SOUTH AFRICA'S MINERAL INDUSTRY 2012 / 2013

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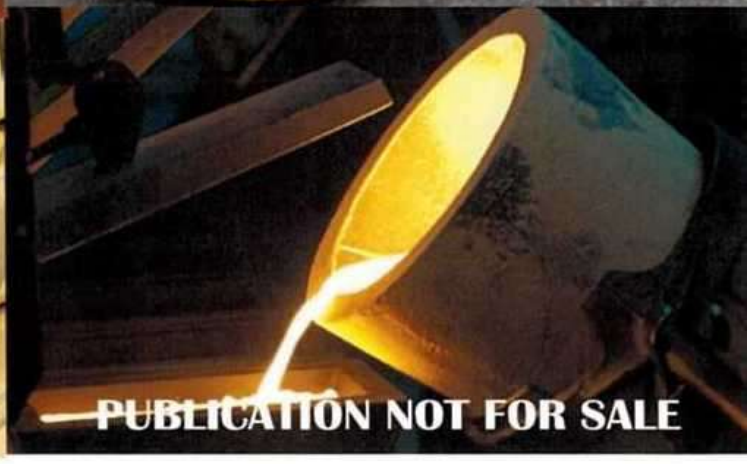

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Mineral Resources
REPUBLIC OF SOUTH AFRICA

DEPARTMENT: MINERAL RESOURCES
REPUBLIC OF SOUTH AFRICA

Directorate: Mineral Economics

SOUTH AFRICA'S MINERAL INDUSTRY

2012/2013

The cover picture represents South Africa's Minerals Mining Industry.

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FOREWORD

The world economy continues to be characterized by a relatively tepid growth. In the advanced world, levels of economic activity continue to stagnate or contract in several countries. Weak demand from Europe continues to affect export-led economies, as a result impacting adversely on minerals production. Although current economic conditions globally still reflect tepid recovery, signs of stability may be eminent and prospects appear to be improving in certain regions of the world. However, projections for Africa's economic growth in 2013-2014 look favourable. Rising activity levels in mining should support the expected growth rate of over 5 per cent in the Sub Sahara Africa over this period.

South Africa's economy continues to be negatively affected by global trading conditions, with severe home-grown factors aggravating its performance. The mining industry world-wide has now entered a new era, with governments looking for larger pieces of the pie through new requirements such as mandated beneficiation, export levies, royalty tax and limits on foreign ownership. The year 2012 was particularly, a sobering year for mining companies globally and, many challenges facing miners are set to continue in 2013.

While the 2009-2011 period experienced a recovery in overall commodity prices from the lows of 2008 financial crisis, 2012 saw a slowdown in this recovery, with gold being the only commodity gaining value. Gold achieved a record 10 year high in February 2012, while at the same time platinum achieved its lowest real price in the last decade. The decline in prices of most commodities is a worrying factor, because the mining industry already adds significant value to our country and its people.

In 2012, primary mining contributed R262.7 billion (US$32.0 billion) or 9.3 per cent to the gross domestic product and accounted for 35.1 per cent of the country's total exports of goods to the rest of the world. Exports destined for China, Japan, United States of America and other African countries continue to account for largest contributions to export growth performance. The export categories included precious stones and metals, ores, slag and ash (largely iron ore and to a much lesser extent chrome and manganese), mineral fuels (mostly coal and refined petroleum. Mining also continued to make a significant contribution to public finances in terms of the large labour force it employs. In 2012, the industry, excluding exploration, research and development organizations and head offices, employed 2.9 per cent of South Africa's economically active population. The average number of workers employed in the mining industry increased by 2.3 per cent or 11 754 workers, from 512 878 in 2011 to 524 632 in 2012. Over the last decade, 2003 to 2012, a total of 89 004 jobs were created.

The industry is also reflecting a change in minerals revenue compared to a decade ago when gold was the main contributor to total minerals sales revenue. In 2005, coal and platinum group metals overtook gold as the biggest revenue-generating commodities. In 2012 coal was the biggest revenue earner at R96.1 billion, followed by gold at R76. 8 billion. The combined revenues of ferrous minerals accounted for R71.7 billion for the period under review, while, the industrial minerals contributed 3.9 percent to the total revenue generated from South Africa's primary mineral sales, of which R11.1 billion was from local sales and R3 billion exports.

South Africa has over a century been a resource economy and is believed to have an in-situ mineral wealth in excess of US$2.5 trillion. Most of the minerals mines in South Africa have mainly been exported as raw ores, concentrates or as partially processed minerals. The role of beneficiation continues to be crucial as another means of creation job opportunities and fuelling of industrialization programme in the country. Thus, the approval of the beneficiation strategy, which seeks to maximize the value the country gets to derive from its mineral resources, is therefore a great milestone in the industry's history.

The mining industry world-wide has now entered a new era, with governments looking for larger pieces of the pie through new requirements such as mandated beneficiation, export levies, royalty tax and limits on foreign ownership. The year 2012 was particularly sobering year for mine companies globally and many challenges facing miners are set to continue in 2013. Mining companies are now, more than ever before, operating in a stakeholder integrated environment, as all stakeholders are claiming their share of the industry returns.

South Africa, ranked by the World Bank as an upper middle-income country is politically stable and has a well-capitalized banking system, abundant natural resources, well developed regulatory systems as well as research and development capabilities. The country's economy has a marked duality, with sophisticated financial and industrial economy having grown alongside an underdeveloped informal economy. It is this informal economy which presents both potential and development challenges. The country has a diverse economy, with mining sector coming in as the fifth largest contributors to GDP in

2012 at 8.3 per cent after manufacturing's 11.1 per cent, wholesale's 14.3 per cent, government services' 14.9 per cent and finance's 19.3 per cent.

The South African economy has demonstrated resilience over these unsettled global economic conditions. While global developments may hold back higher growth over the short term, the domestic outlook remains positive for South Africa. Gross Domestic Product (GDP), which was expected to grow by 2.7 per cent, grew by 2.5 per cent in 2012, down from 3.5 per cent recorded in 2011. However, strengths in domestic economy will help sustain growth. Household spending remains robust, private sector investment is gradually rising and interest rate is well contained. There are encouraging signs of employment growth in the formal sector and, fiscal and monetary policies remain supportive of growth. South Africa's success in reforming its economic policies is perhaps best reflected by its GDP figures, which reflected an unprecedented 62 quarters of uninterrupted economic growth between 1993 and 2007, when the GDP rose by 5.1 per cent. With South Africa's increased integration into the global market, there was no escaping the impact of the 2008 – 2009 global economic crises, as a result of which the GDP contracted to 3.1 per cent.

Ray Masetlana
Director: Mineral Economics

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ABBREVIATIONS AND SYMBOLS

A$	Australian dollar
bbl	barrel
bbl/d	barrels per day
BGS	British Geological Survey
billion	thousand million
CIF	cost, insurance, freight
CIS	Commonwealth of Independent States. Par of the former Union of Soviet Socialist Republics (USSR)
China	People's Republic of China
CPI	Consumer price index
conc	concentrate carat ct
ct	carat
DM	Deutsche Mark
DMR	Department of Mineral Resources
DRC	Democratic Republic of Congo
DRI	Direct reduced iron
e	estimate
EAF	Electric-arc furnace
EU	European Economic Union
FOB	free on board
FOR	free on rail
FSU	Former Union of Soviet Socialist Republics (USSR)
g	gram
Ga	giga year
g/t	gram per ton
GAR	gross as received
GWe	net gigawatts electric
ILZSG	International Lead and Zinc Study Group
INSG	International Nickel Study Group
kcal	kilocalorie
kg	kilogram
kg/t	kilogram per metric ton
km	kilometre
kt	kiloton
kt/a	kiloton per annum
lb	pound avoirdupois
LME	London Metal Exchange
m	metre
m^3	cubic metre
Ma	million years
mic	metal-in-concentrate
Mct	million carats
Mozt	million ounces troy
Mozt/a	million ounces troy per annum
Mt	megaton (million tons)
Mt/a	million tons per annum
MVA	megavolt ampere
carat	MWh megawatt hour
na	not available
nar	not as received
ns	not specified
NW	North West Europe
ozt	troy ounce
pa	per annum
PGMs	platinum-group metals
ppm	parts per million
R	rand (South African currency)
	SA South Africa
S.ton	Short ton
t	metric ton
t/a	tons per annum
TCF	trillion cubic feet
UAE	United Arab Emirates
US	United States of America
USBM	United States Bureau of Mines
USGS	United States Geological Survey
w	withheld
WBMS	World Bureau of Metal Statistics
y	year
y-o-y	year-on-year
$	US dollar, unless stated otherwise
C$	Canadian dollar
£	British pound sterling
%	per cent

EXPLANATORY NOTES

Reference	Due to space limitations, only the sources of statistical information are given. The absence of a source reference to statistical data indicates that such data was sourced from the Directorate: Mineral Economics database of mineral production, sales and labour in South Africa. A bibliography is presented in Part Three.
Mineral Resource	Mineral Resource covers in situ mineralisation as well as dumps or tailings, which have been identified and estimated through exploration/assessment and sampling from which mineral reserves may be derived by the application of modifying factors.
Minerals Reserve	In this publication, mineral reserve refers to the economically mineable material derived from a measured and indicated mineral resource. It includes diluting materials and allows for losses that are expected to occur when the material is mined. Appropriate assessment to a minimum of pre- feasibility study for a project or a Life of Mine Plan for an operation, must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

PART ONE: SOUTH AFRICA'S MINERAL INDUSTRY

GENERAL REVIEW

P Mwape, M Mnguni, N Jali and K Menoe

INTRODUCTION

The South African mining and minerals industry has played a key role in the country's economic development over past 130 years, which has transformed South Africa into the most industrialised country in Africa. It has also been the principal driver of the current infrastructure network which now underpins jobs in many other sectors. The South African government's development policies, the National Development Plan (NDP) and the New Growth Path (NGP) both recognise the critical role that mining contributes in growing investments, exports, gross domestic product (GDP) and job creation. In this respect government, organised labour and industry have, through the Mining Industry Growth, Development and Employment Task Team (MIGDETT) undertaken several initiatives aimed at resolving the challenges facing the industry.

Other policy interventions have either been developed or are currently being developed to address the structural imbalances that seek to tackle high levels of unemployment, poverty and inequality. These policies define the interventions contained in the measurable performance and accountable delivery agreement and will continue to shape government response in addressing the developmental challenges. Principal amongst these are the National Development Plan (NDP), Developmental Growth Path (DGP), Industrial Policy Action Plan (IPAP), the Ten Year Innovation Strategy as well as the Beneficiation Strategy. The IPAP identifies areas where employment could be leveraged and Key Action Plans (KAPs) to achieve the employment growth.

The mining industry is a well-established and resourceful sector of South Africa's economy and has a high degree of technical expertise as well as the ability to mobilize capital for new development. It has provided the impetus for the development of an extensive and efficient physical infrastructure and has contributed greatly to the establishment of the country's secondary industries. With the diversity and abundance of its natural resources, South Africa is a leading producer and supplier of a range of minerals and produced approximately 53 different minerals from 1 579 mines and quarries in 2012 as well as exporting to approximately 70 countries. Gold was produced from 53 mines, platinum-group metals (PGMs) from 41 mines, coal from 113 mines and diamonds from 371 mines, all as primary commodities.

STRUCTURE OF THE MINING INDUSTRY

South Africa, now in its second decade of a constitutional democracy endorsed the principles of private enterprise within a free-market system, offering equal opportunities for its entire people. The State's influence within the mineral industry is not only confined to orderly regulation and the promotion of equal opportunity for all its citizens and investors, but also participates in mining operations through state owned companies like Alexkor, African Exploration Mining and Finance Corporation (Pty) Ltd (AEMFC) and Industrial Development Corporation (IDC).

Transformation

Corporate restructuring of the South African mining industry remains an ongoing exercise. The introduction of the Mining Charter in South Africa was aimed at transforming the mining industry to redress historical imbalances, so that the industry is aligned with the changes in the country's overall transformation of its social, political and economic landscape.

The transformation of the mining industry has included the consolidation of ownership through minority buy-outs, separation of large diversified companies into two or more specialised companies as well as the purchase of South African mining assets by foreign companies.

Associations involved in the South African mining industry include:

Business

The *Chamber of Mines* of South Africa is a voluntary, private sector employers' organisation founded in 1889, three years after gold was discovered on the Witwatersrand. The Chamber is an association of mining companies and mines operating in the gold, coal, diamond, platinum and other mineral commodity sectors. Today, the organisation acts as the principal advocate of the major policy positions endorsed by mining employers. The Chamber represents the formalised views of its membership to various organs and spheres of governments, and to other relevant policy-making and opinion-forming entities, both within and outside the country.

The *South African Mining Development Association (SAMDA),* which was formed in 2000 as a junior mining initiative by a group of people associated with various South African junior and BEE mining companies, aims to create an enabling environment for raising finance, developing technical and other skills, practising responsible environmental management and sustainable development as well as the maintenance of standards of good practice in the junior mining sector.

Voluntary Associations

- The Southern African Institute of Mining and Metallurgy (SAIMM) was founded 115 years ago in 1894. The SAIMM is a professional institute with local and international links aimed at assisting member's source news and views about technological developments in the mining, metallurgical and related sectors as well as embracing a professional code of ethics. (www.saimm.co.za).

- South African Colliery Managers Association (SACMA). (www.Sacollierymanagers.org.za)

- Association of Mine Managers South Africa (AMMSA). (www.ammsa.org.za)

- Geological Society of South Africa (GSSA)

- Engineering Council of South Africa (ECSA)

- South African for Natural Scientific Professions (SACNASP)

Statutory Associations:

Workers in the mining industry are represented by the following organisations:

- The National Union of Mineworkers (NUM), which was formed on 4 December 1982. The NUM is the largest recognised collective bargaining agent representing workers in the Mining, Construction and Electrical Energy Industries in South Africa and the largest affiliate of the Congress of South African Trade Unions (COSATU), with offices in all the South African Provinces.

- The United Association of South Africa (UASA) also plays an important role in the international labour arena, joining hands with various international federations that promote global solidarity among workers of the world in their struggle against the negative effects of globalisation of the economy. UASA is affiliated to the International Federation of Transport Workers (FIOST), the International Confederation of Free Trade Unions (ICFTU), and the World Confederation of Labour (WCL).

- Solidarity is another movement, which represents the rights of its members and their communities.

- The African Mineworkers and Construction Union (AMCU) formed in 1999, also represents workers at chrome and platinum mines as well as workers at some coal mines in Mpumalanga and KwaZulu-Natal. It is also recruiting at the iron ore and manganese mines around Kathu and Hotazel in the Northern Cape. It focuses on vulnerable contract workers.

There are also many co-operative organizations, which serve the interests of the smaller groups and independent operators, or specific sectors of the industry. These include the Aluminium Federation of South Africa, the South African Copper Development Association, the Ferro-Alloy Producers Association,

the Engineering Industries Federation of South Africa, the Southern Africa Stainless Steel Development Association, the Diggers Association and the Aggregate and Sand Producers Association of South Africa.

Government

Ownership, access and opportunity in regard to the country's mineral resources are regulated by the Mineral and Petroleum Resources Development Act of 2002 (MPRDA), which recognizes the state's custodianship over the country's mineral resources. The MPRDA regulates the prospecting for, and optimal exploitation, processing and utilisation of minerals, provides for health in the mining industry and controls the rehabilitation of land disturbed by exploration and mining. This Act defines the entire regulatory environment of the minerals industry, from rights and ownership to mineral sales and beneficiation.

The Act's main objectives are to:

- recognize State custodianship of all mineral resources within the Republic of South Africa;
- promote equitable access to the nation's mineral resources, especially among historically disadvantaged South Africans;
- promote investment, growth and employment in the mineral industry thus contributing to the country's economic welfare;
- provide for security of tenure in respect of existing prospecting and mining operations;
- give effect to section 24 of the Constitution by ensuring that the nation's mineral resources are developed in an orderly and ecologically sustainable manner; and
- ensure that holders of mining rights contribute towards the socio-economic development of the areas in which they are operating.

Recognizing State custodianship of natural resources has brought South Africa in line with international best practices. This more universally recognized mineral rights system has led to the freeing-up of unused old order rights and hitherto effectively sterilized privately-owned mineral rights in prospective mineral terrains, which attracts international exploration and mining companies and increases the level of competition among local players.

The Act also aims to assist historically disadvantaged South Africans aspiring to conduct prospecting or mining activities, with the proviso that such assistance is fair and equitable and does not harm the interests of other parties. The Act provides security of tenure for owners of existing rights, or for those whose applications were being processed at the time of enactment and guarantees security of tenure in respect of prospecting and mining operations. Furthermore, this gives the holder of an "old order" mineral right an opportunity to comply with the provisions of the Act and also promotes equitable access to the country's mineral and petroleum resources.

The Advantages of the New System of State Custodianship of Mineral Rights in South Africa

- The change from a dual system of ownership to a singular system where the state controls the ownership of mineral rights on behalf of the nation has facilitated access to potential mineral terrains for new entrants into the mining and minerals industry thus stimulating private sector activity.
- State control of mineral rights removes difficulties in legal and administration costs and delays caused by a fragmented mineral right holdings structure.
- The system of state custodianship of mineral rights enables the state to enforce the submission and release of exploration information, thereby avoiding the duplication of exploration activities.
- State custodianship of mineral rights prevents the hoarding of mineral rights and allows equal and equitable access to potential investors.

Review of the Mining Charter

The Mining Charter of 2002 was developed on the basis of principles of co-determination with all stakeholders in South Africa's mining industry. This charter provided for a review after five years in terms of progress made by all stakeholders. Through the second mandate of the Mining Industry's Growth, Development and Employment Task Team (MIGDETT), which started during the latter part of 2008, competitiveness and transformation were identified as mutually reinforcing attributes that will position South Africa's mining industry along a sustainable growth path. On 30 June 2010 mining stakeholders represented in MIGDETT (Chamber of Mines, SAMDA, NUM, UASA and Solidarity) affirmed their

commitment by signing a Declaration on the strategy for the sustainable growth and meaningful transformation of South Africa's mining industry. The declaration formed the basis for the Mining Charter review, and basis to the Amended Mining Charter which includes "sustainable development" as an additional element. The Amended Charter was published on the 13 September 2010. In 2009 a baseline assessment of compliance by the mining industry with the requirement of the Mining Charter was conducted. The Department will be conducting a second assessment report on compliance for 2014 reporting period. This will be a continuation of the initial assessment to ensure that the Department quantifies the compliance levels over this ten year window period.

Other Mining Policy Amendments

- Chapter XVI of the Mining Rights Act, (Act No 20 of 1967) in the form of the Precious Metals Act, 2005 (Act No. 37 of 2005)
- The Diamonds Act, 1986 (Act No 56 of 1986) in the form of the Diamonds Amendment Act, 2005 (Act No 29 of 2005), and the Diamonds Second Amendment Act, 2005 (Act No 30 of 2005).
- Geosciences Amendment Act, 16 of 2010
- The Geoscience Amendment Act (16/2010) Regulations
- The Housing and Living Conditions Standards for the Mining and Mineral Industry,
- The Codes of Good Practice for the Mining and Mineral Industry
- Section 22 (5) Guidelines
- Draft Mineral and Petroleum General Laws Amendment Bill 2011

The objective of the precious metals act is to provide for the acquisition, possession, smelting, refining, beneficiation, use and disposal of precious metals. Precious metals include gold and the platinum group metals (PGMs). Since silver is produced as a by-product and has a low value (price) compared to other precious metals, it is excluded from the definition of precious metals.

The Diamonds Amendment Acts, 2005 (Act No. 29 of 2005 and Act No. 30 of 2005)

The rationale for the amendment of the Diamonds Act, 1986 (Act No.56 of 1986) was: to increase access to rough diamonds for jewellery manufacturing in South Africa, to maintain security of supply of rough diamonds, and to promote the beneficiation of diamonds in South Africa, thus creating jobs and increasing participation especially by Historically Disadvantaged South Africans throughout the diamond value chain.

Housing and Living Conditions for the Mineral Industry

The Housing and Living Conditions were gazetted in April 2009, with the objective of developing basic guidelines for suitable housing and living conditions standards for mine workers.

The Codes of Good Practice for the South African Minerals and Mining Industry

The codes were first published in April 2009 for implementation as of the 1st of May 2009.

The review of the codes initiated in September 2010 was influenced by the need identified by the department to facilitate the creation and development of relevant avenues for human resources and economic development within mining communities. The need identified was also to ensure sustainable development and economic growth in line with the Broad Based Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry.

Drafts of reviewed Codes were developed and referred to the Minister who has since approved them for consultation purposes. The purpose of the review is to outline ethical standards to be adhered to by all mining industry stakeholders in respect of fronting, labour practices, fair business practices, beneficiation, community upliftment, employee welfare, sustainable development and safe mineral exploitation. In the Draft Review of the Codes of Good Practice, stakeholders commit to exercising ethical behaviour, respect for employees' rights and to promote economic development within mine communities. Extensive consultation with all relevant stakeholders on the Draft Reviewed Codes will be conducted after the Minister has approved the Draft Reviewed Codes document. It is expected that once the Codes of Good Practice are implemented, the industry will reflect the vision of non-racial, non-sexist and prosperous South Africa. The setting up of administrative principles will also facilitate the effective implementation of the minerals and mining legislation and enhance the implementation of the Broad-Based Socio-Economic

Charter as applicable to the mining industry as well as to give effect to section 100(1) (b) of the Mineral and Petroleum Resources Development Act, 2002.

Geoscience Amendment Act 16 of 2010

Following an extensive consultative process, a Draft Amendment Bill was prepared and tabled in Parliament in June 2010. In September 2010, the Bill was considered by the Parliamentary Portfolio Committee and approved by the National Assembly in late November 2010. The President of the Republic assented to and signed the Bill into law on the 3rd of December 2010.

The main objectives of the Amendment Act are to mandate the Council for Geoscience to be the custodian of geotechnical information, to be the national advisory authority in respect of geo-hazards related to infrastructure and development, and to undertake reconnaissance operations, prospecting, research and other related activities in the mining sector.

The Geoscience Amendment Act (16/2010) Regulations

Consequent to the promulgation of the Amendment Act, the Mineral Policy Development Directorate, together with the Council for Geoscience, developed Draft Regulations. The purpose of the regulations is to prescribe the processes, procedures and requirements for compliance with the Amendment Act. All the relevant stakeholders will be consulted on the Draft Regulations.

Section 22 (5) Guidelines (MPRDA of 2002)

In March 2011, comprehensive section 22 (5) guidelines were prepared. The purpose of the guidelines is to create an enabling environment for the Department to facilitate the processing of applications made in terms of section 22 (5), which empowers the Minister to exercise his/her discretion by publishing a notice in the Government Gazette inviting applications for mining rights in respect of specific land.

The guidelines are aimed at achieving the following objectives:

- optimal mining of South Africa's mineral resources;
- promotion of investment in the mining and minerals industry;
- equitable access to the nation's mineral resources;
- substantial and meaningful opportunities for historically disadvantaged persons;
- promotion of economic growth and mineral resources development;
- promotion of employment and advancement of the social and economic welfare of all South Africans.

The draft guidelines were approved by the Director General (DG) and the Minister for implementation.

