotiation of the Mining Charter in 2001-2002.

BEE & TRANSFORMATION IN LEGISLATION

Black Economic Empowerment (BEE) is promoted in the Precious Metals Act, 2005 in the same way as beneficiation: *"In considering an application for any licence, permit or certificate the Regulator must have regard to the requirements of the broad-based socio-economic empowerment charter developed in terms of section 100 of the Mineral & Petroleum Resources Development Act, 2002*".

It was concluded in Chapter 3, that the above legislation for BEE or transformation of the precious metals industry has had only a small effect on transforming the industry in South Africa, however, it has had a negative impact on beneficiation (especially in the family-business dominated jewellery industry). It is therefore proposed, based on feedback by industry plyers interviewed, that the requirements for compliance with the Broad-based Socio Economic Empowerment Charter should be limited to skills development only or totally eliminated for the Precious Metal Beneficiation Licence and the Jeweller's Permit applications (the only two of six precious metals licences actually related to downstream beneficiation). This is because beneficiation is as

important an objective of the Act as transformation. As mentioned above, the two objectives are given equal status in the Precious Metals Act, 2005.

DEVELOPMENTAL PRICE FOR GOLD AND PLATINUM

In Chapter 3 the proposed Developmental Price for certain minerals and metals including gold and platinum was discussed. The rationale for such a proposal is to offer beneficiators (fabricators of gold and platinum such as jewellers and autocatalyst manufacturers) a competitive advantage.

It was argued in the Chapter that this amounts to subsidisation which has been proven not to work in the diamond industry in South Africa. It was also questioned in the Chapter: who will pay for the subsidy? If miners are to accept a discounted price for their production to be sold to beneficiators, this will affect their profitability and marginal mines would close. If government is to use tax payer's money for the subsidy, the Gauteng Toll-roads debacle suggests that South Africans would object strongly. However, there may be merit as suggested in Chapter 3 in beneficiation credits to be used to offset royalty payments and other taxes.

PROPOSALS FOR FUTURE REGULATION

The hypothesis at the start of this study was that the Precious Metals Industry in South Africa was over-regulated – "draconian" according to many industry players, and should in a phased approach, be deregulated in line with most other countries in the world. In the discussions in Chapters 2 to 7 of this study, there were arguments against and for deregulation. It was shown in those chapters that while the prohibition of possession of unwrought and semi-fabricated precious metal allows for better control (including exchange control) and has led to successful convictions related to illegal mining and trading, this level of control was also seen by some as an infringement of a citizen's rights and not in keeping with the trend in the rest of the world.

In the light of this, it is proposed that while deregulation is inevitable in future, it will have to be only after the fundamental problems are dealt with. These problems in South Africa include illegal gold mining, theft of precious metals from mines, illegal trade and smuggling of precious metals and exchange control considerations. These problems could take 10 to 15 years to resolve or to cease being relevant. It is therefore proposed that complete deregulation of the industry is about 15 years away, from a feasibility point of view.

It is recommended that it is worth monitoring the progress of relatively new initiatives such as The World Gold Council's Conflict-Free Gold Standard. The implementation of this Standard shows that there is a place for self-regulation by industry and that when regulation is voluntary, companies embrace it as part of business and essential to good business believing that it will translate to consumer confidence in the products that the companies produce (PWC, 2012). A system of such voluntary self-regulation (including self-certification) contributes to an effective internal control system.

It is proposed that self-regulation measures in the precious metals industries complement the Precious Metals Act, 2005, until phased deregulation of the industry can begin in the 10 to 15 year timeframe cited earlier. Thereafter, it may become

feasible for self-regulation (including aspects such as self-certification with external audit) to substitute regulation by government in terms of the Precious Metals Act, 2005.

It is also proposed that elements of the Conflict-Free Gold Standard in conjunction with other such initiatives in the gold value chain can also be applied to tackle the copper theft problem in South Africa with the objective of ensuring a company excludes stolen and illicit copper from the company's supply chain. These elements or measures include appropriate management systems, policies and skills in place; Know-Your-Client systems; appropriate processes/internal controls and a chain of warranties across the whole supply chain.