Draft Mineral and Petroleum General Laws Amendment Bill 2011

The objectives of the amendment are:

- to improve the current construct of the Act to remove ambiguities,
- make provision for a comprehensive consultation process,
- make provision for enhanced punitive measures,
- streamline the licensing processes and provide for a single regulatory authority.

Numerous workshops with industry stakeholders (MIGDETT) and Department of Water Affairs and Department of Environmental Affairs have been held since the inception of the amendment exercise. Inputs and comments received have been given due consideration leading to the development of the Draft Bill. Drafting meetings are held regularly to discuss outstanding issues and update the Draft Bill accordingly. The Draft Bill currently awaits Cabinet approval to engage stakeholders and to introduce the Bill into the Parliamentary process once the consultation process has been finalized.

International Organisations/Associations

Association of African Diamond Producing Countries (ADPA)

ADPA is an association of diamond producing African countries, 11 of which have full membership while seven only enjoy observer status. The Association is chaired on a rotational basis and in July 2012, Ghana

took over chairpersonship from the Democratic Republic of Congo during the annual Council of Ministers' meeting held in Accra, Ghana. The 2013 meeting will be held in Guinea Conakry as the next Chair. The main focus of ADPA revolves around the implementation of aligned policies and strategies intended to maximize the benefits derived from revenues of diamonds across the African continent. In so doing ADPA explores the development of a best practice document that will promote the realisation of harmonised policies across Africa with a goal to increase foreign investments into the diamond sector for the benefit of all member States.

The Kimberley Process (KP)

South Africa is one of the founding members of the Kimberley Process (KP), which brought into existence the Kimberley Process Certification Scheme (KPCS). The KP was established when diamond producing countries convened in Kimberley, South Africa in May 2000, to discuss ways to stem the trade in 'conflict diamonds' and ensure that the diamond trade was not fuelling armed conflicts. In December 2000, the United Nations General Assembly adopted a landmark Resolution 55/56 of 2000, which supported the establishment of an international certification scheme for rough diamonds. By November 2002, negotiations between governments, the international diamond industry and civil society organisations resulted in the creation of the KPCS, which was launched in Kimberley, South Africa in 2003.

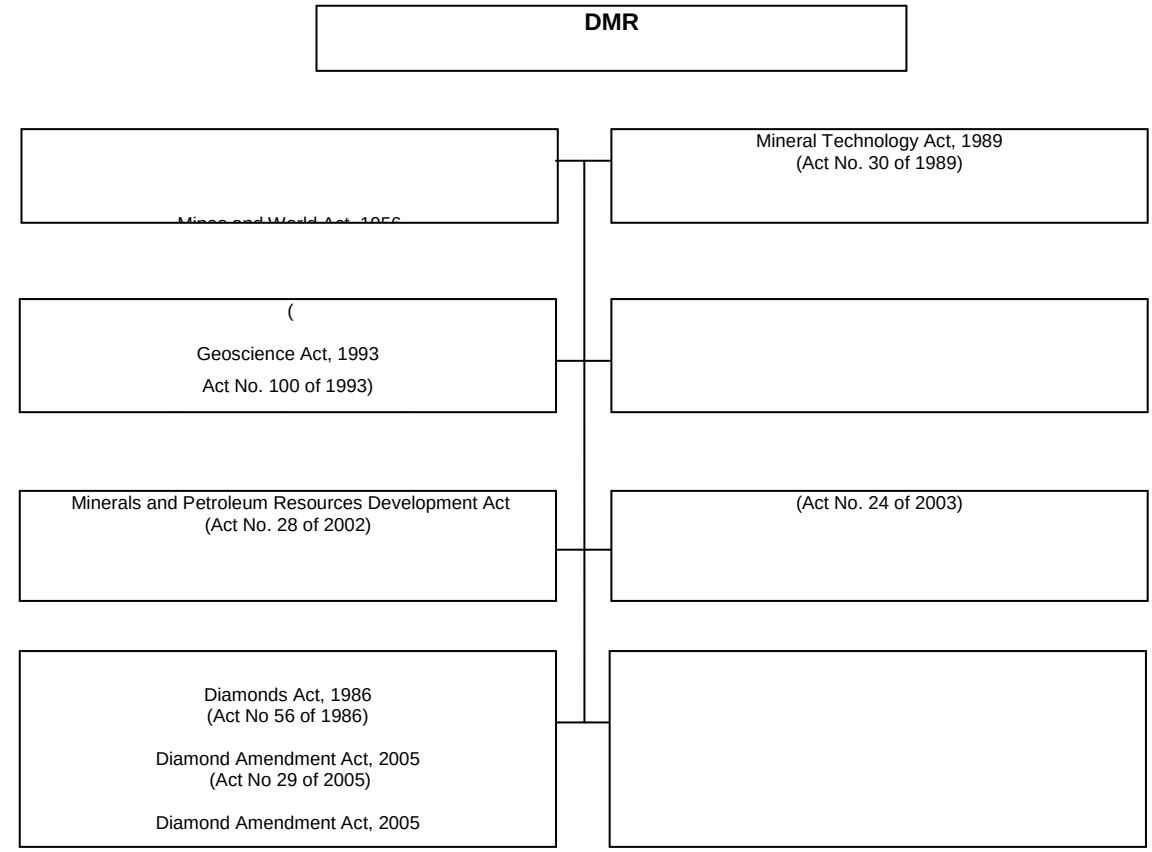
As one of the founding members of the KPCS, South Africa played a pivotal role in the establishment of the KPCS as well as the harmonisation of the regulatory framework relating to the sale and export of diamonds. The KPCS has 54 participants representing 80 countries (including the European Union, which represents 27 states that counts as a single participant accounting for 99.8 percent of the global production of rough diamonds. The KPCS core document (statutes) governs the global production of rough diamonds and stipulate the objectives, definitions, internal controls and, most importantly, minimum requirements that each participant must comply with. South Africa is 2013 KP chair which marks the 10th anniversary of the establishment of the KPCS. As chair; South Africa will host the anniversary meetings comprised of the Intercession and Plenary held in June and November 2013 respectively.

Department of Mineral Resources (DMR)

The Department of Mineral Resources (DMR) assumes the custodianship of all mineral resources in the Republic of South Africa on behalf of its citizens. To this end, the Department promotes and regulates the Minerals and Mining Sector for transformation, growth and development as well as ensures that all South Africans derive sustainable benefit from the country's mineral wealth. Various specialised divisions of the DMR and associated institutions are responsible for the administration of the mining and regulations (Figure 1) and for promoting the development of the industry. Mining is regulated by three branches, namely the Mineral Policy and Promotion Branch, Mineral Regulation Branch and the Mine Health and Safety Inspectorate.

The *Mineral Policy and Promotion Branch* of the DMR is responsible for formulating and promoting mineral related policies that encourage investment in the mining and minerals industry. The branch consists of four Chief Directorates: *Mineral Policy,* which develops new policies, reviews existing policies and amends legislation to promote investment growth and achieve transformation in the minerals and mining industry; *Economic Advisory Services* that undertakes macroeconomic research and analysis, regulatory impact assessments of the laws and policies implemented by the Department as well as monitoring and evaluating transformation in the mining industry; *Mineral Promotion* promotes mineral development and advises on trends in the mining industry to attract additional investment,; and *Mine Environmental Management* that provides strategic guidance to mine environmental management and mine closure issues, including the management of derelict and ownerless mines.

FIGURE 1: SUMMARY OF SOUTH AFRICA'S ADMINISTRATION OF MINERAL LAWS



Source: DMR

The *Mineral Regulation Branch* regulates the minerals and mining sector to promote economic growth, employment, transformation and sustainable development. Mineral Regulation is also responsible for the administration and issuing of prospecting and mining rights licensing and compliance with the Mineral and Petroleum Resource Development Act, 28 2002 (the Act), including mine environmental management compliance.

The *Mineral Regulation* branch consists of four Chief Directorates that are accountable for all matters relating to mineral regulation within the nine regions. The *Central Region* is responsible for Free State and Northern Cape provinces; *Western Region* for Gauteng and North West provinces,; *Northern Region* for Limpopo and Mpumalanga provinces; while the *Coastal Region* is responsible for KwaZulu Natal and Eastern and Western Cape provinces.

The *Mine Health and Safety Inspectorate* (MHSI) is responsible for implementing mine health and safety legislation. The Inspectorate ensures the safe mining of minerals under healthy working conditions and is represented in the various provinces by Principal Inspectors.

The branch is comprised of two sub – programmes which are: Mine Health and Safety (Regions) responsible for audits, inspections, investigations, enquiries, enforcing the Mine Health and Safety Act and its provisions, examination services and providing professional advice; and Governance Policy and provide technical support to regional offices, chair tripartite structures and facilitate HIV and AIDS work in the sector.

Through the *Mine Health and Safety Council* (MHSC), the inspectorate provides leadership and participates in initiatives and activities of tripartite institutions to respond to current health and safety challenges. The MHSC is a national public entity (schedule 3A) established in terms of the Mine Health and Safety Act, No 29 of 1996 as amended. The main task of the Council is to advice the Minister of Mineral Resources on occupational health and safety legislation and research outcomes focused on improving and promoting health and safety in South African mines. The MHSC continues to respond to health and safety challenges through implementation of focused programmes addressing milestones agreed upon by stakeholders (labour, state and employers) during their health and safety summit in 2003.

Resolutions made included that the mining sector will achieve a 20 percent decline in fatality and injury rates per year and eliminate Silicosis and Noise Induced Hearing Loss by 2013. The setting, monitoring and enforcement of health and safety standards within the South African mining industry are regulated under the Mine Health and Safety Act 1996, (Act No. 29 of 1996). The Mine Health and Safety Act 29 of 1996 ("MHSA"), referred hereto as the Principal Act, was published in the Government Gazette in June 1996 and came into operation on the 15th of January 1997. The Principal Act was amended in 1997 by the Mine Health and Safety Amendment Act 72 of 1997 with minimal changes.

In 2008 the Principal Act was further amended in detail by the Mine Health and Safety Amendment Act 74 of 2008. This Act 74 of 2008 addressed some challenges and shortcomings that had developed over the years in the mining industry with regard to the enforcement of the MHSA. This Amendment Act came into operation on the 1st of May 2009. Currently, the Mine Health and Safety Act is being reviewed comprehensively;

- to strengthen enforcement provisions; to simplify the administrative system for the issuing of fines;
- to reinforce offences and penalties; to substitute and remove ambiguities in certain definitions and expressions; and
- to effect certain amendments necessary to ensure consistency with other laws, particularly the Mineral and Petroleum Resources Development Act, 2002 (MPRDA).

Consultations with affected parties were held during the 2010/2011 financial year and further consultations will continue until 2012. It is envisaged that the amendments will be tabled at cabinet for further processing to parliament during the 2012/13 financial year. The review of the MHSA will ensure that health and safety impacts of mining on employees and communities affected by mining activities are managed in a comprehensive, integrated and well-coordinated manner.

The DMR in association with the following highly specialised associated institutions of government conducts regulatory, promotional and various research activities

- The Council for Geoscience (CGS) undertakes geological mapping and carries out studies pertaining to the identification, nature, extent and genesis of ore deposits and also maintains national databases of the country's geoscientific data and information.

- Council for Mineral Technology (MINTEK) assists the minerals industry to operate more effectively by developing and making available the most appropriate and cost-effective mineral recovery and mineral beneficiation technologies. It is engaged in the full spectrum of minerals research: from the mineralogical examination of ores to the development of processing, extraction and refining technologies and also conducts research into: the production of added value products and feasibility and economic studies. Much of this work is carried out in close liaison with the local and international minerals and metallurgical industries.

- The South African Nuclear Energy Corporation (NECSA) undertakes and promotes research and development in the field of nuclear energy technology and radiation sciences in order to process source material, special nuclear material and restricted material as described in Nuclear Energy Act, No 146, 1999, Sections 2(a), 2(b) and 2(c).

- The Council for Scientific and Industrial Research (CSIR) conducts, *inter alia*, research related to specific minerals, brown fields mineral exploration, air quality, water pollution and purification, as well as mining and mineral processing technologies. The CSIR's Division of Natural Resources and Environment in the mining category focuses its research and development on the mining industry. Major research activity in this division focuses on the most crucial challenges threatening the health and safety of the underground workforce and overcoming a variety of technological challenges that impact on profitability in the mining industry. The division conducts fundamental research and technology development and provides general advice and assistance relating to the improvement of the underground environment and strata control, reduction of hazardous conditions associated with rock pressure in mining operations, as well as development of new or improved mining systems and equipment.

- The South African Diamond & Precious Metals Regulator (SADPMR) was established by Section 3 of the Diamonds Act, 1986 (as amended in 2005), and replaced the South African Diamond Board which was de-listed as a Schedule 3A public entity in March 2007. The South African Diamond Board was established in 1987 in terms of the Diamond Act, Act 56 of 1986 to regulate control over possession, the purchase and sale of diamonds, and the processing and the export of diamonds.

- The State Diamond Trader (SDT) is a state owned entity established in terms of Section 14 of the Diamonds Amendment Act, 29 of 2005. The SDT's main business is to buy and sell rough diamonds in order to promote equitable access to and beneficiation of diamond resources. The main aim of the SDT is to address distortions in the diamond industry and correct historical market failures to develop and grow South Africa's diamond cutting and polishing industry. The entity is empowered by law and proclamation to purchase up to 10% of the run of mine stones from all diamond producers in South Africa, and to sell to registered customers through an application and approval process.

- Petroleum Agency South Africa (PASA) promotes exploration for onshore and offshore oil and gas resources and their optimal development on behalf of government, as designated in terms of the Mineral and Petroleum Resources Development Act (MPRDA). The Agency regulates exploration and production activities, and acts as the custodian of the national petroleum exploration and production database.

- Most of South Africa's institutions of higher education (universities and universities of technology) are not only responsible for the training of professional and technical personnel required by the mineral industry but also undertake mineral and/or mining research. The mining industry strives to conform to strict professional ethics and competitive technical practices through organisations such as the Geological Society of South Africa (GSSA), the Southern African Institute of Mining and Metallurgy (SAIMM) and the South African Council for Natural Scientific Professions (SACNASP). The Mining Qualifications Authority (MQA) plays a critical role by addressing skills shortages in the mining industry through capacity development and process improvement. The MQA as established by the MHSA, No. 29 of 1996, is mandated to ensure that the mining and mineral sector has sufficient competent people who will improve health and safety.

MINERAL INDUSTRY STRENGTH

South Africa's mineral wealth has been built on the country's enormous resources most of which are usually found in the following distinctive geological structures and settings:

- The Witwatersrand Basin yields some 93 percent of South Africa's gold output and contains considerable resources of uranium, silver, pyrite and osmiridium;
- The Bushveld Complex hosts platinum group metals (with associated copper, nickel and cobalt mineralisation), chromium and vanadium bearing titanium iron ore formations as well as large deposits of the industrial minerals, including fluorspar and andalusite;
- The Transvaal Supergroup contains enormous resources of manganese and iron ore;
- The Karoo Basin extends through Mpumalanga, KwaZulu-Natal, Free State as well as Limpopo Province hosting considerable bituminous coal and anthracite resources and shale gas discovery;
- The Palaborwa Igneous Complex hosts extensive deposits of copper, phosphate, titanium, vermiculite, feldspar and zirconium ores;
- Kimberlite pipes host diamonds that also occur in alluvial, fluvial and marine settings;
- Heavy mineral sands contain ilmenite, rutile and zircon;
- Significant deposits of lead-zinc ores associated with copper and silver are found in the Northern Cape near Aggeneys.

South Africa accounts for 96 percent of known global reserves of the platinum group metals (PGMs), 85 percent of chrome, 26 percent of vanadium and 12 percent of gold reserves (Table 1). Since most of the identified mineral resources and reserves were discovered by means of obsolete exploration methods, there is still significant potential for the discovery of other world-class deposits in areas not yet thoroughly explored using modern exploration technologies. As a major mining country, South Africa's strengths include a high level of technical expertise as well as comprehensive research and development activities. In order to encourage development, the new mining legislative framework facilitates access to permits/rights for interested parties.

TABLE *1*: SOUTH AFRICA'S ROLE IN WORLD MINERAL RESERVES, PRODUCTION AND EXPORTS, 2012

COMMODITY	RESERVES				PRODUCTION				EXPORTS			
	Unit	Mass	%	Rank	Unit	Mass	%	Rank	Unit	Mass	%	Rank
Aluminium		*	*	*	kt	809	9,8		kt	592		6
Alumino-silicates	Mt	51	*	*								*
Antimony	kt	27	1,5	5	t	3 066	1,7	2		*	*	*
Chrome Ore	Mt	3 100	85	1	kt	11310	45,8	1	kt	2 470	21,0	2
Coal	Mt	30 156	3,5	8	Mt	258,6	3,3	7	Mt	68,8	6	6
Copper	Mt	11	1,6	9	kt	89	0,1	10	kt	26	0,3	11
Ferro-chrome		*	*	*	kt	3 426	37	1	kt	3 048	55,2	1
Ferro-Mn/Fe-Si-Mn		*	*	*	kt	790	*	*	kt	751	*	*
Ferro-silicon		*	*	*	kt	83	2,4	7	kt	33	3,1	5
Fluorspar	Mt	41	17,1	1	kt	170,3	2,5	6	kt	175,4	*	*
Gold	t	6 000	11,8	2	t	154,2	5,4	6	t	176,2	*	*
Iron Ore	Mt	650	0,8	14	Mt	67,1	2,2	6	Mt	51,9	4,4	5
Lead	kt	3 00	0,3	14	kt	56	1,1	10	kt	47	1,4	14
Manganese Ore	Mt	150	24	1	kt	8 943	60	2	kt	7 498	29,1	1
Nickel	Mt	3,7	4,9	7	kt	45,9	2,2	10	kt	26,6	*	*
PGMs	t	63 000	95,5	1	t	254,3	*	1	t	244	*	*
Phosphate Rock	Mt	1 500	2,2	5	kt	2 242	1,2	12	kt	1.9	*	*
Silicon Metal		*	*	*	kt	53,0	2,5	8	kt	59,4	4,5	6
Silver		*	*	*	t	67,3	0,2	20	t	70,3	*	*
Titanium Minerals	Mt	71,3	10,2	4	kt	1 161	16,6	2		*	*	*
Uranium	kt	279,1[#]	5,2	6	t	551	1,1	11		*	*	*
Vanadium	kt	3 500	25	2	kt	20,0	33	2	kt	15,5	*	*
Vermiculite	Mt	14	*	*	kt	133	23.3	1	kt	162,4	*	*
Zinc	Mt	14	3,3	8	kt	32	0,3	26	kt	42	0,4	24
Zirconium	Mt	14	29	2	kt	367	25,8	2		*	*	*

Sources: *USGS, BP statistical review of world energy 2012, Mineral Economics Directorate,*
Notes: *Full details given in respective commodity chapters*
** Information not available*
[#]Resource

INFRASTRUCTURE DEVELOPMENTS

In September 2012, the S.A government adopted the National Development Plan (NDP) which envisages an economy that serves the needs of all South African. The 2030 structural reforms outlined in the NDP are complemented by the near-term goals of the New Growth Path, the Industrial Policy Action Plan, and the projects of the Presidential Infrastructure Coordinating Commission. The NDP provides a framework of policy and planning priorities and a phased implementation approach to which the country's public and private business must be aligned to.

South Africa ranks among the most sophisticated and promising emerging markets in the world. The unique combination of a well-developed first-world economic infrastructure and a rapidly emerging market economy, has given rise to an entrepreneurial and dynamic investment environment with many global competitive advantages and opportunities. Being a leading producer and supplier of a range of minerals, the country offers a highly competitive investment location ensuring that it can meet specific trade and investment requirements of prospective investors and business people, whilst also meeting the development needs of its populace.

South Africa's ascension to the BRICS (Brazil-Russia-India-China-South Africa) grouping is recognition of the country's potential and places it alongside future global leading economies. Although SA's economy is smaller than those of Brazil, Russia, India and China, it can also serve as the gateway to the African continent, linking the BRIC economies to more than a billion consumers. South Africa is open to increasing trade and investment among the BRIC countries and with potential as an innovative hub, is a sound investment destination and a leading emerging market economy. Africa is the fastest-growing region after China and India, while South Africa is ranked the 27th biggest economy in the world, with a gross domestic product that the International Monetary Fund (IMF) puts at $354 billion.

The introduction of the New Growth Path (NGP) in 2010 set out a strategy for creating a competitive, fair and socially cohesive economy. The NGP also puts employment at the centre of economic policy. It identifies how greater efficiencies can be achieved in the economy, and the investments needed to create an advanced modern infrastructure. The NGP is expected to create large-scale, sustainable jobs in key sectors through a collaborative approach. This will encourage trade, innovation and economic growth of up to 7 percent per annum and will ensure South Africa remains at the forefront of fast growing emerging economies and also as an attractive investment destination. The successful implementation of the NGP is also expected to increase investment in South Africa's mineral industry by ensuring the continuation of a competitive business environment and the lowering of barriers to entry. The Southern African subcontinent will also benefit from improved regional co-operation, seeking to harmonize legislation governing the mining industry.

South Africa boasts the most modern and extensive infrastructure in Africa, with a highly developed transport infrastructure consisting of extensive road and rail networks. Transnet is a public company wholly owned by the government and is dominant player in the Southern African transport sector, supporting the country's freight logistics network. Its activities extend beyond the borders of South Africa into Africa and the rest of the world. The company has five operating divisions that drive business value creation, namely; Transnet Freight Rail (TFR), Transnet Engineering (TE), Transnet National Ports Authority (TNPA), Transnet Port Terminals (TPT) and Transnet Pipelines (TP). Transnet has also three specialist units: Transnet Property (TP), Transnet Capital Projects (TCP) and the Transnet Foundation (TF). The Company's corporate centre is responsible for finance, planning and monitoring, human resources, risk, commercial and corporate affairs.

Transnet adopted the Market Demand Strategy (MDS) in 2012, committing the company to invest R300,1 billion in infrastructure to support a ramp up in freight volumes, operational efficiencies, jobs and skills while advocating transformation and delivering sustainable economic, social and environmental outcomes. The successful execution of the MDS will result in an increase in rail, port and pipeline capacity ahead of market demand. There is a strong focus within Transnet to shift freight from road to rail by increasing rail volumes to 360,3 Mt by 2020, reducing the cost of doing business and supporting important social and environmental objectives.

An amount of R13,0 billion was invested in General Freight Business (GFB) which relates to the upgrade and maintenance of infrastructure and rolling stock. The New Multi-Product Pipeline (NMPP) connecting Durban with Johannesburg will ensure the supply of liquid fuels to the hinterland. The NMPP is a strategic investment to secure the supply of petroleum products to the inland market over the long term. It is one of the largest and most complex multiproduct pipelines in the world. An innovative engineering project goes underground over a distance of 555 kilometres. The 24 inch trunk line from Durban to Jameson Park was operationalised in January 2012 and transported over 2,7 billion litres of diesel for the year.

TFR is the largest division within Transnet, representing the group's rail freight transport interests. It transports bulk and containerised freight by rail. The network and rail services provide strategic links between ports and production hubs and connect with the railways of the SADC region. The Rail network unit manages Freight Rail's rail infrastructure and focuses on the maintenance, modernisation and expansion of the approximately 20 500 route kilometre (31 000 track km) rail network. About 1 500 km comprises heavy–haul lines for coal and iron ore export. There are dedicated railway lines for iron ore from

Sishen, in the Northern Cape to Saldanha Bay on the west coast, and for transporting coal from the coal fields of Mpumalanga to the Richards Bay Coal Terminal (RBCT) on the east coast.

Portnet, a subsidiary of PSA Corporation Limited, was formed in 2000 with the aim of helping the port and shipping to increase productivity and save costs through the greater use of information technology and the internet. Portnet is the largest port authority in Southern Africa, with the best-equipped and most efficient network of ports in Africa. The network connects the ports of South Africa and the rail networks of the Sub-Saharan region. Most of South Africa's minerals are exported through five major ports, the largest of which is Richards Bay Coal Terminal (RBCT) with the capacity of 92 Mt per annum mainly for coal exports.
During the 2011/12 financial year ended 31 March 2012, Richards Bay Coal Terminal handled a total of 1 782 ships with a gross tonnage of 65.9 Mt. In the same period the port handled 89.2 Mt of cargo, of which 84.5 Mt was bulk cargo. Imports amounted to 5.888 metric tons and exports 83.113 metric tons. During its 2011 calendar and financial year RBCT handled 65.512 Mt of export coal compared with 63.427 Mt in the 2010 calendar year. Saldanha Bay which is the only dedicated iron ore export facility in the country handled a total of 528 ships with a total gross tonnage of 34 503 749 gt. In 2011/12, the cargo handled by the port totalled 58 263 030 tonnes, including oil.

The Port of Ngqura being developed near Port Elizabeth in the Eastern Cape will increase the country's port capacity substantially. The port is capable of serving post-Panamax dry and liquid bulkers and the new generation of cellular container ships. On 27 January 2012, the Minister of Transport gave effect to the cabinet decision by issuing a section 79 Directive in terms of Ports Act, enabling Port Terminals to operate the terminal until 26 January 2015. Transnet invested R292 million to acquire equipment for the Ngqura Container Terminal Phase 2A expansion. The total capital invested at the Ngqura Container Terminal for the year amounted to R444 million.

Eskom was established in South Africa in 1923 as the Electricity Supply Commission. In July 2002, it was converted into a public, limited liability company, wholly owned by government. Eskom is a vertically integrated operation that generates, transmits and distributes electricity to industrial, mining, commercial, agricultural, residential customers and redistributors. The company generates 95 percent of electricity in the country and close to 45 percent of all the electricity used in Africa. It provides electricity directly to about 45 percent of all end-users in South Africa and the other 55 percent is resold by redistributors including municipalities. Eskom is ranked among the top seven utilities in the world in terms of generation capacity and in the top nine in terms of sales.

SA's power utility is planning to invest up to R149-billion over the coming ten years on transmission projects, to improve the reliability of networks and integrate new-generation capacity into the current power grid. The investment forecast is outlined in the latest Transmission Ten-Year Development Plan of 2013-2022. The investment aims to ensure that the network complies with the minimum reliability criteria, connect new demand centre's and integrate new Eskom and independent power producer (IPP) generating capacity. A total of R121-billion has been set aside for projects. A further R25-billion is designated for programmes that will focus on integrating new power generation projects, such as the Medupi, Kusile and renewable energy projects. About R3-billion will be allocated to customer-related projects. The Medupi and Kusile projects have both had their rollout periods extended with Medupi due for completion in 2017 instead of 2015 and the first unit of Kusile delayed from 2015 to 2017. Kusile will only be completed in 2020 not in 2019.

South Africa's banking system is well-developed, which sets it apart from many other emerging economies, offering a mature market with a good regulatory and legal framework. The South African Reserve Bank (SARB) oversees the local banking services industry. The non-banking financial services industry is governed by the Financial Service Board (FSB). The South African banks are well capitalised and managed; and have sophisticated risk-management systems and corporate-governance infrastructures comparable to First World economies.

South Africa has a sizeable labour pool and a Human Development Index (HDI) survey, conducted by the United Nations in about 187 countries, places South Africa at 121 as a medium human development country. The Government, through the Amended Skills Development Act of 2003 tightened regulations to ensure continuous improvement in the skill development strategies across all sectors. The Mining Qualifications Authority (MQA) is responsible for the provision and administration of skills development projects for the mining and minerals sector.

PRODUCTION OVERVIEW OF SELECTED MAJOR MINERALS

TABLE 2: SOUTH ARICA'S PRODUCTION OF SELECTED MAJOR MINERALS, 2008 – 2012

COMMODITY	UNIT	PRODUCTION				
		2008	2009	2010	2011	2012
Coal	t	252 699 108	250 538 125	257 205 807	250 706 255	258 575 793
Cobalt	t	244	238	840	862	1 102
Copper	t	97 185	92 884	83 640	89 298	69 859
Chromite	t	9 682 640	7 560 938	10 871 095	11 865 380	11 310 223
Diamonds	ct	12 894 874	6 112 834	8 870 967	7 117 887	7 245 403
Gold	kg	212 571	197 628	188 702	180 293	154 178
PGMs	kg	275 767	271 393	287 304	288 851	254 338
Nickel	t	31 675	34 605	39 960	43 321	45 945
Lead	t	46 440	49 149	50 625	54 460	52 489
Manganese	t	6 807 059	4 575 766	7 171 745	8 651 842	8 943 415
Iron Ore	t	48 982 537	55 313 053	58 709 330	58 056 897	67 100 474
Zinc	t	29 002	28 159	36 142	36 629	37 034

Source: Department of Mineral Resources, Directorate: Mineral Economics

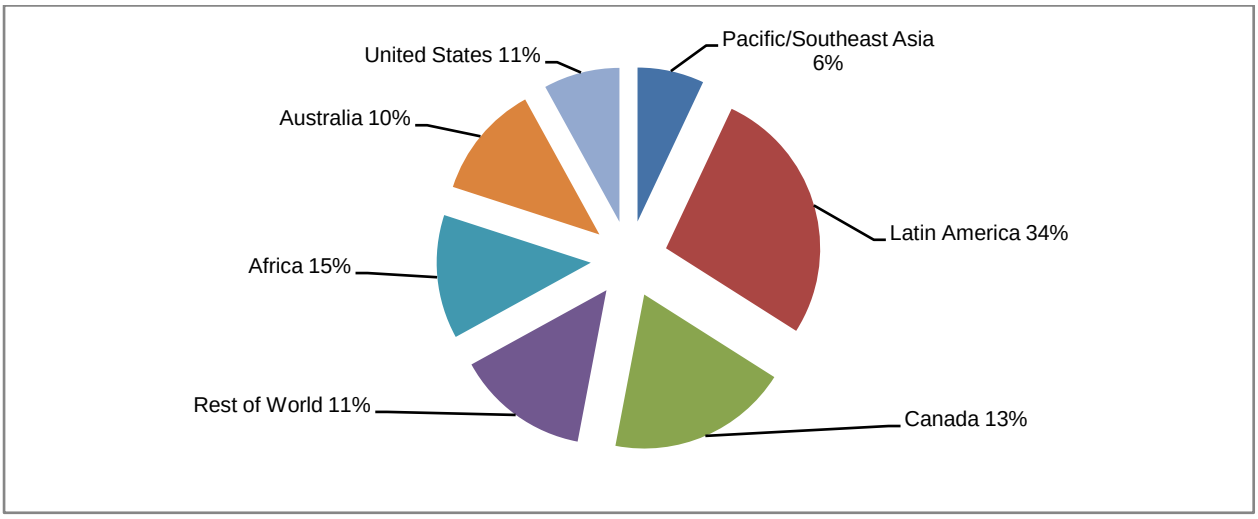
In 2012, production of some commodities plummeted following industrial actions in the mining industry. Gold production continued trending downward despite the price increase in rand terms, registering a decrease of 14.5 percent to 154.2t in 2012 from 180.3t in 2011. PGMs also followed the same trend decreasing by 12.1 percent to 254.3t from 288.9t in the same period. However, iron ore recorded the highest production increase of 15.6 percent due to increased output at Kumba's Sishen operations, while both coal and manganese increased production by 3 percent. On the other hand, diamond production rose marginally by 1.7 percent to 7 245ct in 2012 from 7 118ct in 2011.

MINERAL EXPLORATION

In 2012, exploration expenditure increased in all regions, with Latin America and Africa registering the largest increases while Canada and United States (US) registered smallest increases. Exploration expenditure recorded an all time high of 18.3 percent increase to US$ 21.5 billion from US$ 18.2 billion in 2011, despite weak metal prices brought about by the Euro Debt crisis as well as China's slower economic growth. World exploration budgets for top ten countries accounted for 64 percent or US$ 13.2 billion of the world total. During the period under review, allocations for top ten rankings remained the same with Canada and Australia remaining the top contributing countries to global exploration expenditure at 16 and 12 percent, respectively. However, Argentina replaced Colombia to be the tenth country in the world top ten countries contributing to global exploration expenditure. Figure 2 below depicts other regions attracting large exploration expenditure, which included Latin America at 34 percent, followed by Africa and Canada at 15 percent and 13 percent, respectively.

Although South Africa lost its spot in the top ten countries, it is counted among major African countries attracting large exploration spending, alongside Democratic Republic of Congo (DRC), Burkina Faso, Ghana and Zambia.

FIGURE 2 EXPLORATION EXPENDITURE BY REGION, 2012



Source: Metal Economics Group, 2012

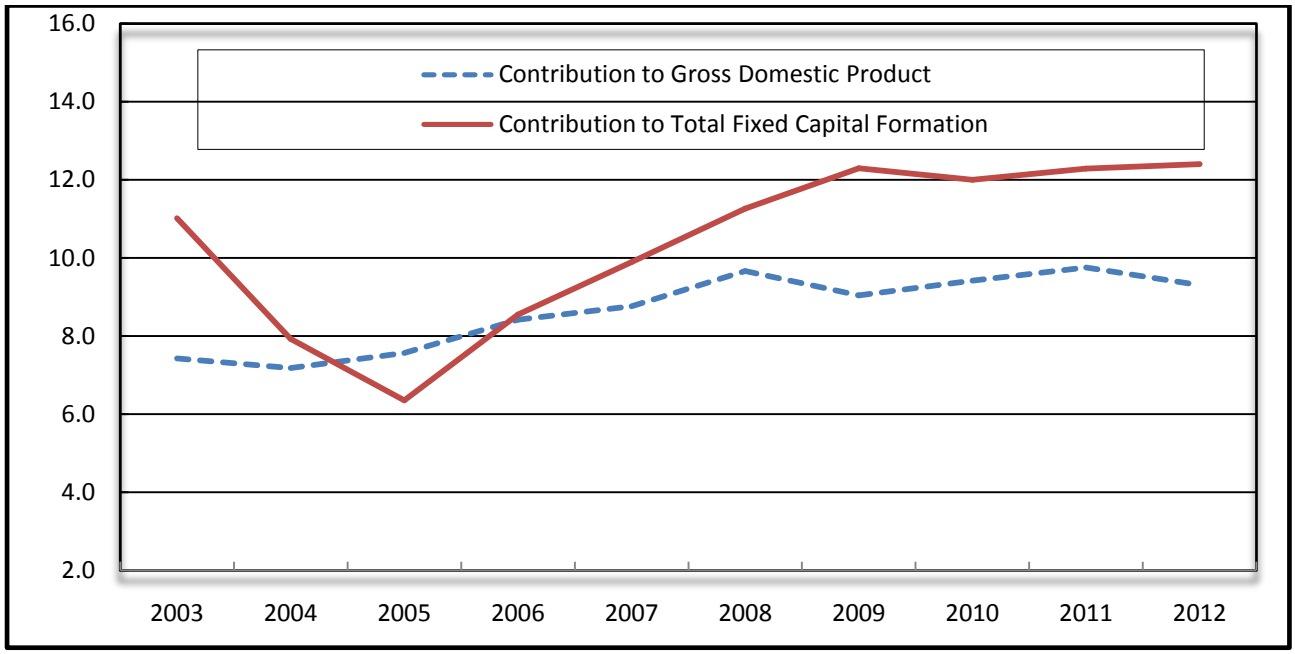
In 2012, a total amount of 2 849 applications for prospecting and mining rights were received by the DMR. Of the total number of applications received, 2 705 applications were for prospecting rights, 144 were for mining rights. Most of the applicants targeted commodities such as PGMs, diamonds, uranium and coal. The country has the potential to supply a large share of the global demand for many commodities, but its rich endowment of natural resources and high mineral potential can only be developed and extended through a vibrant exploration sector.

The depleting nature of the mineral resources necessitates that South Africa refocuses its support towards investment in greenfield exploration, in order to sustain the mining industry through the discovery of new deposits. Mineral exploration investment as prescribed under the sustainable development element of the Mining Sector Declaration, amongst other factors, was identified as one of the key elements in growing and developing the mining industry.

ROLE OF MINING IN THE NATIONAL ECONOMY

South Africa's mining industry is one of the country's key economic sectors with potential for substantial contribution to economic growth, job creation and transformation, consistent with the government's objectives of higher and more balanced economic growth. In 2012, mining contributed R221.7 billion ($27.0 billion) or 9.3 percent to gross domestic product (Figure 3 and Table 3), an increase of R38.7 billion over the previous year. The increase in value added in rand terms by mining can be attributed to rand/dollar exchange rate which plummeted from R7.23 in 2011 to R8.20 to a dollar in 2012 as well as the increase in the price of gold brought about by investment demand and the increase in the production of ferrous minerals. If the value-added contribution of processed minerals (presently included in the manufacturing sector's figures) were added to that of mining and quarrying, the impact of mining on the national accounts would be significantly higher. Mining and quarrying contribution to Gross Fixed Capital Formation (GFCF) remained at 12.4 percent in 2012.

FIGURE 3: PERCENTAGE CONTRIBUTION OF MINING AND QUARRYING TO GROSS DOMESTIC PRODUCT AND TOTAL FIXED CAPITAL FORMATION OF SOUTH AFRICA, 2003 – 2012 (CURRENT RAND PRICES)



Source: South African Reserve Bank: Quarterly Bulletin, June 2012

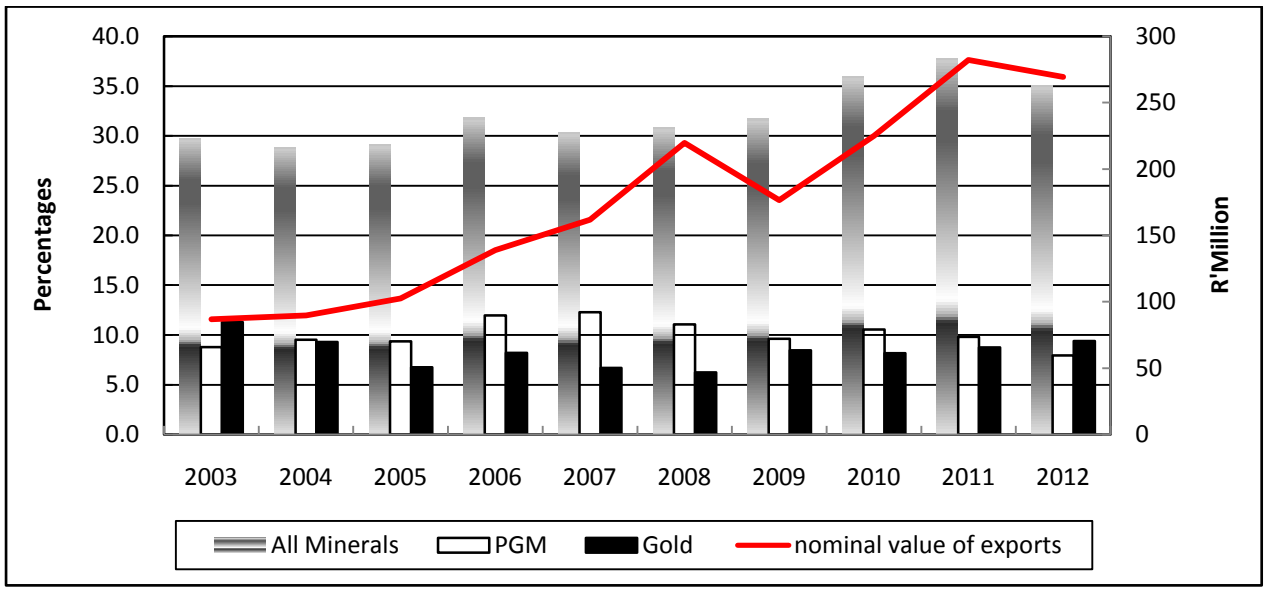
TABLE 3: CONTRIBUTION OF MINING AND QUARRYING TO GROSS DOMESTIC PRODUCT, FIXED CAPITAL FORMATION AND TOTAL NATIONAL EXPORTS OF GOODS, 2003 – 2012 (at current prices)

	CONTRIBUTION TO VALUE ADDED			CONTRIBUTION TO FIXED CAPITAL FORMATION			CONTRIBUTION TO NATIONAL TOTAL EXPORT OF GOODS		
Year	National Gross Domestic Product	From Mining		Total Fixed Capital Formation	From Mining		Total Exports	From Mining	
	R'million	R'million	%	R'million	R'million	%	R'million	R'million	%
2003	1 272 537*	82 770*	6.7	196 999*	21 706*	11.0	291 434*	86 747*	29.8
2004	1 415 237*	91 198*	6.4	226 180*	17 917*	7.9	310 525*	89 546*	28.8
2005	1 401 067*	105 992*	7.6	263 754*	16 743*	6.3	358 361*	102 486*	29.1
2006	1 572 319*	132 301*	8.4	324 083*	27 715*	8.6	447 690*	138 878*	31.8
2007	1 792 076*	156 970*	8.8	406 257*	40 206*	9.9	533 791*	161 755*	30.3
2008	2 033 207*	196 525*	9.7	520 717*	58 645*	11.3	704 293*	219 593*	30.8
2009	2 174 512*	196 521*	9.0	521 707*	64 140*	12.3	556 432*	176 837*	31.8
2010	2 412 490*	227 117*	9.4	514 004*	62 431*	12.1	625 359*	224 956*	35.9
2011	2 670 504*	260 381*	9.8	553 313*	68 800*	12.4	746 518*	282 012*	37.8
2012	2 835 087	221 731	9.3	604 390	74 658	12.4	767 230	269 119	35.1

Sources: *Department of Mineral Resources, Directorate Mineral Economics*
South African Reserve Bank, Quarterly Bulletin June 2011, pS105 & 114
Notes ** Revised figures*

South Africa's mining and minerals industry has been severely affected by a number of unprotected strikes, with the platinum mining emerging as the sector that has experienced significant challenges. This is evident in the country's mineral export sales revenue which declined by 4.6 percent to R269.1 billion in 2012 from R282.0 billion in 2011, accounting for 35.1 percent of the country's total exports value of goods, (Figure 4 and Table 3). In 2012, PGMs and ferrous mineral export sales revenue decreased by 16.8 percent and 12.5 percent, respectively. Platinum demand was mostly affected by the Euro crisis and increased recycling as well as automotive producers who have reduced load rates and drifted away from platinum towards palladium. However, non-ferrous minerals sales value increased significantly by 21.9 percent from R6.6 billion in 2011 to R8.1 billion in 2012, followed by gold at 10.3 percent and coal at 3.3 percent.

FIGURE 4: CONTRIBUTION OF PRIMARY MINERALS TO SOUTH AFRICA'S EXPORTS[#,] 2003-2012



Sources: Department of Mineral Resources, Directorate Mineral Economics
Notes: [+] Includes gold
[#]Total exports of goods only, including gold

South Africa primary and processed minerals were each exported to 70 countries. Exports by region indicate that Europe is still South Africa's leading destination for mineral exports, accounting for 64.8 percent of the total export of primary mineral and Pacific Rim remains the main importer at of the selected processed minerals 38.0 percent (Table 4). With respect to mineral exports to the Pacific Rim region, China and India are increasingly growing SA's trade partners both in value terms and growth rate.

TABLE 4: SOUTH AFRICA'S EXPORT VALUE OF PRIMARY AND SELECTED PROCESSED MINERAL PRODUCTS ACCORDING TO DESTINATION, 2012

REGION	PRIMARY				PROCESSED	
	Including precious metals/minerals %		Excluding precious metals/minerals %		%	
	2011	2012	2011	2012	2011	2012
Europe	64,2	64,8	32,0	30,3	40,6	39,2
Pacific Rim countries	27,3	24,1	56,1	49,4	33,6	38,0
Middle and Near East	3,5	2,6	1,8	5,5	6,6	1,8
North and Central America	0,6	0,8	1,4	1,6	16,5	18,6
South America	0,1	2,0	0,5	1,8	1.3	0,9
Africa	0,3	0,7	0,9	2,0	1,4	1,5
Other	4,0	5,0	7,2	9,4	N/A	N/A
TOTAL	100,0	100,0	100,0	100,0	100,0	100,0

Sources: Department of Mineral Resources, Directorate Mineral Economics

The total state revenue from the mining sector decreased significantly by 30 percent to R12.8 billion in 2012 from R18.3 billion in 2011. Gold and uranium and cement each contributed 46.6 percent and 12 percent to the total state revenue, while platinum and copper registered decreases of 73.8 percent and 63.8 percent respectively. The decrease in mining taxation can be attributed to the poor performance in the mining sector and the direct consequences of domestic supply side disruptions due to industrial strikes in the industry.

TABLE 5: CONTRIBUTIONS OF MINING AND QUARRYING TO STATE REVENUE, 2003–2012

YEAR Ended 31 Mar	Mining Taxation	State Share of Profits and Diamond Exports Duties	Total Revenue	As Percentage of Total State Revenue	State Aid#
	R' 000	R'000	R'000	%	R'000
2003	6 850 764	1 034 702	7 885 467	0,3	20 349
2004	3 300 975	421 793	3 722 769	0,9	32 530
2005	8 754 436*	1 132 179*	9 886 615*	0,4	36 225
2006	19 296 292*	825 472*	20 121 764*	0,2	37 339
2007	25 055 690*	900 703*	25 956 393*	0,1	24 139
2008	38 540 477*	644 241*	39 184 718*	0,1	21 000
2009	15 625 306*	1 104 882*	16 730 188*	0,1	21 000
2010	16 921 875*	468 596*	17 390471*	0,1	18 000
2011	17 518 359*	802 061*	18 320 420*	0,1	18 000
2012	12 228 479	575 234	12 803 714	N/A	N/A

Sources: *Department of Finance, South African Revenue Service*
Department of Mineral Resource, Directorate Financial Planning and Management Accounting
Notes: # *In respect of leased mines*
* *Revised figures*

In 2012, the mining industry, excluding exploration, research and development organisations and head offices, employed 2.9 percent of South Africa's economically active population, or 2.6 percent of all workers in the non-agricultural formal sectors of the economy (Table 6).

The South African labour market was characterised by fairly widespread and disruptive labour unrest particularly in the third quarter of 2012. The strike activity started in the PGM mining sector, before spreading to other mining subsectors and subsequently to other sectors of the economy. However, the country's total mining employment increased by 11 754 workers or 2 percent from 512 878 in 2011 to 524 632 in 2012, despite the declining volume of mining output. During the same period wage income in the mining sector increased by 7.6 percent from R 87.1 billion in 2011 to R 93.6 billion in 2012 (Table 6). For the past decade, 2003-2012, a total of 89 004 direct jobs were created, highlighting the significance of mining to the South African economy.