It is also proposed, from this study, that the elements and measures mentioned above for copper can be applied to rough diamonds better, due to the smaller size of the industry and due to the fact that there are Conflict-Affected and High Risk countries and areas associated with rough diamonds. It is recommended that the Kimberley Process examine how these can be applied to the Kimberley Process Certification System to plug the loopholes a government-implemented certification scheme cannot.

SPECIFIC PROPOSALS FOR REGULATION OF THE PRECIOUS METALS TRADE IN THE SHORT TERM

Before deregulation of the precious metals industry in South Africa can begin in an estimated ten years, it is recommended that the following proposals be considered as they could assist in controlling illegal mining and trade (see Table 8.1). Firstly, the legislation that controls mining and prospecting in South Africa, the Mineral & Petroleum Resources Development Act, 2002 (MPRDA) should be amended to include the control of illegal mining and prospecting as one of its key objectives (section 2). Amendments to the Act and Regulations under the Act should also include setting out more clearly the responsibilities of the DMR especially with a view to practical implementation of sections 91 and 92. Sections 91 & 92 of the MPRDA provide powers to any person (including the Regional Manager of the DMR in the

various provinces and officers of the DMR) authorised by the Minister to conduct inspections and investigation in any area where prospecting or mining is taking place, under the authority of a warrant, to ensure that the provisions of the Act are not being contravened. Section 91 also provides the authorised person powers to obtain evidence, seize any material, document or data and take samples of any material for testing and analysis. Therefore “police” powers can be given to certain Managers and officials of the DMR to police the provisions of the Act including ensuring prospecting and mining is carried out with the relevant right or permit and in accordance with the provisions of the Act and conditions of the right or permit. A corollary of this is that illegal mining and prospecting should be policed by the DMR. For this to happen, there needs to be greater emphasis placed on this aspect of regulation of the industry, and the capacity of the DMR needs to be strengthened at the provincial level to enable the implementation of sections 91 and 92 of the MPRDA (sections dealing with inspections to ensure compliance with the Act).

With respect to the Precious Metals Act, 2005, it is suggested that the inclusion of the regulation of access to mercury under the Precious Metals Act, 2005 should be considered in the short-term. This is because illegal miners are using mercury to process gold. If possession, purchase, import and sale of mercury are tightly controlled, it will allow for another weapon to be used in the fight against illegal mining. Currently mercury is meant to be controlled under the Hazardous Substances Act, 1973 but implementation by the Department of Health is ineffective.

It is also suggested that the provision for geochemical fingerprinting and the resources allocated thereto be strengthened. Section 22 of the Precious Metals Act, 2005 (titled: Database for precious metals) provides that any producer (miner) or any person who imports precious metal must submit to the Forensics Science Laboratory of the South African Police Services specimens of any precious metal produced or imported as prescribed. It is proposed that this provision be extended to specimens of exports of unwrought and semi-fabricated precious metal. It has been found in this study that not requesting specimens of exports of unwrought precious metal especially, is a loophole that allows for stolen and illegally mined metal to leave the country apparently through holders of legitimate export licences. It is also suggested

that the requirement to submit specimens periodically be extended to refiners (holders of refining licences) some of whom it is believed buy illegally mined and illicit precious metal.

Furthermore, it is suggested that provision be made for industry-self regulation in the current Precious Metals Act, 2005. The provision would entail recognition in the Precious Metals Act, 2005 of self-regulation by holders of precious metal licences (mining licences, refining licences and beneficiation licences). It is also a relatively simple to insert such a provision in precious metals legislation and require that holders of precious metals licences perform due diligence to ensure the integrity of the person they are sourcing precious metal from. It can be made compulsory that holders of precious metals licences satisfy themselves with reasonable certainty that their clients have not associated themselves with conflict or illicit gold. There are some measures already in the Precious Metals Act, 2005 that speak to a paper audit trail. In particular, holders of precious metals licences must record transactions of precious metals purchases and sales in registers prescribed by regulation. There are however, no assurances given to the next party in the chain that the gold was purchased or handled in a manner that is "conflict-free" or human-rights-abuse free. This can be addressed in current precious metals legislation by inserting a provision requiring invoices of sales and exports to contain a conflict-free or human-rights-abuse free statement. Moreover, current precious metals legislation can be improved by requiring that assurances of the conflict-free and human rights abuse – free nature of gold or gold-bearing material being exported or imported is declared in writing on invoices and export/import documents.

In this study, the proposal for re-regulation of silver was rebuffed because silver does not satisfy the criteria to justify regulation. The proposal to declare copper a "precious metal" to allow for greater control – with the intention to control theft was also not favoured due to the metals' intensity of use in households and buildings in general which would make regulation cumbersome and costly. In terms of platinum, it is proposed that South African refiners be incentivised (tax incentive for example) to increase platinum recycling or extend their operations to platinum scrap (in

particular spent autocatalyst) recycling. This will serve to increase South Africa's dominance of platinum supply.

It was deduced in the study that the Mineral & Petroleum Resources Development Act, 2002 (MPRDA) has no jurisdiction over urban (e-waste) mining because metals such as precious metals found in city dumps and landfills do not fall under the definition of "mineral" or "mine" in the MPRDA. It is proposed that if the definition of "unwrought precious metal" is amended to cover waste containing precious metals, the Precious Metals Act, 2005 would be the appropriate legislative instrument to regulate Urban Mining in the literal sense (i.e., mining of urban dumps or landfills in which metal containing material has been dumped or buried for many years). Such an amendment would allow for a refining licence provided for in the Act, to be used for the purpose of urban mining. Regulations under the Precious metals Act would need to be augmented to strengthen health and safety (as we are dealing with a hazardous substance) and environmental compliance (A Compliance Certificate in terms of the National Environmental Management Waste Act, 2008 and an EIA should be a pre-requisite).

The judgment in the De Beers Consolidated Mines versus Ataqua Mining and Others case in relation to tailings dumps (that pre-date the implementation of the MPRDA) has opened the flood gates for both the legal and illegal removal without a mining authorisation of tailings dumps or any material that could be passed off as tailings dump material. This has resulted in most of this material (legal and illegal) being sold to holders of refining licences issued in terms of the Precious Metals Act, 2005 for processing. This has complicated the regulation of compliance by these refiners, as this material is being received by refiners from persons not in possession of a mining right or mining permit. It is proposed that to ensure that the exploitation of tailings dumps is regulated, a specific licencing provision for this activity be created under the Second-hand Goods Act, 2009

Table 8.1- Summary of issues and proposed solutions (pre-deregulation)

ISSUE	PROPOSAL/S FOR REGULATION
Illegal gold mining	1. The MPRDA should be amended to include the control of illegal mining and prospecting as one of its key objectives (section 2 of the Act). 2. Amendments to the MPRDA & Regulations under the Act setting out more clearly the responsibilities of the DMR, especially with a view to practical implementation of sections 91 and 92 of the Act are also necessary. Theses sections deal with powers of any person (including the Regional Manager of the DMR in the various provinces and officers of the DMR) authorised by the Minister to conduct inspections and investigations in any area where prospecting or mining is taking place. In short, illegal mining and prospecting should be policed by the DMR. 3. The Regulation of possession, acquisition and transfer of mercury should be included under the Precious Metals Act, 2005. This is because illegal miners are using mercury to process gold.
Illicit trade and smuggling	1. The Precious Metals Act, 2005 should be amended to allow for specimens of exports of unwrought precious metal to be provided to the Forensics Science Lab of the SAPS. 2. The requirement to submit specimens periodically should be extended to the various products of refining licence holders.