TABLE 6: EMPLOYMENT AND WAGES IN SOUTH AFRICA'S MINING INDUSTRY, 2003–2012

YEAR	EMPLOYMENT		WAGES				
	Number employed	As % of total economically active population	Total		Per worker per annum		As % of total mining revenue[#]
			Nominal	Real[+]	Nominal	Real[+]	
			R million		R	R	
2003	435 628*	2,7	30 827	33 056	71 748*	72 740*	26,2
2004	448 909*	2,9	33 655	34 124	77 515*	80 146*	26,9
2005	444 132*	2,6	36 682	36 703	86 299*	90 305*	25,6
2006	456 337*	2,7	39 447	41 756	92 578*	99 149*	20,3
2007	495 150*	2,9	50 072	49 924	100 826*	100 527*	22,4
2008	518 519*	2,9	60 876	65 193	125 730*	134 647*	20,3
2009	492 219*	2,9	66 096	68 935	140 049*	146 064*	27,4
2010	498 906*	2,9	74 318	78 044	156 430*	164 273*	24,7
2011	512 878*	2,9	86 972	91 866	179 118*	189 196*	23,5
2012	524 632	2.9	93 608	93 608	178 426	178 426	25.7

Sources: *Quarterly Labour Force Survey (Stats SA), July 2013*
Department of Mineral Resource, Directorate Mineral Economist
Notes: [#] *Export plus local commodity sales*
[+] *Deflated by means of the CPI with 2008 as base year*
** Revised figures*

North West, the platinum province emerged as the largest contributor to total mining employment and remuneration at 35 percent and 32 percent respectively. Provincial employment distribution was distinctly unequal with five provinces (North West, Mpumalanga, Gauteng, Limpopo and the Free State) employing 90.0 percent of the mining workforce, which in turn earned 88.5 percent of the total remuneration (Table 7).

TABLE 7: EMPLOYMENT AND REMUNERATION BY PROVINCE, 2012

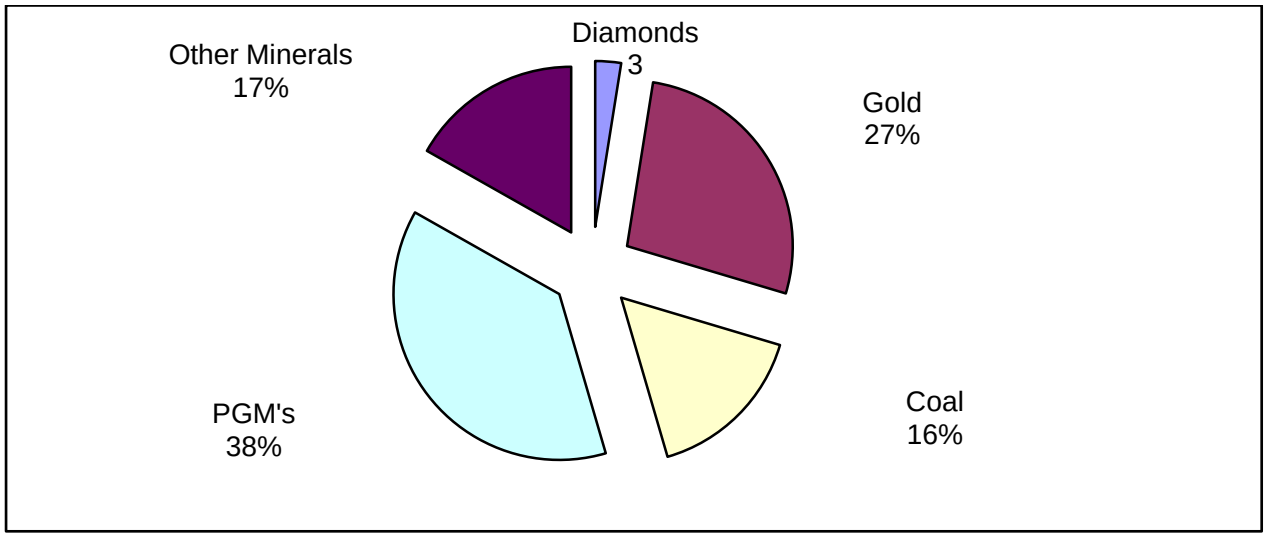
PROVINCE	EMPLOYEES		TOTAL REMUNERATION	
	Number	%	R million	%
North West	181 715	34,6	29 942	32,0
Mpumalanga	106 771	20,4	22 274	23,8
Gauteng	75 954	14,5	12 163	13,0
Limpopo	66.949	12,8	12 255	13,1
Free State	39 493	7,5	6 177	6,6
Northern Cape	37 226	7,1	7 244	7,7
KwaZulu-Natal	11 611	2,2	2 764	3,0
Western Cape	3 306	0,6	624	0,7
Eastern Cape	1 602	0,2	146	0,2
TOTAL	524 632	100,0	93 607	100,0

Source: *Department of Mineral Resources, Directorate Mineral Economics*

During the period under review, the PGMs sector employed 38 percent of the total mining industry's employment, an increase of 2 percent to 197 847 in 2012 from 194 745 in 2011. Other sectors which recorded increase in employment were diamond and coal at 9 percent and 6 percent, respectively. Employment levels in the gold mining sector decreased by a marginal 2 percent from 144 799 in 2011 to

142 201 in 2012, due to dismissals following the illegal strike activity and closure of unprofitable operations. Nevertheless, the gold sector maintained its positions as the second largest contributor to total mining employment at 27 percent.

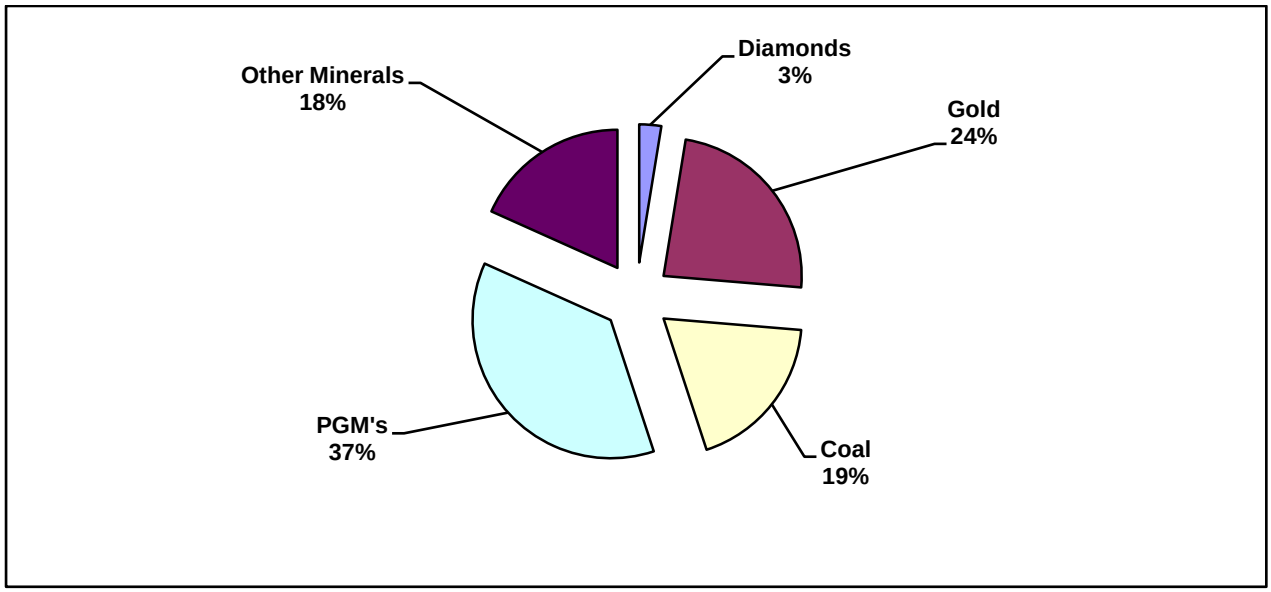
FIGURE 5: MINING INDUSTRY'S EMPLOYMENT BY SECTOR, 2012



Source: Department of Mineral Resources, Directorate Mineral Economics

South Africa's mining sector's remuneration increased by 7.3 percent from R87.1 billion in 2011 to R93.6 billion in 2012. The PGMs industry accounted for 37 percent of the total remuneration, followed by gold and coal industry which accounted for 24 percent and 19 percent, respectively (Figure 6).

FIGURE 6: MINING INDUSTRY'S REMUNERATION BY SECTOR, 2012



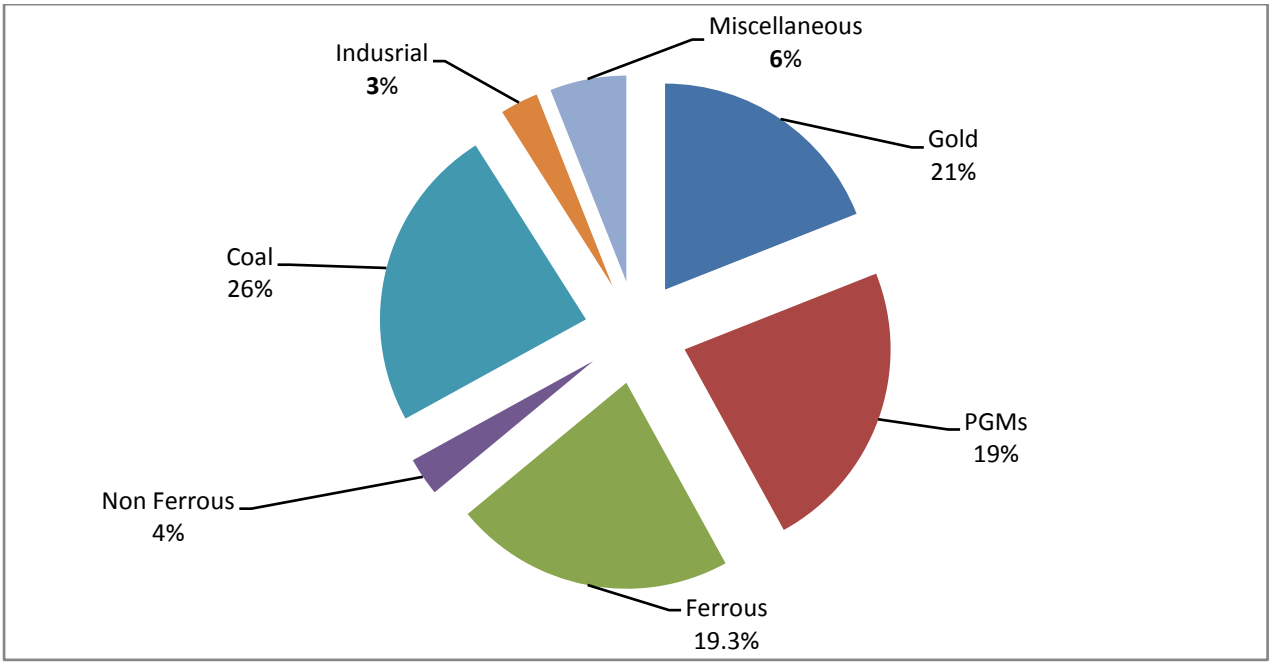
Source: Department of Mineral Resources, Directorate Mineral Economics

MINERAL PRODUCTION AND SALES IN 2012

The Eurozone crisis, slowdown in US demand and lower industrial economic growth in China impacted negatively on most commodity prices in 2012. This is evident in South Africa's total primary minerals sales value, which decreased by a marginal 1.8 percent to R363.8 billion in 2012 from R370.3 billion in 2011. During the same period, coal and gold prices performed well, but could not offset the decline in the total mineral sales revenue. The coal and gold prices registered increases of 13.3 percent and 6.4 percent

respectively due to stronger demand. In 2012, coal remained South Africa's highest revenue earner with R96.1 billion from R87.8 billion in 2011, due to strong local and international demand for the commodity. During the same period, gold and ferrous total sales revenue rose by 11.5 percent and 11.7 percent, respectively. The increase in gold sales revenue can be attributed to depreciation of the rand against the dollar and increased prices. On the other hand, the total sales of PGMs plummeted to R69.2 billion in 2012 from R83.9 billion in 2012, as result of the 9.7 percent decline in the metal price and the uncertainties of the Eurozone economic crisis as well as increased use of palladium as a replacement of platinum in auto catalyst.

FIGURE 7: CONTRIBUTION OF PRIMARY MINERAL COMMODITIES TO TOTAL SALES REVENUE, 2012



Source: Department of Mineral Resources, Directorate Mineral Economics

TABLE 8: MINERAL PRODUCTION AND SALES, 2012

COMMODITY		PRODUCTION	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
		Quantity	Quantity	Value (R)	Quantity	Value (R)	Quantity	Value (R)
1. Precious								
Diamonds	ct	7 245 403	**	**	**	**	**	**
Gold	kg	154 178	11 272	4 862 747 567	164 944	71 961 756 627	176 215	76 824 504 194
Platinum-group metals	kg	254 388	**	8 285 235 063	243 955	60 918 938 757	**	69 204 173 820
Silver	kg	67 304	70 274	49 291 393	70 274	533 232 352	76 413	582 823 745
2. Semi-precious stones			*	*	*	*	*	*
3. Ferrous[@]	t	87 354 112	*	10 266 843 671	67 077 121	61 473 923 643	*	71 740 767 314
4. Non-ferrous[+@]	t	227 746	92 017	6 445 359 242	111 333	6 612 922 772	203 349	13 058 282 014
5. Energy								
Coal	t	258 575 793	185 668 665	43 921 276 970	76 008 647	52 226 904 339	261 677 312	96 148 181 309
Uranium oxide	kg	550 582	**	**	**	**	**	**
6. Industrial[@]				11 099 848 315		2 958 112 080		14 057 960 395
7. Miscellaneous				11 065 843 816		10 988 604 176		22 054 447 992
TOTAL#				94 636 717 128		269 119 751 443		363 756 468 571

Source: Department of Mineral Resources, Directorate Mineral Economics
Notes: All quantities are in metric tons, unless otherwise specified
***Not available: where applicable, earnings are included under 'Miscellaneous'*
[@] Full details given in respective overview chapters
[+] Excludes titanium and zirconium minerals which are included under Miscellaneous'
** Nil*

Total local mineral sales value increased by 7.1 percent to R94.6 billion in 2012 from R88.4 billion in 2011 (Table 8), due to the increased rand price of some mineral commodities supported by the weakening of the rand/dollar exchange rate. In 2012, coal remained the major local earner at R43.9 billion from R37.3 billion in 2011, representing an increase of 18 percent, while gold sector increased significantly by 33.8 percent from R3.6 billion in 2011 to R4.9 billion in 2012. As expected, PGMs declined by 22 percent owing to the industrial actions in the mining industry.

TABLE 9: SOUTH AFRICA'S PRIMARY MINERAL SALES BY PROVINCE, 2012

PROVINCE	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
Mpumalanga	38 914 615	41.1	65 557 741	24,4	104 472 355	28.7
North West	10 912 476	11.5	57 118 436	21,2	68 030 913	18.7
Northern Cape	8 160 425	8.6	55 697 778	20.7	63 858 202	17.6
Limpopo	16 229 824	17.2	29 477 642	11.0	45 707 467	12.6
Gauteng	5 474 816	5.8	37 923 806	14.1	43 398 622	11.9
Free State	4 273 421	4.5	16 219 464	6.0	20 492 885	5.6
KwaZulu-Natal	4 489 229	4.8	5 196 210	1.9	9 685 439	2.7
Western Cape[#]	5 686 982	6.0	1 928 674	0.7	7 615 656	2.1
Eastern Cape	494 929	0.5	0	0	494 929	0.1
TOTAL[#]	94 636 717	100,0	269 119 751	100,0	363 756 468	100,0

Source: Department of Mineral Resources, Directorate Mineral Economics
Note: [#] Hydrocarbons were produced and sold at a value of R1 070 million locally

The bulk of the total mineral revenues were generated from Mpumalanga, North West, Northern Cape, Limpopo and Gauteng provinces collectively accounting for 89.5 percent of the total primary mineral sales revenue (Table 9). Mpumalanga emerged as the leading contributor to both local and export sales revenue with 41.1 percent and 24.4 percent respectively, with North West province as the second largest contributor to export sales revenue at 21.2 percent. Mpumalanga is mainly dependent on coal as a major contributor towards minerals revenue, North West depends on PGMs, Northern Cape on diamonds, Limpopo on PGMs, diamonds, copper as well as coal and Gauteng on gold.

SELECTED PROCESSED MINERAL SALES

The total sales revenue decreased by 8.7 percent from R65.1 billion in 2011 to R59.5 billion in 2012, with export sales accounting for 82 percent of the revenue of the total processed minerals (Table 10). The largest contributors to the total of selected primary minerals sales were chromium alloys at 43.2 percent, followed by a conglomerate of classified commodities at 41.4 percent and manganese alloy and vanadium at 11.2 percent and 4.2 percent respectively. The value of local sales of processed mineral products also decreased by 18.5 percent from R11.9 billion in 2011 to R9.7 billion in 2012.

TABLE 10: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORT SALES OF SELECTED PROCESSED MINERAL PRODUCTS, 2012

COMMODITY	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		Mass	Value (FOR)	Mass	Value (FOB)	Mass	Value (FOB)
	T	T	R'000	T	R'000	T	R'000
Chromium alloys	3 063 257	443 141	3 402 210	2 745 025	22 290 876	3 188 167	25 693 085
Manganese alloys	882 461	60 229	526 946	681 386	6 158 005	741 613	6 684 925
Vanadium[+]	19 956	1 421	210 820	15 500	2 278 915	16 920	2 489 735
Other: Classified[x]	2 204 264	294 774	5 596 558	1 811 817	18 997 045	2 106 591	24 593 602
TOTAL 2012	6 169 938	799 565	9 736 533	5 253 728	49 724 842	6 053 291	59 461 376
TOTAL 2011			11 853 392		53 283 345		65 136 737

Sources: Department of Mineral Resources, Directorate Mineral Economics
: United State Geological Survey
Notes : [+] Contained vanadium
[x] Comprises aluminium, titanium slag, zinc metal, low-manganese pig iron, silicon alloys and metal, phosphoric acid, and antimony trioxide

Table 11 below, shows KwaZulu-Natal (KZN) province as the major contributor to the total selected processed mineral sales accounting for 38.1 percent, followed by Mpumalanga and North West provinces at 33.1 percent and 17.4 percent respectively, (Table 11). Together, KwaZulu-Natal, Mpumalanga and North West provinces accounted for 88.6 percent of the total processed minerals sales revenue. Titanium slag and aluminium dominated the KwaZulu-Natal contribution, whilst 81.4 percent of Mpumalanga's total sales revenue was derived chromium alloys. North West's total processed mineral sales revenue was almost entirely derived from ferroalloys. These three provinces also dominated the local and export sales revenue, with a combined contribution of 90.6 percent to local sales revenue.

TABLE *11*: SOUTH AFRICA'S LOCAL AND EXPORT SALES OF SELECTED PROCESSED MINERAL PRODUCTS BY PROVINCE, 2012

PROVINCE	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
	R'000	%	R'000	%	R'000	%
KwaZulu-Natal	4 673 400	47.2	17 977 796	36.2	22 651 197	38.1
Mpumalanga	3 461 377	35.6	16 196 087	32.6	19 657 464	33.1
North West	765 370	7.8	9 581 195	19.3	10 346 565	17.4
Gauteng	481 954	4.9	2 971 654	6.1	3 453 607	5.8
Limpopo	291 409	3.1	928 424	1.9	1 219 833	2.1
Western Cape	63 023	0.6	2 069 686	4.2	2 132 709	3.6
TOTAL	9 736 533	100.0	49 724 842	100.0	59 461 376	100.0

Source: Department of Minerals Resources, Directorate Mineral Economics

SOUTH AFRICA'S IMPORTS OF SELECTED PRIMARY AND PROCESSED MINERAL PRODUCTS, 2012

As a result of its vast mineral resources, South Africa is, to a large degree self-sufficient with respect to the supply of minerals. However, there are some minerals and mineral products which need to be imported due to lack of local resources. The total value of the more significant imports during 2012 decreased by 16.1 percent from R20.1 billion in 2011 to R16.8 billion in 2012 (Table 12). In order to reduce the increase in imports, South Africa will need to intensify beneficiation and develop projects that will produce products locally and substitute imported goods.

The value of imports of precious metals increased significantly by 80 percent to R 3.0 billion in 2012 from R1.7 billion in 2011, with diamonds also increasing by 74.1 percent. During the same period coking coal and primary industrial minerals sales value decreased by 40.4 percent and 18.6 percent respectively.

TABLE *12*: SOUTH AFRICA'S IMPORTS OF SELECTED PRIMARY AND PROCESSED MINERAL PRODUCTS, 2012

PRODUCT	VALUE (FOB)		
	2011 R'000	2012 R'000	Year on year % change
Precious			
Diamonds	4 813 982	1 245 375	74.1
Other precious and semi-precious stones *	301 689	278 019	-7.8
Precious metals +	1 709 135	3 081 658	80.3
Ferrous@			
Primary	766 583	837 882	9.3
Processed	687 826	1 028 490	49.5
Nonferrous@	93 025	104 301	12.1
Coking Coal	1 798 222	1 072 519	-40.4
Industrial@			
Primary	1 866 151	1 509 316	-18.6
Processed	2 388 143	1 988 923	16.5
Manufactured	5 681 581	5 727 067	-0.8
TOTAL#	20 106 337	16 873 550	-16.1

Source: South African Revenue Service, 2012

Notes: * *Includes natural and synthetic precious or semi-precious stones and dust and powders of these stones*
+ *Includes alloys containing base metals*
@ *Full details given in relevant chapters*

REPORTED MINERAL-RELATED PROJECTS IN SOUTH AFRICA

Newly committed investment in mineral related projects in South Africa amounted to R167 237 million by September 2012, of which 87.9 percent is for primary minerals and 12.1 percent recorded for processed mineral products (Table 13). Platinum projects dominated the primary minerals, accounting for 54.8 percent followed by other minerals 38.9 percent and gold's 5.4 percent.

TABLE *13*: NEWLY COMMITTED MINERAL-RELATED PROJECTS IN SOUTH AFRICA, 2012

SECTOR	COST R million	COST+ $ million	AS A PERCENTAGE OF PRIMARY MINERALS	AS A PERCENTAGE OF TOTAL MINERAL PRODUCTS
Primary	147 237	17 650	100	87.9
Gold	8 005	960	5.4	4.7
Platinum	80 785	9 683	54.8	48.3
Other	58 447	7 007	39.8	34.9
Processed minerals	20 000	2 397		12.1
TOTAL	167 237	37 695		100.0

Source: Department of Minerals Resources, Directorate Mineral Economics
Mining Weekly
Note: +At a Rand/dollar exchange rate of R8, 3427, as at September 2013

SADC MINING AND MINERAL PRODUCTION OF SELECTED MAJOR MINERALS

The Southern African Development Community (SADC) countries continue to be major contributors to the world's mining and mineral production. During the period 2011 to 2012, a number of SADC countries attracted considerable investment in mineral projects, which has led to increased production in some commodities particularly copper, whose production increased significantly by 11.3 percent from 1.4 Mt in 2011 to 1.5 Mt in 2012, with diamond also increasing by 6.3 percent (Table 14). Platinum registered the largest decline of 9.5 percent, followed by lead and gold at 5.3 percent and 1.5 percent respectively. The decrease in the platinum production can be attributed to the decline in the metal price and the continuing Eurozone economic crisis.