ISSUE	PROPOSAL/S FOR REGULATION
Scrap precious metal control	1. Provision should be made for joint inspections by SAPS and the SADPMR with regard to scrap precious metal in terms of both the Precious Metals Act, 2005 and the Second-hand Goods Act, 2009. 2. The melting of jewellery by holders of refining and beneficiation licensees into dorè bars or any bars should be specifically prohibited. A new licence with the necessary controls should be provided specifically for this to prevent laundering of illegally mined metal.
Money laundering (using gold)	1. The Financial Intelligence Centre Act, 2001 should provide for specific measures to prevent the use of gold in money laundering activities.
Platinum Recycling	1. There should be a levy (duty) on the export of platinum and palladium -containing secondary materials including scrap, and incentives for the import of the same to promote recycling of these metals in South Africa.
Residue Stockpiles/Deposits (Historical Dumps)	1. There should be controls on the mining of residue stockpiles/deposits in the Precious Metals Act, 2005 and the Waste Act, 2008.
Co-regulation	1. There should be provision for self-regulation by industry in the Precious Metals Act, 2005. This could allow for closing of loopholes in the Act.
Beneficiation	1. VAT on gold and platinum purchases for fabrication should be 0-rated. 2. Red tape in fabricators accessing gold and platinum should be eradicated 3. Export Processing Zones should be introduced

ISSUE	PROPOSAL/S FOR REGULATION
BEE	1. Applicability of the Mining Charter to the downstream manufacturing industry should be reviewed.

DEREGULATION OF THE INDUSTRY IN THE MEDIUM TERM

When the fundamental problems relating to precious metal illegal mining and trade are under control, it is proposed that phased deregulation of the industry can begin. It is recommended that statutory hallmarking be implemented at that point in lieu of strict control of possession to bring the industry in line with countries such as the UK (see Table 8.2).

Self-regulation by industry should also be encouraged in the post-deregulation phase. In addition, in the post-deregulation phase, with supply side and "stick" approach legislative controls out of the way, non-legislative instruments to promote beneficiation should be strengthened (see Table 8.2). Lastly, deregulation will also allow for investment product innovation without the (current) barriers of possession control and capital controls.

Table 8.2- Summary of proposals (deregulation phase)

ISSUE	PROPOSAL
Hallmarking	Statutory Hallmarking should be introduced in lieu of the Precious Metals Act, 2005 after the deregulation phase
Self-regulation	Self-regulation by industry should complement Hallmarking after the deregulation phase
Beneficiation	Non-legislative measures to promote beneficiation should be enhanced (such as metal loan schemes, market development, market access, incentives and skills development in design, manufacturing and marketing). More emphasis can be placed on demand-side measures and programmes in this phase.
Investment products	Deregulation will allow for innovation in investment products

RESOURCE NATIONALISM -MOTIVATED PROPOSALS

As discussed above, except for the platinum coin concept, none of the resource nationalism -motivated proposals (inter alia Producer Price for Precious Metals, OPEC-type Trade Bloc for Platinum and State Platinum Trader) were supported in this study. Therefore, no regulatory proposals are made in this regard for the future regulation of the precious metals industry. Nevertheless, it was a useful exercise to analyse these as such analyses can be informative to policy makers.

As far as beneficiation promotion is concerned, it is suggested that non-legislative instruments and initiatives including lowering the cost of production (such as metal financing schemes), market development and markets access be considered. This is mainly due to the fact that supply-side provisions in legislation have not proven to be successful in growing beneficiation in South Africa.

RECOMMENDATIONS FOR FUTURE WORK

It is recommended that further work on the optimal framework for self-regulation and a dual system of co-regulation be investigated as this study did not get into the detail of such proposals.

It would also be worth investigating the various reasons that contribute to commodity-specific legislation (like the Precious Metals Act, 2005) punishing the legal entities and individuals but allowing for criminal syndicates to exploit loopholes and thrive - especially in developing countries.

Lastly, should any of the resource nationalism -related proposals ever be introduced in draft legislation in the future, a thorough Regulatory Impact Assessment (RIA) must be done by an independent body, before it progresses to a Bill to be introduced in parliament.

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