TABLE 14: SADC MINE PRODUCTION OF SELECTED MAJOR MINERALS, 2008 – 2012

MINERAL	PRODUCTION						
	unit	2008	2009	2010	2011	2012	% of world production
Coal	t	253 870 000	255 863 000	260 448 000	256 755 000	258 575 793	3.3 %
Cobalt	t	40 044	27 738	56 840	58 540	9 764	12.6 %
Copper	t	958 600	1 046 900	1 254 400	1 371 500	1 525 800	5.4 %
Chromite	t	10 346 593	10 742 600	11 340 000	11 411 400	11 549 900	46.4 %
Diamonds	carats	88 431 401	57 807 117	69 574 658	67 551 925	71 782 664	56.1 %
Gold	kg	316 598	266 344	272 600	239 500	236 000	7.2 %
Platinum	kg	151 700	148 000	156 500	158 400	143 300	79.5 %
Nickel	t	81 900	80 530	71 700	68 900	71 600	3.6 %
Lead	t	46 440*	60 000	63 000	62 500	59 200	1.1 %
Zinc	t	316 000	233 000	241 000	238 200	230 400	1.7 %

Source: Department of Minerals Resources, Directorate Mineral Economics
World Bureau of Metal Statistics
**RSA Figure (other SADC countries figures not available)*

MINERAL BENEFICIATION

The continued stagnation in most commodity prices off their pre-financial crisis highs and more recently the retreat in the gold price have starkly shown the peril for countries of over reliance on raw mineral resource exports. The adoption of the mineral beneficiation strategy for the South African mining and minerals industry as policy was one in a series of deliberate interventions by government to shift the trajectory of the economy to a more sustainable course. This intervention was followed by the development of an implementation framework that pulls together policy building blocks suggested in the strategy and specifies

how they will be implemented to create a conducive environment for increased mineral beneficiation that will be the cornerstone for the re-industrialisation drive by government.

Whilst the framework is still being finalised, the amendment process of the Minerals and Petroleum Resources Development Act, 2002 (as amended) provided an opportunity to fast track the implementation of one of the above-mentioned policy building blocks. This building block is Section 26 of the MPRDA, 2002. The following key amendments have been proposed in this provision of the Act:

- Designation of minerals as being key to domestic mineral beneficiation
- Enabling the Minister to set aside a percentage of the total domestic production of designated minerals for domestic beneficiation at differentiated prices.
- These differentiated prices are intended to provide a competitive advantage to domestic beneficiators over their international counterparts whilst preserving South Africa's attractiveness as a premier mining jurisdiction for current and future mining projects

These amendments are now subject to the parliamentary law making process. Once the bill has been ascended into law the next implementation step will be the development of regulations that will give effect to section 26.

ECONOMIC OUTLOOK FOR THE SOUTH AFRICAN MINERALS INDUSTRY 2012/2013

The recovery from the 2008 – 2009 recession is the slowest and most problematic of the past century. The global economy has yet to shake off the fallout from this recession. The global growth dropped to almost 3 per cent in 2012.The global economic environment still remains uncertain. The current key challenges facing the global recovery remains the Euro-zone sovereign debt and banking crisis, which has triggered on-going volatility in the financial markets. In the United States, the recovery remains fragile and may face further risk of contraction in 2013. However, the BRICS economy which has witnessed robust growth in 2010 and half of 2011 is expected to continue to drive world economic growth. Nevertheless, the growth prospects for these economies are also expected to moderate in the short term due to trade exposure to the Euro-zone.

Despite signs of improvement, the world economic situation and prospects for the future still continue to be challenging. After a marked slowdown in 2011, global economic growth remained lukewarm in 2012, with most regions expanding at a pace below their potential. In the face of subdued growth, the job crisis continues, with global unemployment still above its pre-crisis levels and unemployment in the Euro-zone rising rapidly. Fears of a second global economic downturn since 2008 persisted and were primarily related to worries about the difficult fiscal situations of some countries in the Euro-zone and the worry that potential defaults of some countries could have substantial impacts on the European banking system.

Most developed economies are still struggling to overcome the economic woes originating from the financial crisis. According to the United Nations report on World Economic Situation and Prospect 2012, world trade growth slowed down to 4.1 percent in 2012, from 13.1 percent in 2011 and 6.6 percent in 2010. Faced with weakening external demand and increased global uncertainties, developing countries and economies in transition are projected to be affected.

According to the International Monetary Fund (IMF), the global economic growth rate was 3.2 percent in 2012. The constraints on economic activity are likely to ease in 2013 leading to gradual strengthening of the global growth. Policy actions have lowered acute crisis in the Euro-zone and the United States. Japan's stimulus plans will also boost growth in near term, pulling the country out of a short lived recession. Effective policies have also helped support a modest growth pickup in some emerging markets and developing economies.

A new African narrative is emerging, with political, economic and regulatory reform processes that began in the 1990's continuing to reshape the continent. Armed conflicts have been significantly reduced, providing the relative stability required for economic growth and development. It is therefore not surprising to note that the African continent is recovering well from the global crisis of 2009. The African continent continues to benefit from relatively high growth in emerging countries, such as China and India, which have become more and more important for Africa's trade and investment.

Regional economic performance

The economy of the United States of America started 2012 on a positive note, with job creation exceeding expectations. Economic activity is expected to grow 2.3 percent in 2013, well above the 1.7 percent recorded in 2011. In Japan, the economy is expected to recover moderately in the outlook period. Gross domestic product (GDP) contracted by 0.7 percent in 2011. Economic activity is expected to grow by 2.1 percent in 2013, and remain on track albeit starting at a slow pace.

The recovery in the Western Europe came to a halt in the fourth quarter of 2012 with GDP declining sharply in most countries. Only a modest growth of 0.9 percent is forecast for 2013. Economic growth in South Asia is projected to moderate to 5.6 percent in 2012, down from 6.1 percent in 2011, but well below 7.1 percent recorded in 2010. In 2013, regional GDP growth is expected to accelerate again to 6.1 percent. Following a year tainted by heightened economic uncertainty, China, the world's second largest economy is setting itself up for a positive 2013. This is good news for most mineral producing African countries as they may see many commodities recording increases in prices. China and other emerging market economies appear to be the source of hope for a sustained global economic recovery.

Economic growth in Africa is expected to remain solid in the outlook period, but slightly below the level forecast. The region is expected to see a GDP growth of 4.8 percent in 2013, up from the 4.2 percent forecast for 2012. Weak demand in developed countries and slowing Chinese economy are likely to weigh on the economic growth in Africa. Africa's economic prospect depends on many unpredictable factors. A key external risk involves the slowdown in the Euro-zone, which may reduce the demand for African products. Given Africa's rapidly growing population, the demographic pressure on labour markets will continue in many African countries. The year 2013 is likely to mark a turning point for Africa, especially the sub-Sahara, which is often viewed as frontier markets. Sub-Saharan economies are gradually advancing towards the top ranks of emerging economies dominated by BRICS. One of the most remarkable features of the global economy over the past fifteen years has been the striking surge of economic growth over much of the Sub-Saharan Africa.

South Africa's economic overview

South Africa, which the World Bank ranks as an upper middle-income country, is politically stable and has a well-capitalized banking system, abundant natural resources, well developed regulatory systems as well as research and development capabilities. The country's economy has a marked duality, with a sophisticated financial and industrial economy having grown alongside an underdeveloped informal economy. It is this informal economy which presents both potential and development challenges. South Africa has a diverse economy, with the following sectors contributing significantly to GDP in 2012:

- Agriculture 2.3 percent
- Electricity 2.5 percent
- Construction 3.6 percent
- Transport 8.2 percent
- Mining 8.3 percent
- Wholesale 14.3 percent
- Goverment 14.9 percent
- Finance 19.3 percent

The South African economy has demonstrated resilience in these unsettled global economic conditions. While global developments may hold back higher growth over the short term, the domestic outlook remains positive. Gross Domestic Product (GDP), which was expected to grow 2.7 percent, actually grew by 2.5 percent in 2012, down from 3.5 percent recorded in 2011. The year 2012 was one of the most turbulent years since 1994 as labour unrest in the mining sector crippled production. In addition, the country's major trading partner, the euro area, slid into recession. However strengths in domestic economy from expanded infrastructure investment, an increase in power generation capacity, robust household spending is expected to sustain economic growth. There are encouraging signs of employment growth in the formal sector and fiscal and monetary policies remain supportive of growth.

With Europe as one of South Africa's chief export destination. To reduce unemployment rate, which remained above 25 percent in the final months of 2012 and poverty, the economy needs more rapid and broad based growth. This will require policy reforms and actions by government, business and labour to reduce the cost of doing business, promote beneficiation of the country's minerals and tap into new markets for trade and take advantage of opportunities presented by enhanced regional integration. In this regard the

government has put in plan large-scale public sector infrastructure investments which will expand the capacity of the economy to grow more rapidly. Government is also implementing an economic support package to boost productivity, competitiveness, and research and development across the agriculture, mining, manufacturing and technology sectors.

Global trade and investment

For some time now, a shift in the composition of global trade, production and investment has been underway. Emerging markets now account for more than 40 percent of global imports, exports and industrial production. In 2011, Brazil overtook the United Kingdom to become the sixth largest economy in the world. By 2016, the IMF expects BRICS economies to account for 24 percent of global GDP, up from 7 percent in 1993, and China is projected to be the largest economy in the world based on purchasing power parity. These shifts in the global economy provide considerable opportunities for growth and employment in South Africa and Africa in general. The World Bank projects, that China could shed 85 million manufacturing jobs in the coming years as the economy's comparative advantage moves away from labour-intensive production and wages for unskilled labour rise. South Africa can capture a greater share of world manufacturing through focussed efforts to achieve a competitive position in global production networks and supply chains.

Global foreign investment (FDI) inflows declined by 18 percent in 2012, to an estimated US$1.3 trillion down from US$1.6 trillion in 2011, a level close to the trough reached in 2009. This was due to macroeconomic fragility and policy uncertainty for investors. This uncertainty is driven by weakening macroeconomic environment with lower growth GDP, trade, capital formation and employment and by a number of perceived risk factors in policy environment, related mainly to the Euro-zone crisis. However, FDI flows to developing countries remained resilient in 2012, reaching US$680 billion, the second highest level ever recorded. This is an unprecedented US$130 billion more than the developed world.

FDI flows to China declined slightly but the country continues to be a major FDI recipient, the second largest in the world. FDI flows to China declined by only 3.4 percent to US$120 billion in 2012. The 7 percent growth of the Chinese economy helped maintain investor confidence. FDI to India declined by 14 per cent, although it remained at high levels achieved in recent years. FDI to Africa rose in 2012. Flows to North Africa reversed their downward trend, as Egypt saw a rebound of investment from European investors. Angola, an important recipient of FDI in Africa posted a lower disinvestments in 2012 compared with 2010 and 2011. Positive growth of FDI flows to South Africa contributed to a rise in inward flows to Southern Africa. FDI flows fell drastically in developed countries to values last seen almost ten years ago. Of the global decline of US$300 billion in FDI inflows, from US$1.6 trillion in 2011 to US$1.3 trillion in 2012, almost 90 per cent was accounted for by developed countries.

The trend of mining production moving to emerging economies will continue. There are two major land areas in the world which have been less explored than other regions; Africa and the Arctic including Siberia, Alaska, northern Canada, Greenland and Nordic countries. Looking ahead, it is possible to get an idea of where mine production in the next decade will be located, by analysing investment inflows. Current exploration projects also provide clues to where mining is going. During 2011 (2012 figures not available), 136 new mining investment projects with a total estimated cost of US$74 billion were noted in company annual reports. The entire project investment pipeline was considerable; amounting to US$676 billion overall by end of 2011.

Some 73 percent of this was accounted for by three most economically important metals, iron ore, copper and gold. Africa accounts for 15 percent of investment signalled by the project pipeline. The continent accounts for 10 percent of today's production. In 2012, investment share of the top ten mining countries including South Africa in terms of value of production will most certainly reach 70 percent. The breakdown of the US$676 billion project investment pipeline by region is as follows;

•	Central America	US$192 billion	28 percent
•	North America	US$124 billion	18 percent
•	Oceania	US$113 billion	17 percent
•	Africa	US$99 billion	15 percent
•	Europe	US$75 billion	11 percent
•	Asia	US$73 billion	11 percent

Global and regional economic outlook

According to Fitch Ratings, the global economic growth is forecast at 2.4 percent in 2013 and 2.9 percent in 2014. However the International Monetary Fund (IMF) is rather optimistic, forecasting a global economic growth of 3.6 percent in 2013. Plagued by uncertainty and fresh setbacks, the world economy has weakened further and will grow more slowly over the next years. Advanced economies risk going into recession and this could spread to more dynamic emerging economies such as China. The Euro-zone debt crisis remains the biggest threat to the world economy. An escalation of the crisis would likely be associated with severe turmoil on financial markets and a sharp rise in global risk aversion, leading to a contraction of economic activity in developed countries, which would spill over to developing countries and economies in transition. The Pan African Research paints an optimistic view, of global economic growth to start acceleration from the second half of 2013. The emerging economies, led by China will be the main drivers of growth. The developed world is also expected to start picking up despite recent problems in the US and Europe.

Following a year tainted by heightened economic uncertainty, China, the world's second largest economy is setting itself up for a positive 2013. This is good news for most mineral producing African countries as they may see many commodities recording increases in prices. China and other emerging market economies appear to be the source of hope for a sustained global economic recovery.

Economic growth in Africa is expected to remain solid in the outlook period, but slightly below the level forecast. The region is expected to see a GDP growth of 4.8 percent in 2013, up from the 4.2 percent forecast for 2012. Weak demand in developed countries and slowing Chinese economy are likely to weigh on the economic growth in Africa. Africa's economic prospect depends on many unpredictable factors. A key external risk involves the slowdown in the Euro-zone, which may reduce demand for African products. Given Africa's rapidly growing population, the demographic pressure on labour markets will continue in many African countries. The year 2013 is likely to mark a turning point for Africa, especially the sub-Sahara, which is often viewed as frontier markets. Sub-Sahara economies are gradually advancing towards the top ranks of emerging economies dominated by BRICS

Minerals/metals commodity prices

World market prices of primary mineral commodities declined markedly in the second half of 2011, but were on the rise again in early 2012. These trends are expected to contribute to a further moderation of inflation on the continent. However, the burning issues facing the mining industry tend to remain largely unchanged. The industry fails to take into account the extent to which shifting social, economic and political trends affect the mining sector.

MINERAL / METAL PRICES: 2008 - 2012 Annual Averages

COMMODITY	UNIT					
		2008	2009	2010	2011	2012
Aluminium High Grade, LME Cash	$/t	2573.21	1664.36	2173.19	2383.20	2023.52
Antimony, Metal Bulletin Free Market	$/t	6108.16	5200.86	9020.27	14741.44	12778.05
Cadmium,Metal Bulletin Free Market	$/lb,	297.51	149.25	193.50	138.29	90.58
Coal[+] - Steam: Local FOR	R/t	141.53	162.75	177.50	196.14	222.17
Export FOB	R/t	711.99	515.58	551.42	727.85	684.91
Anthracite: Local FOR	R/t	602.42	690.33	778.25	898.90	953.75
Export FOB	R/t	598.43	889.75	780.75	864.65	945.47
Cobalt, Metal Bulletin Free Market	$/lb,	38.64	17.35	20.57	17.58	13.97
Copper: Grade A, LME Cash	$/t	6899.55	5112.77	7533.92	8832.89	7957.31
Republic Copper Price	R/t	65381.67	0.00	62173.56	72610.50	73057.35
Ferrochrome: Charge 52% Cr*	$/lb, Cr	1.80	0.91	1.24	1.26	1.21
Ferromanganese: High Carbon 7,5% C*	€/t	1803.93	912.74	1091.52	993.14	907.58
Ferrovanadium 70-80% V*	$/kg V	61.34	25.01	29.99	28.76	24.99
Gold, London Price	$/ozt	872.13	973.32	1225.05	1572.32	1669.59
Ilmenite Concentrate 54% TiO_2	A$/t	102.71	86.05	74.31	128.38	276.93
Lead, LME Cash	$/t	2090.78	1718.86	2144.44	2397.52	2064.25
Lithium Ore: Petalite 4%	$/t	212.50	212.50	212.50	212.50	212.50
Manganese Ore: 48-50% Metalurgical*	$/mtu	14.09	5.37	7.71	6.07	4.92
Molybdenum: Molybdic Oxide*	$/lb. Mo	29.97	11.38	15.84	15.78	12.79
Nickel, LME Cash	$/t	21100.92	14633.19	21803.81	22938.74	17577.39
Palladium, London Price	$/ozt	355.65	263.48	526.32	731.02	646.72
Platinum, London Price	$/ozt	1574.87	1204.85	1610.89	1718.63	1554.33
Rhodium, Johnson Matthey Base Price	$/ozt	6584.88	1586.51	2458.43	2025.04	1275.73
Rutile Concentrate 95% TiO_2	A$/t	709.32	741.76	756.68	1032.34	2369.85
Silver, London Price	$/ozt	15.01	14.66	20.16	35.34	31.24
Tantalum Ore: 30% Ta_2O_5	$/lb,	35.00	35.00	0.00	0.00	0.00
Tin, LME Cash	$/t	19189.50	13563.83	20405.83	26181.78	21060.80
Uranium Oxide, NUEXCO spot	$/lb,	64.24	46.68	45.87	56.30	48.96
Vanadium Pentoxide*	$/lb,	13.55	6.04	6.92	6.61	5.59
Zinc, Special High Grade	$/t	1875.18	1653.77	2160.71	2194.36	1952.98
Zircon: Foundry Grade, Bulk, FOB	A$/t	762.50	854.68	839.35	1671.19	2489.68

Commodity prices have declined from their peak and some prices are likely to further decline due to weaker demand and increased supply. But most commodity prices are expected to remain at favourable levels for African commodity exporters. The shadow comes from a worsening of the debt crisis in Europe causing lower global growth. This would further weaken Africa's export markets, depress commodity prices and undermine Africa's recovery.

Despite the uplift of metal prices in 2011, the market volatility will continue due to uncertainty in global economic recovery, making fundamental conditions difficult. However, strategic investors will continue to seek opportunities to secure supply of or control over raw materials. After recovering from the effects of the 2008/2009 global financial crisis, the majority of the minerals which had recorded the highest annual average prices since 2008 started to show weaknesses from the first quarter of 2012. Commodity prices in 2011 averaged considerably higher than 2010. This was due to a combination of factors including the strong demand from China, low interest rates that facilitated commodity investments, a weaker US currency and increasing commodity supply constraints. After three quarters of declines, silver's fortunes changed as the metal posted gains for the first quarter of 2012 registering an average price of US$32.62/ozt albeit lower than the 2011 average of US$35.35/ozt. Silver took off after the new year, rising to its highest level since 22 September 2011 on 28 February 2012, when it crossed the US$37/ozt. However the leap was short-lived, as the price tumbled to below US$30/ozt in the first and second quarter

of 2012. With potential troubles roaming in the key consumer regions, there could be serious decline in industrial demand for silver and silver investors appear to be growing increasingly sceptical.

PART TWO: REVIEW OF SELECTED COMMODITIES

PRECIOUS METALS AND MINERALS OVERVIEW

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INTRODUCTION

The precious metals and minerals industry includes gold, platinum-group metals (PGMs), silver, and diamonds. South Africa is the world's largest producer of PGMs and the sixth largest producer of gold. The country is also a major producer of diamonds, while silver is produced as a by-product from gold, lead-zinc, copper and PGM mines.

PRODUCTION AND SALES

The country's total production of precious metals, declined by 12.3 percent to 475.7t mainly as a result of a 14.5 percent and 12.0 percent drop in gold and PGMs production, respectively (Table 15). The PGMs and gold sectors were largely affected by production disruptions in 2012 as a result of unprecedented labour relations in the PGM sector since the dawn of a democratic dispensation. Despite a 4.4 percent drop in the precious metals and minerals' total sales in 2012 compared with 2011, the sector contributed 40.3 percent (R146.6 billion), positioning the sector as the leading revenue earner in 2012. Export sales volumes and revenues decreased by 9.1 percent to 446.1 t and 4.0 percent to R133 billion respectively, as the Eurozone crisis negatively affected the auto catalysts demand. Local sales revenue decreased by 7.9 percent, due to a 16.3 percent drop in local sales volumes in 2012 compared with 2011.

TABLE 15: SOUTH AFRICA'S PRODUCTION AND SALES OF PRECIOUS METALS, 2012.

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		t	t	R million	t	R million	t	R million
GOLD	2012	154.1	11.2	4 863	164.9	71 962	176.2	76 824
	2011	180.2	10.2	3 633	175.5	65 258	185.7	68 891
PGMs	2012	254.3	30.4	8 285	210.9	60 924	241.2	69 209
	2011	288.9	36.8	10 619	244.0	73 234	280.8	83 853
SILVER	2012	67.3	6.1	49.6	70.2	533	76.3	583
	2011	73.2	10.0	80.1	71.3	532	81.2	612
PRECIOUS METAL'S TOTAL	2012	***475.7***	***47.7***	***13 197***	***446.1***	***133 418***	***493.7***	***146 616***
	2011	***542.3***	***57.0***	***14 332***	***490.8***	***139 024***	***547.7***	***153 356***

Source: DMR, Directorate Mineral Economics

South Africa's diamond production rose by a moderate 2.8 percent from 7.0 Mct in 2011 to 7.2 Mct in 2012. Local sales mass increased by 49.4 percent as more stones were available for the local market, after the sale of De Beers Finsch mine to Petra Diamonds in September 2011. This had an impact in the export sales volumes which dropped by 10.7 percent in 2012, with the corresponding revenues also dropping by 10.6 percent.

TABLE 16: SOUTH AFRICA'S PRODUCTION AND SALES OF DIAMONDS, 2012.

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		Mct	Mct	R million	Mct	R million	Mct	R million
DIAMOND	2012	7.25	2.69	5 199	4.45	4 780	7.15	9 979
	2011	7.04	1.80	4 581	4.98	5 351	6.79	9 932

Source: DMR, Directorate Mineral Economics

EMPLOYMENT

The precious metals and mineral sector employed 352 224 employees (Table 17), accounting for 67 percent of total mining employment in 2012. The PGM sector was the leading employer accounting for 56 percent of the precious metals and minerals sector employment, followed by the gold and diamond sectors at 40 percent and 3 percent, respectively. The gold sector's employment continued trending downward, dropping by 1.8 percent, while the PGM and diamond sectors increased by 1.4 percent and 1.2 percent, respectively.

TABLE 17: EMPLOYMENT AND REMUNERATION IN SOUTH AFRICA'S PRECIOUS METALS AND MINERALS MINES, 2005 - 2012.

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000)	AVERAGE REMUNERATION (R/employee)
2005	337 701	26 143 212	68 100
2006	347 998	27 618 263	79 363
2007	371 945	35 040 346	64 208
2008	384 978	41 486 270	107 763
2009	356 197	44 064 129	123 707
2010	350 181	48 366 955	138 119
2011	352 570	53 614 447	152 068
2012	352 224	59 052 254	167 655

Source: DMR, Directorate Mineral Economics

OUTLOOK

According to Gold survey 2013, global gold demand is expected to increase in 2013 in response to lower gold prices. Demand for gold bullion and coins are currently at low levels, which could take a while for this new demand to feed into prices. Economic sluggishness is very likely to weaken international jewellery demand uptake for fabrication. The ongoing Central Bank purchases and growth in investment demand will be partially offset by a reduction in speculator positions and moderately lower Indian demand as import duties are expected to increase. Gold price is expected to stabilize and could rise into the year's end reaching $1,500/oz by early 2014.

Platinum demand remains affected by the poor state of the European auto sector. However, the ongoing issues surrounding platinum mine supply in South Africa should counterbalance weakness in demand. The metal's fundamentals are expected to improve towards the end of 2013, which will be supportive of a higher price. PGM Exchange Traded Funds (ETFs) registered gains in 2012 and are expected to grow further well into 2014. Improved economic expectations and possible further disruption to South Africa's mine production could imply that, after ETF investment, the metal will be in balance or a small deficit for the longer-term. The metal's price is therefore not expected to reach the high of 2012, but is expected to average around $1 450/oz (Johnson Matthey, Platinum 2012).

Palladium supplies are expected to decline again in 2013 as Russian stock sales diminish further and mine output from Russia and South Africa struggles to grow. The metal is expected to move into a supply deficit of about 450,000 oz in 2013 as production is mothballed in South Africa, which should ensure that prices remain firm in 2013. The metal price is expected to remain below $800/oz for the remainder of 2013. Rhodium supplies from all regions of production are expected to be flat in 2013. Demand for the metal in auto catalysts is expected to increase as global production of light duty vehicles continues to expand. However, the market is expected to be held in balance by increased recycling, leaving the metal trading at $1 100/oz on average.

Global rough diamond supply is expected to remain flat in 2013 on the back of production constraints, while growth in consumption from emerging economies such as China and India is expected to ensure that demand continues to increase. Rough diamond prices are expected to stagnate for the remainder of the year due to uncertainty relating to the Eurozone debt crisis and sustainability of economic growth in other

parts of the world. However, the mid- to long-term outlook for diamond prices still remains positive as constrained output is expected to struggle to keep pace with growing demand.

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DIAMONDS

DO. Moumakwa

WORLD OUTPUT

World rough diamond output rose by 3.2 percent from 123.9 million carats (Mct) in 2011 to 127.9 Mct in 2012 (Table 18). However, the value of production fell by 12.2 percent to $12.6 billion. The Russian Federation maintained a steady production to retain its position as the top producer by volume, with an output of just below 35 Mct. It was followed by the Democratic Republic of Congo (DRC) and Botswana, with outputs of 21.5 Mct and 20.5 Mct, respectively. South Africa ranked eighth with an output of 7.2 Mct, after Zimbabwe, Canada, Australia and Angola.

TABLE 18: WORLD ROUGH DIAMOND PRODUCTION, 2012.

	MASS		*VALUE*		
	Mct	*%*	*US$ mil*	*%*	*$/ct*
Angola	8.3	6.5	1 110	8.8	133.26
Australia	9.2	7.2	269	2.1	29.35
Botswana	20.5	16.0	2 979	23.6	144.95
Canada	10.4	8.1	2 007	15.9	192.07
DR of Congo	21.5	16.8	183	1.4	8.51
Lesotho[#]	0.5	0.4	301	2.4	629.43
Namibia	1.6	1.3	900	7.1	552.87
Russian Federation	34.9	27.3	2 873	22.7	82.28
Sierra Leone	0.5	0.4	163	1.3	301.56
South Africa[*]	7.2	5.6	1 027	8.1	145.13
Zimbabwe	12	9.4	644	5.1	53.40
Other	1.3	1.0	188	1.5	144.61
Total: 2012	*127.9*	*100.0*	*12 644*	*100.0*	*98.81*
2011	*123.9*		*14 407*		*116.19*

Source: KPCS Statistics
[*] DMR, Directorate Mineral Economics
[#] Only shown to indicate the high value of the stones

Botswana remained the largest producer by value at $2 979 million, while the Russian Federation closed the gap as its production value increased to $2 873 million. Other top producers by value include Canada, Angola and South Africa. The latter is now ranked fifth by value, after producing $1 027 million worth of rough diamonds. Despite being the second largest producer by volume, the DRC remained ninth by value at $183 million, with Australia completing the top ten at $269 million. At just 0.4 percent of the global output by volume, Lesotho is ranked outside the top ten by volume but, still produced the highest priced stones, with an average value of $629.43 per carat.

GLOBAL TRADE

Rough diamonds were exported to various diamond manufacturing and trading centres, mainly India, Belgium and Israel. The European Community was the world's top exporter of rough stones with 126.8Mct valued at $17.8, while it imported 124.813 million carats valued at $16.79 billion. India imported 151.8 Mct valued at $14.88 billion and exported 33.6 Mct of polished diamonds valued at $17 billion. Israel imported 13.3 Mct of rough stones valued at $4.66 billion and exported $5.56 billion worth of polished stones. Approximately 88.3 Mct of rough stones valued at $12 billion were imported into Belgium, while 6.9 Mct of polished stones valued at $13.2 billion left the country. Just less than 50 percent by value of SA's rough production was supplied into the country's cutting and polishing industry, while the rest was distributed to India, Israel and Belgium for cutting and polishing purposes.

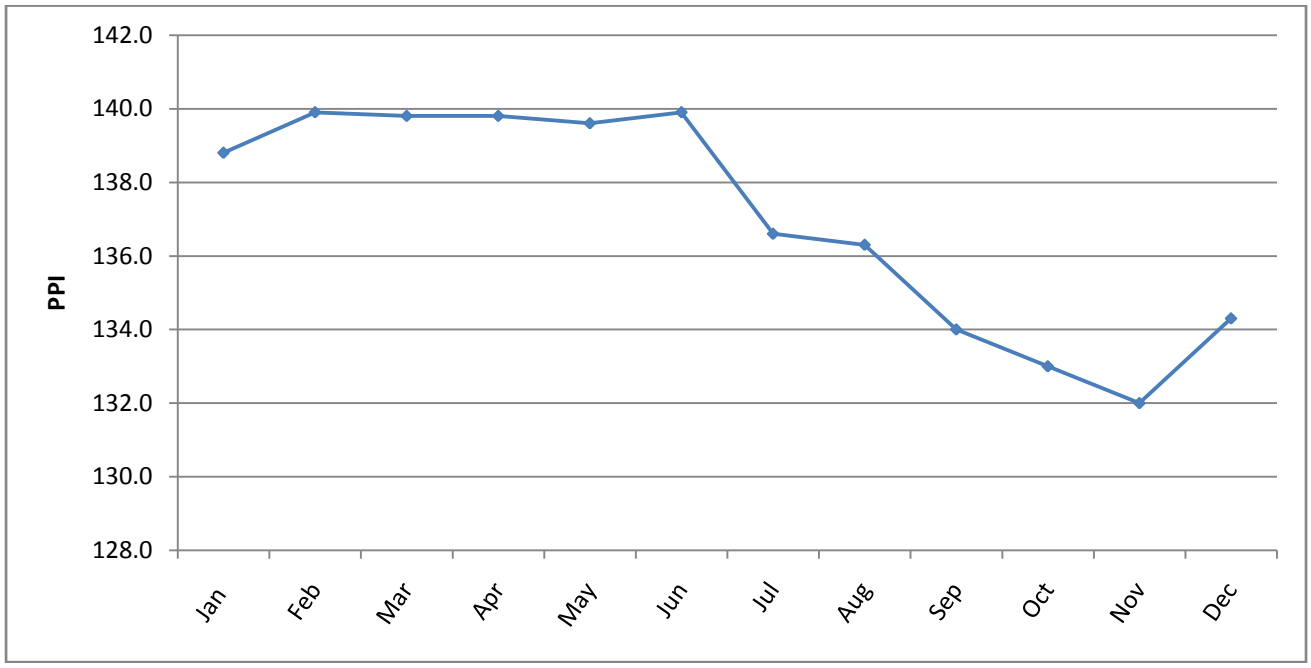
The USA and Hong Kong remained the major export markets for polished diamonds from both Israel and Belgium, while the United Arab Emirates (UAE) emerged as the top export destination of polished stones from India. The majority of the rough diamonds exported from South Africa ended up in Belgium and Israel

as the primary destinations because the majority of De Beers' sight holders' downstream partners for further distribution are based in those locations. The resultant polished stones were further distributed to the USA and China as these are currently the markets with the greatest demand. The former imported $19.6 billion worth of polished diamonds from all trade partners, compared to China's $16.6 billion.

POLISHED DIAMOND PRICES

The International Diamond and Jewellery Exchange (IDEX) online global polished diamond price index (PPI) indicates that average global polished diamond prices rose marginally by 0.8 percent from 135.8 in 2011 to 137 in 2012. The demand declined progressively throughout 2012 as the PPI fell by 3.2 percent between January 2012 and December 2012 (Figure 8). After increasing by 0.8 percent month on month in February 2012, the PPI remained largely unchanged for the next four months as the market remained relatively quiet. This was followed by a 2.4 percent decline in July 2012 as demand weakened further. The downward trend continued until November 2012 as uncertain economic outlook continued to fuel reduced demand. Prices rose again in December 2012 as the holiday season led to increased demand.

FIGURE 8: THE IDEX ONLINE MONTHLY AVERAGE POLISHED DIAMOND PRICE INDEX, 2012.



Note: PPI is a percentage number that shows the extent to which a price has changed over a period as compared with the price in a certain year, in this case April 2004-March 2005, taken as a standard year.
Source: IDEX Online.

DEVELOPMENTS IN SOUTH AFRICA

Local Production and Sales

South Africa's diamond production rose by a moderate 2.8 percent from 7.0 Mct in 2011 to 7.2 Mct in 2012 (Table 19). According to DMR statistics, a total of 97 licensees produced diamonds in 2012, of which 15 mined kimberlites, 14 exploited marine deposits and 68 recovered diamonds from alluvial environments. However, kimberlites were the source of 97 percent of the country's production, while alluvial and marine diamonds made up the remaining 3 percent. Production from De Beers and Petra Diamonds accounted for 94 percent of total production, and despite dominating the marine sector, Trans-Hex and Alexkor contributed less than one percent each.

Local sales mass increased by 49.4 percent as more stones became available for the local market, after the sale of Finsch mine from De Beers to Petra Diamonds in September 2011. This also led to a decrease of 10.7 percent in export sales mass and value.

TABLE 19: SOUTH AFRICA'S ROUGH DIAMOND PRODUCTION AND SALES, 2012.

	Production	Local sales		Export sales		Total Sales	
Kimberlites	*Mass (cts)*	*Mass (cts)*	*Value (R mil)*	*Mass (cts)*	*Value (R mil)*	*Mass (cts)*	*Value (R mil)*
2012	7 062 701	2 498 172	3 531	4 379 237	4 159	6 877 409	7 690
2011	6 817 742	1 566 242	2 581	4 923 966	4 763	6 490 208	7 344
% Change	3.6	59.5	36.8	-11.1	-12.7	6.0	4.7
Alluvial							
2012	158 479	174 936	1 532	66 414	574	241 350	2 106
2011	197 590	206 927	1 818	53 461	495	260 388	2 313
% Change	-19.8	-15.5	-15.7	24.2	16.0	-7.3	-8.9
Marine							
2012	24 222	25 332	136	5 088	47	30 420	183
2011	31 312	32 589	182	8 963	93	41 552	275
% Change	-22.6	-22.3	-25.3	-43.2	-49.5	-26.8	-33.5
Total							
2012	7 245 402	2 698 440	5 199	4 450 739	4 780	7 149 179	9 979
2011	7 046 644	1 805 758	4 581	4 986 390	5 351	6 792 148	9 932
% Change	2.8	49.4	13.5	-10.7	-10.7	5.3	0.5

Source: DMR, Directorate Mineral Economics

Employment

South Africa's diamond industry employed on average, 12 176 people in 2012, a modest increase of 1.2 percent year on year (Table 20). Total remuneration continued its upward trend, increasing by 14.3 percent to R2.4 billion, bringing the average remuneration per employee to R197 512 per annum.

TABLE 20: EMPLOYMENT (INCLUDING CONTRACTORS) AND REMUNERATION IN SOUTH AFRICA'S DIAMOND MINING INDUSTRY, 2012.

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000)	AVERAGE REMUNERATION (R/employee)
2008	18 609	2 181 625	117 235
2009	12 109	1 809 550	149 438
2010	11 159	1 912 019	171 343
2011	12 030	2 142 965	178 135
2012	12 176	2 404 916	197 512

Source: DMR, Directorate Mineral Economics

Projects and Other Developments

SA's production continues to decrease in the 21st century and, despite peaking at 15.8 Mct in 2005 it has generally decreased by 35.7 percent from 11.2 Mct in 2001 to 7.2Mct in 2012. This is due to the non-discovery of major deposits, not only in SA but globally as well. This is partly because the focus is predominantly on brown-field exploration and acquisition of existing operations. Rockwell Diamonds, for example, acquired Jasper mine, next to its Saxendrift complex, located near the Middle Orange River, in the Northern Cape Province. A first phase of trenching and exploratory work on the property in July/August 2012, had recovered results exceeding the company's expectations. Rockwell is now preparing to undertake a second drilling programme on the property, which could potentially extend the Saxendrift operation's mine life.

Expansion plans recently announced for the two major producing mines give a glimpse of hope in terms of production. Petra Diamonds secured a revolving credit facility of $25 million from the International Finance Corporation (IFC), which it would use to expand its production at Finsch mine. The company estimated that the life of mine (LOM) could be extended by 18 years. On the other hand, De Beers would be investing R20 billion in the expansion of Venetia mine, which would extend the LOM to 2042. The development and

build phase of the underground mine was expected to create 1 000 jobs over nine years while open-pit mining operations continued. Underground operations would begin production in 2021, yielding 96 million carats during the LOM, and securing more than 3 000 jobs. However, such projects should not be seen as replacements for the discovery of other world-class deposits through modern exploration techniques in areas yet to be exhaustively explored. Research and development in modern diamond exploration techniques are therefore critical in maximizing the potential of finding other world-class diamond deposits, and can also be focused on ore bodies currently considered marginal or sub-economic.

South Africa assumed the chairmanship of the Kimberley Process Certification Scheme (KPCS) in 2013. As a result, the country hosted the Scheme's intercessional meeting from the 4th to the 7th of June 2013 in Kimberley, which brought together representatives of governments, the diamond industry and civil society to discuss ways of strengthening the effectiveness of the rough diamond certification scheme to ensure that diamond trade does not finance violence by rebel movements, seeking to undermine legitimate governments. The meeting, coinciding with the tenth anniversary of the inception of the KPCS, recognized the scheme as having made a significant contribution to improving the lives of people dependent on diamond trade. Recommendations from the intercessional meeting will be considered at the plenary meeting to be held later in 2013, also in South Africa.

OUTLOOK

Global rough diamond supply is expected to remain flat in 2013 on the back of production constraints, while growth in consumption from emerging economies such as China and India is expected to continue demand increase. Rough diamond prices are expected to stagnate for the remainder of the year due to uncertainty relating to the Eurozone debt crisis and sustainability of economic growth in other parts of the world. However, the mid- to long-term outlook for diamond prices still remains positive as constrained output is expected to struggle to keep pace with growing demand.

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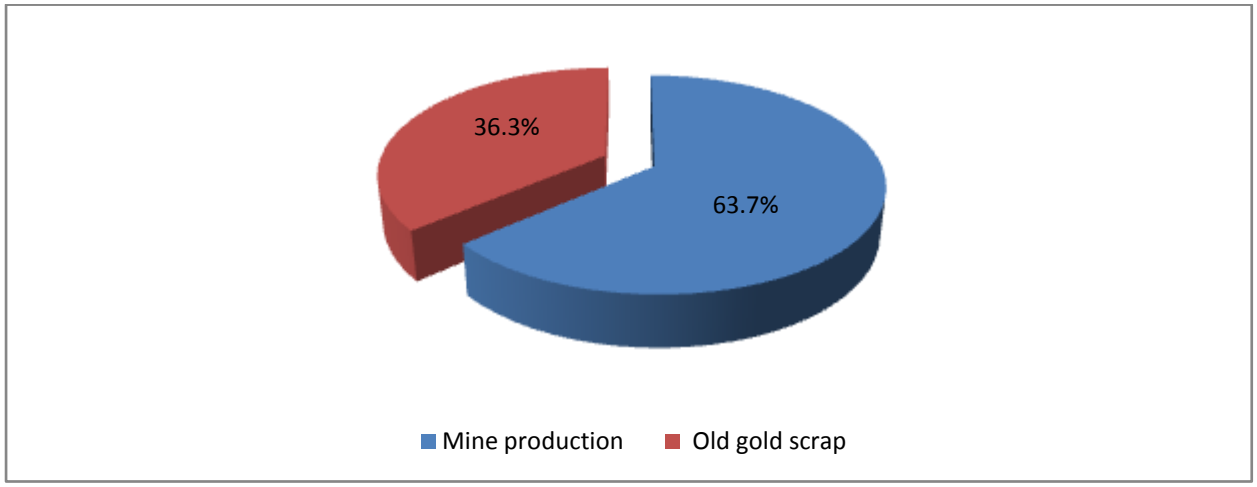
GOLD

PJ Perold

WORLD SUPPLY

Total world gold supply, which includes mine production and scrap supply, decreased by 1.0 percent from 4 496.3 t in 2011 to 4 453 t in 2012. This is attributed to a decrease in global scrap supply, which accounted for 36.3 percent (1 616.0 t) of total supply, representing a decrease of 3.2 percent from 2011 to 2012 (Figure 9). Mine production stood at 2 837 t accounting for 63.7 percent of total supply and increased by 0.7 percent, due to regional supply-gains in China, Russia and Latin America. The top four global gold companies; Barrick Gold (Pty) Ltd, Newmont Mining (Pty) Ltd, AngloGold Ashanti (Pty) Ltd and Goldfields (Pty) Ltd contributed 604.1 t, representing 13.6 percent of total global gold production.

FIGURE 9: WORLD GOLD SUPPLY, 2012



Source: Klapwijk, et al, 2013, pp 8 – 9

Regional global production gains came from Asia, the Common-Wealth of Independent States (CIS) and Latin America, with production increasing by 2.6 percent, 0.8 percent and 0.5 percent respectively when compared with 2011. South Africa contributed 5.4 percent to total gold production in 2012 (Table 21), positioning the country as the sixth largest global producer.

TABLE 21: WORLD GOLD RESERVES AND MINE PRODUCTION, 2012

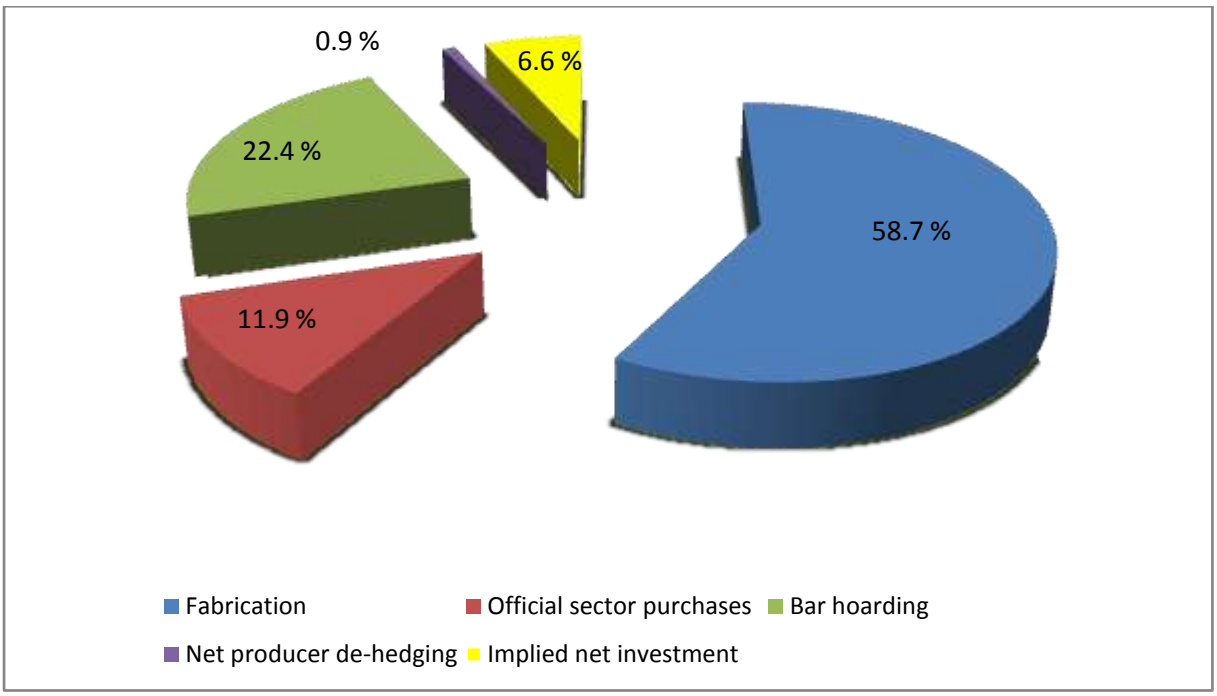
COUNTRY	RESERVES[#]			PRODUCTION°		
	t	%	Rank	t	%	Rank
Australia	7 400	14.5	1	250.1	8.8	2
China	1 900	3.7	6	413.1	14.6	1
Canada	920	1.8	8	108.2	3.8	7
Ghana	1 600	3.1	7	95.8	3.4	8
Peru	2 200	4.3	5	185.0	6.5	5
Russia	5 000	9.8	3	230.1	8.1	4
South Africa	6 000	11.8	2	154.2*	5.4	6
USA	3 000	5.9	4	231.3	8.2	3
Other	22 980	45.1	-	1 169.2	41.2	-
TOTAL	51 000			2 837.0	100	

Sources: [#] *USGS, 2013, pp 66-67*
[°] *Klapwijk, et al, 2012, pp 40 - 41*
[*] *DMR, Directorate Mineral Economics*

WORLD DEMAND

Total world demand was driven by implied net investment at 58.6 percent of total demand, followed by bar hoarding and official sector purchases at 22.9 percent and 11.9 percent respectively. In 2012, total world gold demand fell by 1.0 percent from 4 496.3 t in 2011 to 4 453 t in 2012, mainly as a result of the decline in physical bar investment and fabrication, which decreased by 16.6 percent and 4.2 percent to 998 t and 1 893 t respectively. These decreases outweighed the 16.4 percent increase in Reserve Bank purchases to 532 t and, signalled a return to modest producer de-hedging. Since 2010, central banks have been net buyers of gold, driven in part by uncertainty over the future of the international monetary systems and the need to diversify reserves. South Africa's Reserve Bank (SARB) maintains gold reserves at approximately 4 million fine ounces, which are passively managed. Demand for jewellery fabrication decreased by 8.2 percent, mainly due to losses in gold fabrication from India.

FIGURE 10: WORLD GOLD DEMAND, 2012

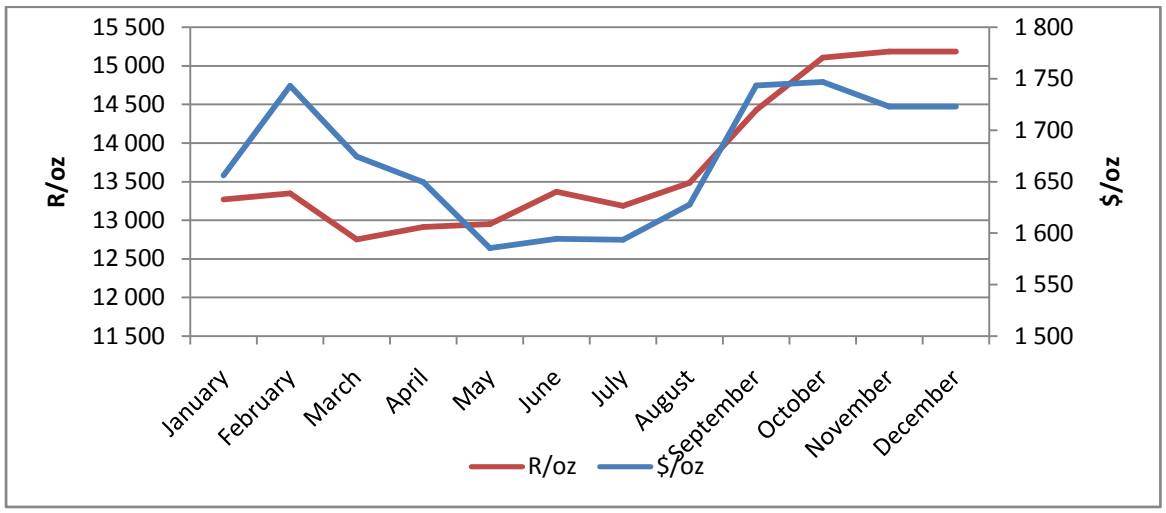


Source: Klapwijk, et al, 2013, pp 8 – 9

PRICES

The average dollar gold price for 2012, at $1 671.57/oz (Figure 11 and Table 22) was 6.5 percent higher than in 2011. While the stronger gold price was driven by investors hedging against economic and financial risk, US monetary policy became an increasingly significant driver of sentiment over the rest of the year. The metal averaged at a price of $1 656.11/oz in January 2012 (Table 22) and $1 722.74/oz in December 2012, an increase of 4.0 percent.

FIGURE 11: AVERAGE GOLD PRICE MOVEMENTS IN RANDS AND DOLLARS, 2012



Source: LBMA, 2012, 2013
SARB, 2012, 2013

TABLE 22: LONDON GOLD PRICE[+], 2012

MONTH	AVERAGE[#]	AVERAGE[#]	HIGH*	LOW*
	$/ozt	R/ozt	$/ozt	$/ozt
January	1 656.11	13 267.70	1 744.00	1 590.00
February	1 742.86	13 349.17	1 788.00	1 711.00
March	1 674.41	12 752.50	1 721.00	1 635.00
April	1 649.30	12 914.00	1 677.50	1 621.00
May	1 585.31	12 948.13	1 664.00	1 537.50
June	1 594.55	13 370.04	1 635.00	1 552.50
July	1 593.35	13 184.99	1 622.75	1 556.25
August	1 627.64	13 484.40	1 668.00	1 594.75
September	1 743.19	14 424.75	1 784.50	1 686.00
October	1 746.68	15 103.51	1 791.75	1 704.00
November	1 722.74	15 184.07	1 750.50	1 679.00
December	1 722.74	15 184.07	1 720.00	1 648.25
2012 average	1 671.57	13 763.94	1 713.92	1 626.27

Sources: [#] *South African Reserve Bank, 2012, 2013*
* *London Bullion Market Association, 2013*
Note: [+] *London AM and PM fixings*

The use of gold as a hedge against economic and inflationary risk became most apparent during the first quarter, as low federal rates and the downgrading of 9 Eurozone nations resulted in a 1.1 percent rise in the average gold price to $1 674.41/oz. However, the price fell by 9.0 percent during late February 2012 to mid-May 2012, as a result perceived negative economic outlook. Other factors that contributed to the decline during this time-frame included a cut in economic forecasts, Greece's debt restructuring and a recession in Spain. Despite these occurrences, a gradual return of investor confidence helped to support price movements from $1 585.31/oz in May 2012 to $1 594.55/oz in June 2012. The average price continued to increase during the third and fourth quarters of 2012, reaching a high of $1 746.68/oz in October 2012. In addition, investment funds had increased their gold exposure and the European Central

Bank (ECB) re-affirmed its position as buyer of last resort. The increase during the fourth quarter was attributed to gold market dynamics shifting from US economic announcements of employment in the non-farm payrolls to US unemployment issues.

SOUTH AFRICAN DEVELOPMENTS

Production and sales

South Africa's gold production, declined by 14.5 percent from 180.3 t in 2011 to 154.2 t in 2012 (Table 23). This country remained the sixth largest global producer. The decrease in production during the first half of 2012 was mainly due to production stoppages resulting from fatalities. The remainder of the year saw production levels decreasing dramatically due to the widespread wage disputes which continued well into the fourth quarter of 2012.

Total sales revenues increased by 11.5 percent to R76.8 billion, due to a 19.8 percent rise in the average rand gold price for the year. Export sales value increased by 15.3 percent in 2012, mainly due to an increase in the average gold price for the year, despite a decrease of 6.0 percent in export sales volumes compared to 2011. Local sales volumes increased by 10.9 percent from 10.2 t in 2011 to 11.3 t in 2012. However, According to the data from the South African Diamond and Precious Regulator (SADPMR), there was an overall decrease in precious metals licenses issued in 2012 compared with 2011, as well as a 56 percent drop on jeweller's permits issued in the same period. SARB gold holdings increased by 0.08 percent from 125.0 t in 2011, to 125.1. Its value increased by 15.3 percent from R 51.42 billion in 2011 to R 59.29 billion in 2012 (Table 23).

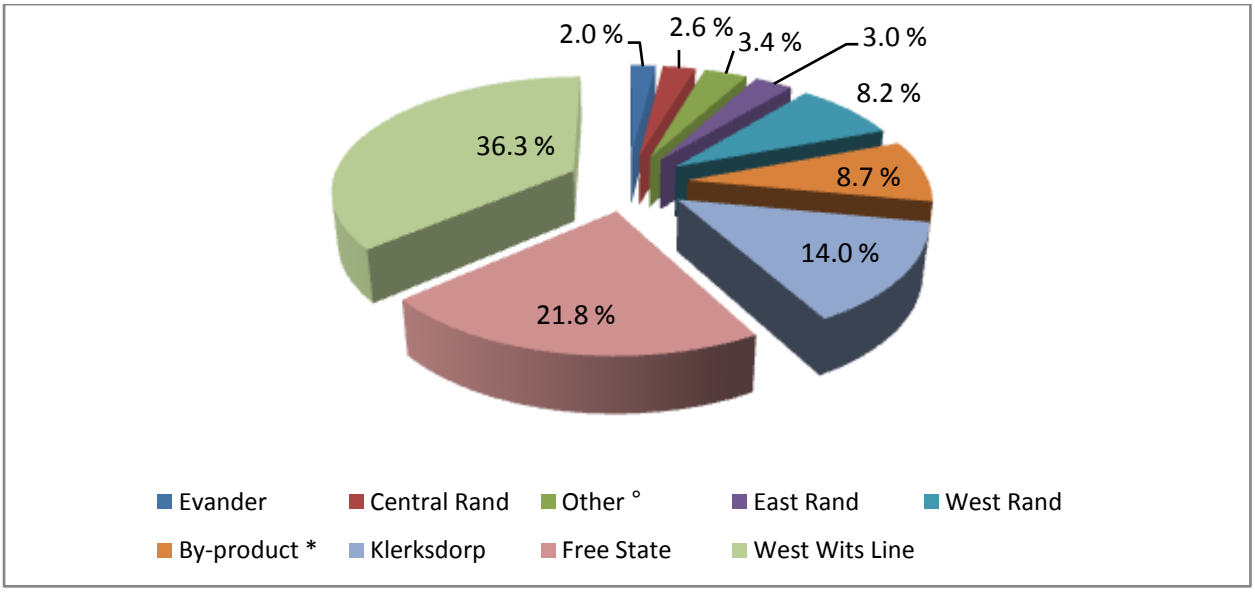
TABLE 23: SOUTH AFRICA'S GOLD PRODUCTION, TOTAL SALES VALUE AND RESERVE BANK HOLDINGS, 2011 – 2012

YEAR	PRODUCTION[#]	TOTAL SALES VALUE[#]	RESERVE BANK HOLDINGS*	
	t	R ' 000	t	R ' 000
2003	373.3	33 052 899	123.6	9 798 741
2004	337.2	29 329 871	123.9	8 886 591
2005	294.7	24 601 241	124.0	12 970 035
2006	272.1	37 443 092	124.1	17 634 409
2007	252.6	38 035 724	124.3	22 843 006
2008	212.7	45 992 244	124.7	32 426 081
2009	197.6	48 695 502	124.8	32 752 733
2010	188.7	53 093 147	124.9	37 492 459
2011	180.3	68 891 413	125.0	51 420 484
2012	154.2	76 824 504	125.1	59 290 225

Sources: *South African Reserve Bank, 2003 - 2013*
*DMR, Directorate Mineral Economics*
Note: * *Gold holdings at year-end*

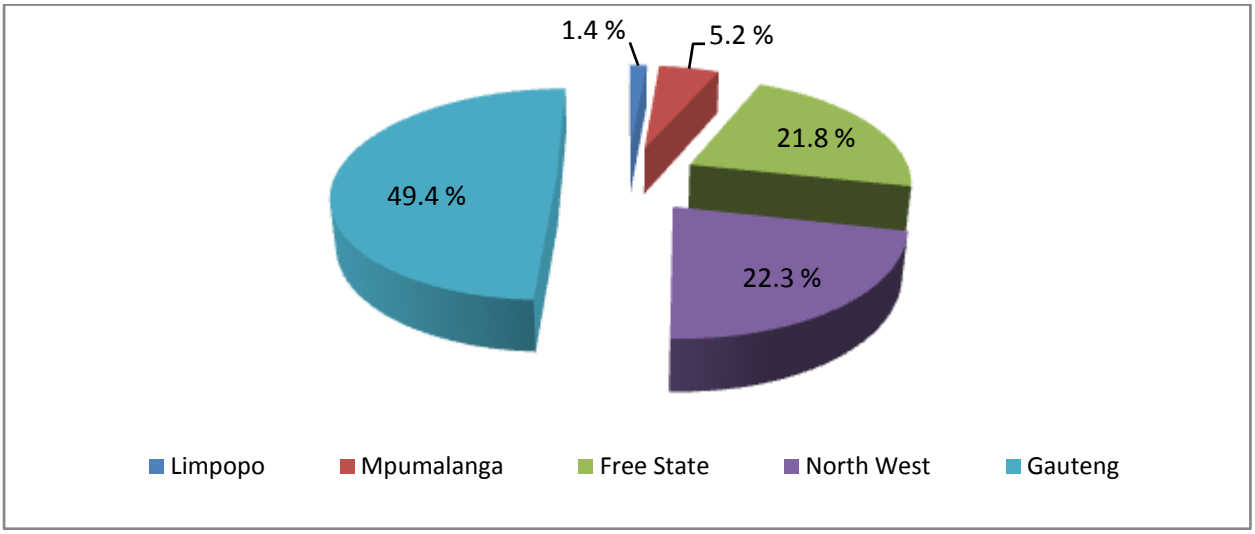
Gauteng was the largest gold producer, accounting for 49.4 percent of total production, while West Wits Line yielded the largest gold production accounting for 36.3 percent of total production (Figure 12 and 13).

FIGURE 12: SOUTH AFRICA'S PRIMARY GOLD PRODUCTION AND CONTRIBUTION TO TOTAL PRODUCTION BY GOLD FIELD, 2012 (T, %)



Source: *DMR, Directorate Mineral Economics*
Note: ° *Gold mines outside the Witwatersrand Basin*
* *Platinum and base metal mines*

FIGURE 13: SOUTH AFRICA'S PRIMARY GOLD PRODUCTION AND CONTRIBUTION TO TOTAL PRODUCTION BY PROVINCE, 2012 (T, %)



Source: *DMR, Directorate Mineral Economics*
Note ° *Gold Mines outside the Witwatersrand Basin*

Employment

Total employment in the gold mining sector fell by 1.8 percent from 144 799 in 2011 to 142 201 in 2012, due to restructuring and retrenchment in the first and third quarters of 2012 (Table 24). In contrast, total remuneration increased by 6.7 percent in the same period.

TABLE 24: SOUTH AFRICA'S GOLD MINES, EMPLOYMENT AND REMUNERATION, 2008 – 2012

YEAR	NUMBER OF EMPLOYEES*			REMUNERATION		
	Total	Male	Female	Total R ' 000	Male R ' 000	Female R ' 000
2008	166 424	158 011	7 513	15 960 051	15 248 317	711 734
2009	159 925	150 562	9 363	17 371 249	16 338 917	1 032 332
2010	157 019	145 865	11 154	19 844 856	18 481 016	1 363 840
2011	144 799	133 172	11 627	20 840 802	19 219 230	1 621 572
2012	142 201	129 940	12 261	22 238 338	20 342 069	1 896 269

Source: *DMR, Directorate Mineral Economics*
Note: * *Average number of employees in service, including contractors*

Projects and other development

South Africa's gold production continued trending downward, due to the deep level mining. However, recent research in new technology of robotics could provide producers with a means to access deep level gold mines to exploit decommissioned shafts, which could have a positive spin on the production trend of the country.

Goldfields Limited (Ltd) implemented a new mechanisation model at its developing South Deep mine. The model increased production, facilitated cooperation between stakeholders and created 300 additional jobs to date. In addition, the company committed to spend over $1 billion to bring the new mine to full production. The mine is expected to produce over 700 000 oz of gold per year by the end of 2015 and could herald a new era of production.

Acid Mine Drainage (AMD) remains a challenge in the Witwatersrand Basin, and requires an estimated R924 million to implement short term AMD programme. However, Government could only fund R 433 million towards the programme, and is thus seeking private sector funding to resolve the AMD challenges the country is facing today.

The majority of exploration expenditure was focused on Brownfield mine deposits in the sector. However, Wits Gold commenced geotechnical drilling for the shaft positioning at its advanced DBM project in the Free State gold field in October 2012, positioning the company as the leader in Greenfield exploration.

In the year 2012/2013 the following transactions occurred in the gold sector:

- Gold One acquired Rand Uranium For $ 250 million
- Pan African Resources Acquired Harmony's Evander mine for R1.5 billion
- Kumvest holdings acquired a 26 percent stake in first Uranium
- CAPM acquired liquidated miner Pamodzi's Orkney gold mine
- AngloGold Ashanti acquired Mine Waste Solutions (MWS), adding 25 000 tons of Uranium to its production profile.

The above developments are indicative of a vibrant, albeit changing gold industry. Possible advancements and combinations of new developments, such as mine mechanisations and research in new technology (mining robots) could provide the country with the means to maintain deep-level gold mining, curb fatalities and exploit decommissioned shafts thereby lessening expected decreases in production

Beneficiation

Gold beneficiation in South Africa is mainly conducted by various jewellery hubs within the industry, and mines selling directly to jewellers. The jewellery industry employs both skilled and unskilled labour. These hubs also provide downstream employment in the South African gold industry in terms of fabrication. Statistics released by the DMR indicates that 6.4 percent of total gold production was sold locally, amounting to over R4.9 billion. This figure also includes gold sold for fabricating gold coins and special uses, such as dentistry.

OUTLOOK

According to the World Gold Council (WGO), total world gold demand is expected to increase in 2013, in response to lower gold prices, which is expected to increase global mine production. In contrast, gold scrap supply is expected to drop modestly in line with a gradual decline in price levels (secular bear market). Central Bank purchases, which are less dependent on gold prices, are expected to increase again in 2013, which will ease a possible production surplus in the market. Economic sluggishness is very likely to weaken international jewellery demand uptake for fabrication. Investment demand and exchange traded funds (ETF's) are expected to increase in line with a decrease in the dollar gold price. The price in rand terms is forecast to decrease by 0.2 percent to an average of R 434 271/kg as a 17.5 percent weaker R/$ exchange rate is expected to offset losses from the weaker dollar price, which is expected to come to the fore in 2013. Average gold price in dollar terms is expected to decrease by 15.7 percent from $1 669/oz in 2012 to $1 407/oz in 2013, on the back of a stronger U.S economy. Weak gold prices coupled with rising costs could put pressure on SA's gold sector. It is thus critical that the sector looks at more efficient and effective methods of mining. South Africa's production is expected to decrease by 2.0 percent to 151.2 t in 2014.

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PLATINUM-GROUP METALS (PGMs)

DO Moumakwa

WORLD SUPPLY

Global PGMs supplies in 2012 were largely affected by production disruptions in South African mines as a result of labour unrests. However, South Africa remained the leading supplier of platinum, despite a 16 percent decrease to a 12-year low of 116.1 metric tons (t), leading to a 13 percent decrease to 159.9 t of global supplies (Table 25).

TABLE 25: GLOBAL PGMS RESERVES AND SUPPLY, 2012.

	*RESERVES			SUPPLY (t)				
COUNTRY	t	%	Rank	Platinum	Palladium	Rhodium	Total	%
North America	1 210.0	1.8	2.0	8.4	25.7	0.7	34.7	9.5
Russia	1 100.0	1.7	3.0	22.7	81.6	2.6	106.9	29.2
South Africa	63 000.0	95.5	1.0	116.1	66.1	16.3	198.5	54.2
Zimbabwe	na	na	na	9.6	7.5	0.9	18.0	4.9
Others	690.0	1.0	-	3.1	4.8	0.1	8.0	2.2
TOTAL	66 000.0	100.0		159.9	185.7	20.5	366.0	100.0

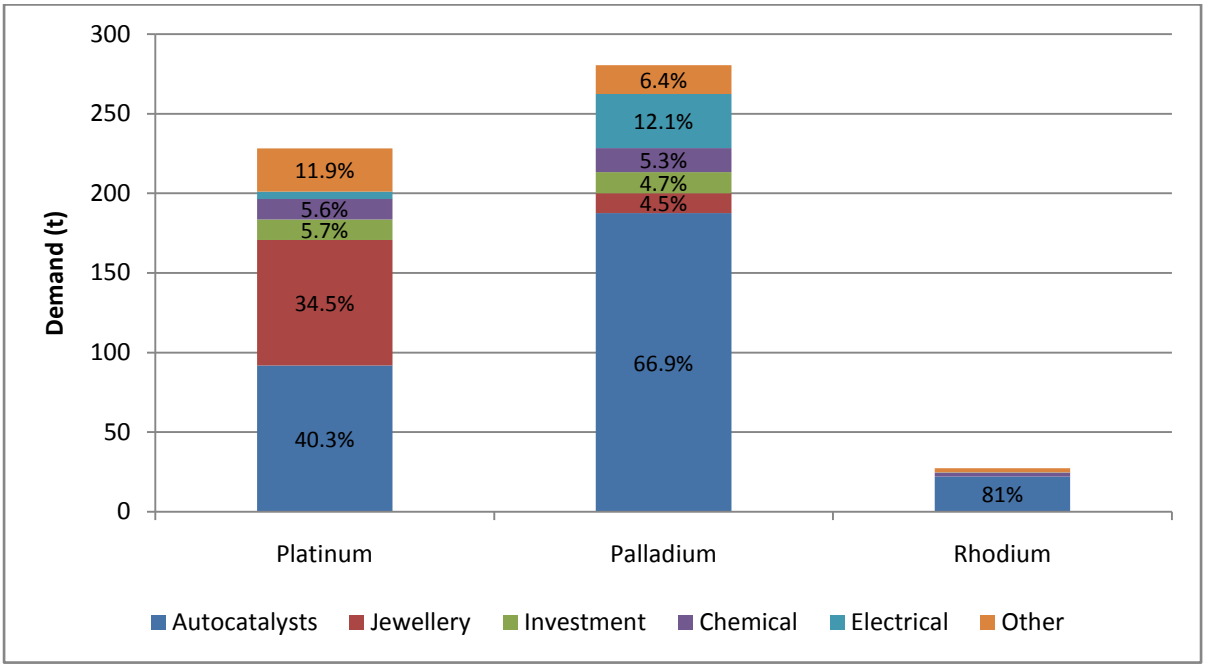
Sources:Johnson Matthey's Platinum 2013
**USGS, 2013*

Global palladium supply fell by 11 percent to 185.7 t, the lowest since 2002, as a result of lower primary and secondary supplies. In addition to a 9 percent decrease in SA palladium supply, Russian mine output declined by 3 percent to 74.6 t, while sales from Russian state stocks fell by two thirds to 7.0 t. Global rhodium supply declined by 5.6 percent to 20.5 t as a 10 percent decrease in SA supply was partly offset by a 28.5 percent increase in Russian supply.

WORLD DEMAND

Despite a depressed light vehicle market in Europe and a lower market share for diesel vehicles, gross demand for platinum in auto catalysts accounted for 40.3 percent of total platinum demand in 2012, after increasing by 1.7 percent to 91.9 t (Fig 14). This is attributed to increased output of vehicles in Japan and diesel vehicles in India, as well as increased demand from heavy duty vehicles. The gross platinum demand in auto catalysts also includes the metal required to control emissions from diesel non-road mobile machinery. Jewellery demand accounted for 34.5 percent of platinum's total demand, recording a 12 percent growth to 78.8 t due to retail expansion and building of stock in China. At 12.9 t, investment demand for the metal was steady and accounted for 5.7 percent, largely due to the persistence of strong investor interest in North America and higher production of coins world-wide. Other applications, including glass manufacturing, petroleum, medical and biomedical, accounted for just fewer than 12 percent of platinum's total demand.

FIGURE 14: PGMS DEMAND BY APPLICATION, 2012.



Source: Johnson Matthey's Platinum 2013.

Gross palladium demand in auto catalysts reached a new record of 187.5 t, on the back of recovering car output in Japan, China and North America. This represented two-thirds of the metal's total demand. The electrical sector, despite posting a decline in sales and production, was the second largest palladium demand driver, accounting for 12.1 percent of total demand at 34 t. It was followed by the chemical industry, which grew by 20 percent to 15 t, representing 5.3 percent of total demand. The largest chemical sector use for palladium remained in catalytic applications for the production of purified terephthalic acid. The jewellery and investment sectors combined accounted for less than 10 percent, while other applications were responsible for 6.4 percent of total demand.

Gross rhodium demand was almost exclusively from the automotive industry, which consumed 22.2 t, its highest level in 5 years. This was attributed to a significant increase in light duty gasoline vehicle output in Japan, as the industry returned to normal after production interruptions by the 2011 earthquake and tsunami, as well as an increase in light duty vehicle output in North America due to improved demand for cars and trucks. Demand for rhodium auto catalysts for the production of acetic acids was largely responsible for the 8.4 percent (2.3 t) of total demand attributable to the chemical sector.
Even though some of platinum's total gross demand of 228.1 t was accounted for by 57.5 t from recycling, the market was still undersupplied by 10.6 t in 2012 (Table 26).The palladium market was also under-supplied by 30.3 t while, by contrast, the rhodium market was close to balance in 2012 after a 6 percent growth in gross demand to 27.4 t. PGMs recoveries from auto catalysts were impacted by low prices and continued weakness in the European car market. Recycling of platinum from electrical goods was far lower than palladium as the only significant potential source, hard disks; contain minute quantities of the metal, which make recovery and refining uneconomical. The opposite was true for recycling of platinum from jewellery, the majority of which was from old jewellery traded in, in exchange for new pieces.

TABLE 26: PGMS SUPPLY, DEMAND AND RECYCLING, 2012.

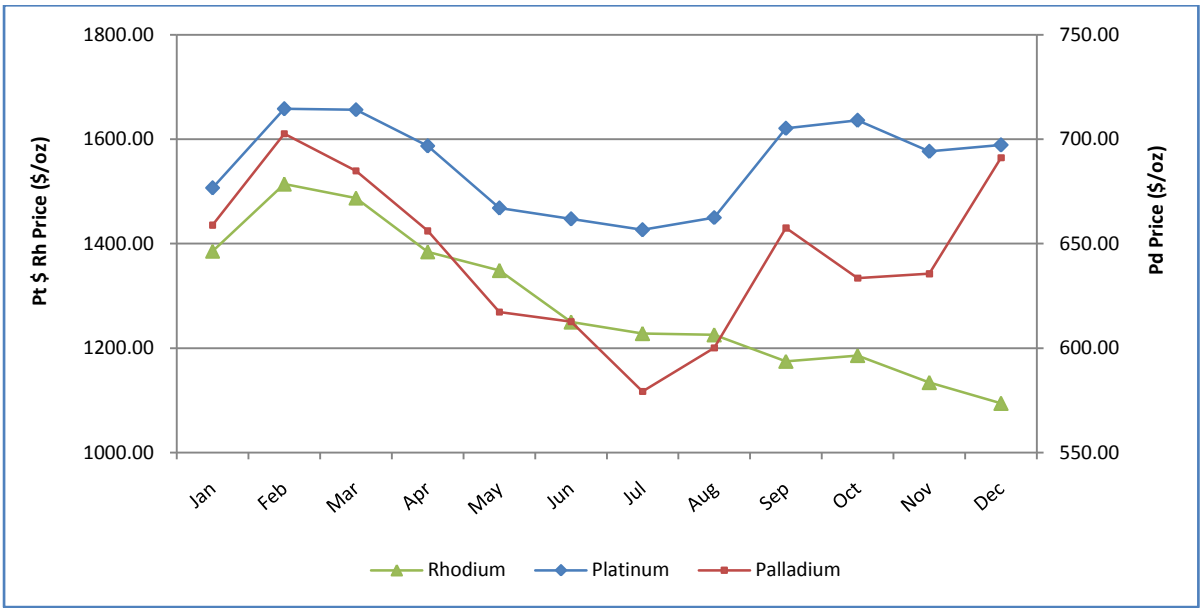
Metric Tons (t)	Platinum	Palladium	Rhodium	Total
Total Supplies	159.9	185.7	20.5	366.1
Total Gross Demand	***228.1***	***280.5***	***27.4***	***536.0***
Recycling				
Auto catalysts	32.0	47.1	7.4	86.5
Electrical	0.3	12.2	0.0	12.5
Jewellery	25.2	5.4	0.0	30.6
Total Recycling	***57.5***	***64.7***	***7.4***	***129.6***
Total Net Demand (total gross demand – total recycling)	**170.5**	**215.9**	**20.0**	**406.4**
Market Balance (total supply – total net demand)	***-10.6***	***-30.3***	***0.5***	***-40.4***

Source: Johnson Matthey's Platinum 2013.

PRICES

PGMs prices in 2012 were largely driven by supply concerns as a result of labour disruptions in South Africa. After opening the year at $1 408/oz, the platinum price increased in February as investors, in anticipation of lower supplies, drove the price higher, reaching a high of $1 729 later in the month (Fig 15). However, the price decreased progressively over the next five months due to a combination of perceived weak demand, oversupply, falling gold price and macroeconomic anxiety surrounding the Euro zone. The price hit a low of $1 390/oz in early August, although the average for the month increased. As labour disruptions in South Africa intensified, the price recovered, even regaining the $1 700/oz level in October. Closing at $1 523/oz meant that platinum gained 8 percent ($115) over the course of the year, while the 2012 average price of $1 552/oz was 10 percent higher than in 2011.

FIGURE 15: PGM MONTHLY AVERAGE PRICES, 2012.



Source: Johnson Matthey

Palladium price largely followed platinum and after opening the year at $655/oz, it also reached an annual high of $722/oz in February. The prices generally dipped sharply between March and July, hitting an annual low for the year of $564/oz on July 24. After moving up rapidly in August as a result of renewed supply concerns, the price moved further up in September due to an increase in August US auto sales. The palladium price gained $44 (7 percent) over the course of 2012 after closing at $699/oz, but at $643/oz, the average price for the year decreased by 12 percent.

The rhodium price was on a downward spiral for the better part of the year, due to prevailing weak market sentiments that also dragged down platinum and palladium. In fact, the monthly average price for rhodium increased only twice throughout the year, in February and in October. Overall, the metal traded on average at $1 284/oz, 37 percent lower than in 2011.

DEVELOPMENTS IN SOUTH AFRICA

Production and Sales

SA's PGMs production decreased by 12 percent to 254.3 t in 2012, largely due to labour unrests that affected major producers, including Amplats, Impala and Lonmin (Table 27). A six week strike at Impala Platinum in the first quarter of the year cost the company 3.4 t in lost production, while production at Longman's Marikana mine was halted for six weeks by a wage dispute. This was followed by suspension of operations at Amplats' Rustenburg operations, which continued well into the fourth quarter, costing the company at least 4.2 t in lost production. Over 20 t were lost due to legal and illegal strikes, as well as the closure of some mining operations. Safety stoppages had an impact on production in 2012, but at a much lower level compared to 2011.

TABLE 27: SOUTH AFRICA'S PGMS PRODUCTION AND SALES, 2012 AND 2011.

	Production	Local sales		Export sales		Total Sales	
Platinum	Mass (t)	Mass (t)	Value (R mil)	Mass (t)	Value (R mil)	Mass (t)	Value (R mil)
2012	128.6	12.6	5 113.3	115.0	45 003.4	127.6	50 116.7
2011	148.0	17.2	6 887.0	133.9	52 121.0	151.1	59 008.0
% Change	- 13.1	- 26.7	- 25.8	- 14.1	- 13.7	- 15.6	- 15.1
Palladium							
2012	74.7	16.0	2 652.4	57.2	9 133.1	73.2	11 785.5
2011	82.7	18.0	3 045.0	63.7	10 383.0	81.7	13 428.0
% Change	- 9.7	- 11.1	- 12.9	- 10.2	- 12.0	- 10.4	- 12.2
Rhodium							
2012	17.8	1.2	403.5	16.7	5 346.5	17.9	5 750.0
2011	20.3	2.5	1 081.0	27.0	11 593.0	29.5	12 674.0
% Change	- 12.3	- 52.0	- 62.7	- 38.1	- 53.9	- 39.3	- 54.6
AllPGMs							
2012	254.3	30.4	8 285.2	210.9	60 924.0	241.3	69 209.2
2011	288.9	36.8	10 619.0	244.0	73 234.0	280.8	83 853.0
% Change	- 12.0	- 17.4	- 22.0	- 13.6	- 16.8	- 14.1	- 17.5

Source: DMR, Directorate Mineral Economics

Local sales mass and values declined by 17.4 percent and 22 percent respectively, as the Eurozone crisis weighed down heavily on the demand from auto catalysts, the sole market for local sales. Similarly, export sales mass declined by 13.6 percent, while the corresponding value fell by 16.8 percent. Rhodium was the hardest hit in terms of sales, with local sales mass and value declining by 52 percent and 62.7 percent, respectively, while export sales also recorded a more than 50 percent decline in revenue. Platinum was the worst performer in terms of production, with a 13.1 percent decrease, while palladium was the least affected in terms of both production and sales.

Employment

Despite relatively low prices and wildcat strikes in South Africa's PGMs industry in 2012, average employment increased for the second year running, rising by 1.5 percent to 197 847 (Table 28). Total remuneration increased by 13.1 percent in 2012, resulting in an 11.5 percent increase in the average remuneration per employee. Average productivity per employee decreased by 13.5 percent to 1.28 kg. In terms of revenue, productivity per employee decreased by 18.7 percent from R430 062 in 2011 to R349 811 in 2012.

TABLE 28: EMPLOYMENT (INCLUDING CONTRACTORS) AND REMUNERATION IN SOUTH AFRICA'S PGM MINES, 2012.

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000 000)	AVERAGE REMUNERATION (R/employee)
2008	199948	23344	116752
2009	184163	24879	135093
2010	182 003	26 577	146 027
2011	194 979	30 413	155 980
2012	197 847	34 409	173 917

Source: DMR, Directorate Mineral Economics

Projects and Other Developments

The PGMs sector faced challenges such as labour unrests, depressed prices and rising operating costs in 2012, which led to mine closures and project suspensions. During the second quarter of 2012, Aquarius Platinum suspended operations at both Everest and Marikana mines, allegedly due to weak platinum prices and high costs. Platinum Australia's Smokey Hills mine was placed under review, while Eastern Platinum suspended funding for its Mareesburg mine and Kennedy's Vale concentrator plant. In anticipation of significant job losses, the Department of Mineral Resources set up a Platinum Task Team (PTT) to investigate both short and medium to long term interventions to mitigate the negative impact of the afore-stated challenges on development and employment in the platinum sector.

It was not all doom and gloom in the industry as other companies proceeded with projects, including exploration and new mine developments. In July 2012, Wesizwe Platinum initiated the first blast at its flagship Bakubung platinum mine, in the North West province. The new mine, formerly known as the Frischgewaagd-Ledig mine, embarked on a 62-month R1.64 billion shaft-sinking process. The group aims to deliver first production during the second quarter of 2018 and ramp up to full production of 350 000 oz a year by 2023. In another development, Sylvania Platinum entered into an agreement with Aquarius to access the Everest North UG2 platinum deposit through a 50/50 joint venture (JV), where ore would be processed through the Everest South metallurgical plant. Despite the currently depressed prices, the two projects are going ahead as today's prices are considered less relevant than expectations for the future. These are just two of the projects that are expected to contribute significantly to the country's economy through job creation and increased levels of PGMs output.

Relatively shallow platinum deposits were recently discovered by a Canadian company in Waterberg, beyond the mapped northern limb of the Bushveld Complex. The ore body is at a relatively shallow 100 m and because of its unique nature; the mineralisation of this deposit is being referred to as having T-reef and F-reef. It is totally different to the Plat reef in that it is 20 percent gold in its metal balance. Another discovery was made by yet another Canadian company on the Plat reef itself; a flat-lying ore body which can be mined by room and pillar method. According to the company, it will be highly mechanized and the labour component per unit of platinum produced will be very low compared with traditional underground mining. Whether or not recent discoveries in the northern limb indicate ample potential for the country's low cost platinum production remains to be seen, but hopefully they are likely to encourage further prospecting in areas yet to be exhaustively explored.

OUTLOOK

Global supplies of platinum are expected to increase marginally in 2013 due to slightly higher sales from Russia and North America, with supplies from SA remaining flat. Some SA mines remain under serious cost pressures and a substantial amount of capacity could be shut down in 2013, while further industrial actions cannot be ruled out. However, the platinum market may not need additional supply as gross demand for platinum in auto catalysts does not appear likely to grow, even though jewellery demand may increase slightly. Investment demand is expected to continue growing, which could leave the platinum market in slight deficit in 2013. The metal's price is therefore not expected to reach the high of 2012, but is expected to average around $1 450/oz.

Supplies of palladium are expected to decline again in 2012 as Russian sales decline further and mine output from Russia and South Africa remains low. Non-automotive industrial demand may be stable at best, but auto catalyst demand is expected to increase, on the back of increasing light duty vehicle production. These points to an undersupplied market, which should maintain the demand in ETFs, potentially increasing the price to levels high enough to release some of the approximately 9 Moz of surplus palladium absorbed by the market since 2001. As a result, the mine supply will probably fall, which will maintain the market in deficit again in 2013, while keeping the price below $800/oz.

Rhodium supplies from all regions of production are expected to be flat in 2013. SA production is expected to decline, as many of the shafts which have been closed or threatened with closure are mainly UG2 operations, where the ore body has relatively higher rhodium content. However, this could be compensated for by sales from stocks. Demand for the metal in auto catalysts is expected to increase as global production of light duty vehicles continues to expand. However, the market is expected to be held in balance by increased recycling, leaving the metal trading at $1 100/oz on average. Demand for ruthenium is expected to recover in 2013, while iridium demand is expected to remain flat.

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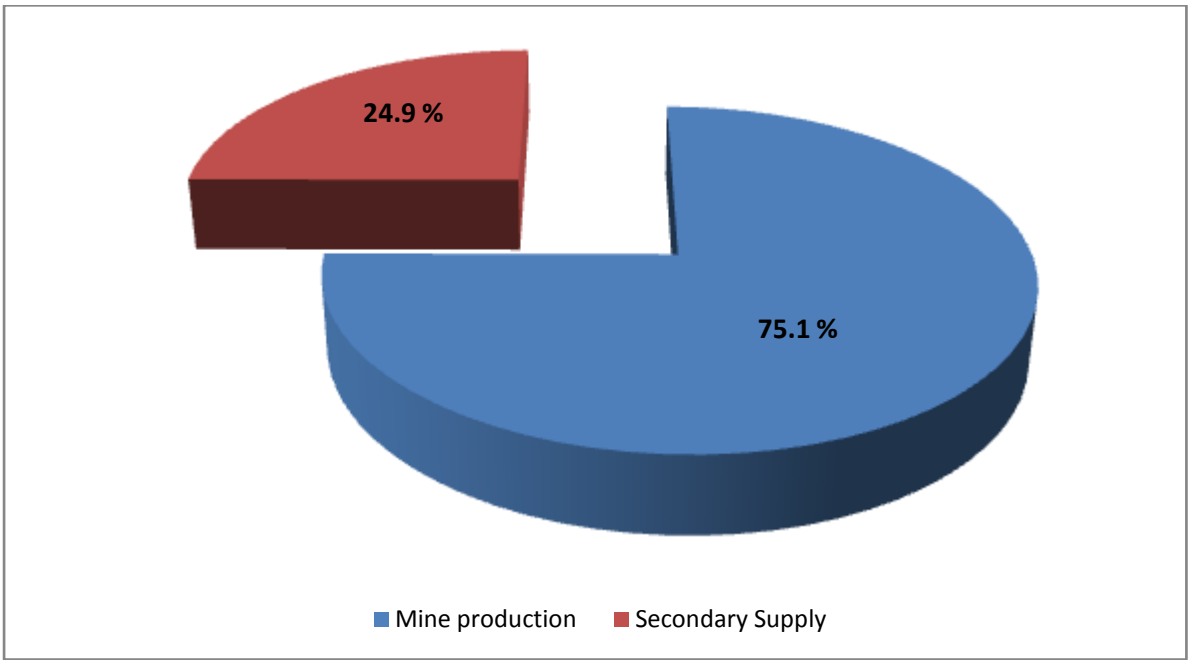
SILVER

PJ Perold

WORLD SUPPLY

Total global silver supply, which includes mine production and secondary supply-sources increased by 0.9 percent from 1 039.4 million ounces (Moz) in 2011 to 1 048.3 Moz in 2012. Mine production, inclusive of output from the lead and zinc sectors remained the largest single contributor to mine total supply, contributing 75.1 percent (787.0 Moz), while secondary supply contributed 24.9 percent (Fig 16.). Mexico remained the world's largest silver producing country, with production levels rising by 86.0 Moz, setting a new record high of 162.2 Moz, for that country. China overtook Peru to become the second largest producer, followed by Peru and Australia at 3rd and 4th position, respectively. Global silver supply was mainly driven by a 4.0 percent increase in production from global primary silver mines as well as stronger growth in by-product output from the lead and zinc sectors in China, Mexico and India.

FIGURE 16: WORLD SILVER SUPPLY BY SOURCE, 2012.



Source: World Silver Survey, 2013

TABLE 29: WORLD SILVER RESERVES AND MINE PRODUCTION, 2012

COUNTRY	RESERVES#			PRODUCTION*		
	Moz	%	Rank	Moz	%	Rank
Australia	2 218.4	12.8	4	56.9	7.2	4
Argentina	N.A	N.A	N.A	24.1	3.1	10
Bolivia	707.3	4.1	8	39.7	5.0	7
Chile	2 475.6	14.3	3	37.0	4.7	8
China	1 382.5	8.0	5	117	14.9	2
Mexico	1 189.6	6.9	6	162.2	20.6	1
Peru	3 858.1	22.2	1	111.3	14.1	3
Poland	2 732.9	15.7	2	41.2	5.2	6
Russia	N.A	N.A	N.A	45	5.7	5
South Africa+	N.A	N.A	N.A	2.4	0.3	20
USA	803.8	4.6	7	32.6	4.1	9
Others	1 993.7	11.5	N.A	117.6	14.9	N.A
TOTAL: 2012	17 362			787.0		
TOTAL: 2011`	16 751	100		757.0	100	100

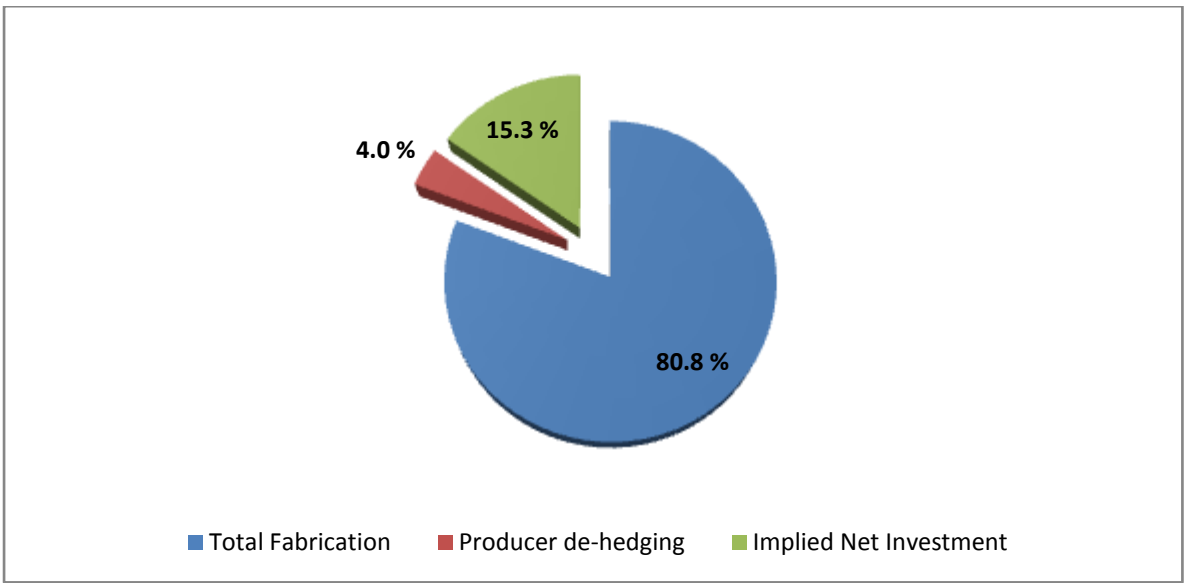
*Sources: *World Silver Survey, 2013.*
+DMR, Directorate Mineral Economics, 2013 (Adjusted fig.)
#USGS, Mineral Commodity Summaries, 2013

Secondary supply, comprising of old silver scrap and net government sales decreased by 7.4 percent from 282.3 Moz in 2011 to 261.3 Moz in 2012. This was partly due to a shift from producer hedging to de-hedging in 2012 as was shown by a 41.5 Moz reduction in the delta-adjusted book at 54.8 Moz. Silver scrap supply fell by 1.6 percent to 253.9 Moz in 2012 as a result of a drop in Western supplies of recycled jewellery, silverware and photographic sources.

WORLD DEMAND

World silver demand, which consists of fabrication, producer-de-hedging and implied net investment, increased slightly by 0.9 percent to 1 048.3 Moz, largely due to the addition of 41.4 Moz of producer hedging amidst the poor-performance of the silver price. The fabrication sector which consists of industrial applications, photography, jewellery, silverware, coins and medals contributed 80.8 percent to total demand. The demand for industrial applications fell by 4.5 percent to 465.9 Moz with a return to producer hedging, in light of poor pricing conditions (Fig 17).

FIGURE 17: WORLD SILVER CONSUMPTION (MOZ) BY SECTOR, 2012



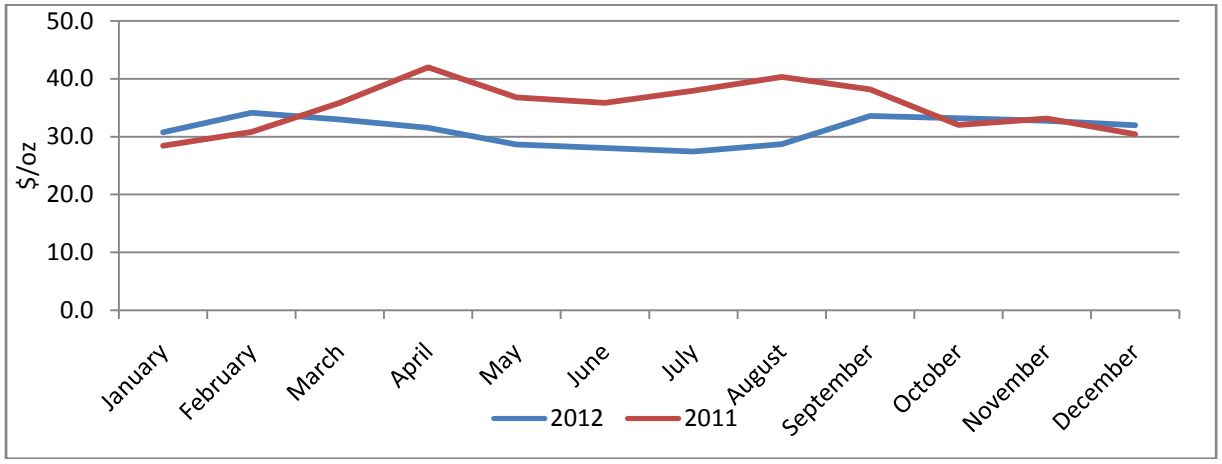
Source: World Silver Survey, 2013

Overall jewellery demand decreased by 0.5 percent to 185.6 Moz in 2012, mainly due to ongoing structural losses coupled with high and volatile silver prices. Photographic demand decreased by 12.6 percent to 57.8 Moz to an all year low in 2012, as a result of the displacement of conventional silver halide technology by digital alternatives. Coins and Medals fabrication demand dropped by 21.6 percent from 118.3 Moz in 2011 to 92.7 Moz in 2012, driven by an absence of near-term inflation pressure.

PRICES

The average annual price decreased by 11.3 percent from $ 35.11/oz in 2011 to $ 31.15/oz in 2012, despite a slight increase in the overall world silver demand. Debt restructuring in the first quarter and renewed pressure resulting from Spanish and Italian bond markets mid-second quarter also exerted some downward price-pressure. Despite the stronger prices in the third quarter, the downturn experienced during the fourth quarter of 2012 was as a result of a lacklustre industrial demand due to Euro zone crisis during the fourth quarter. However, a recovery in the photovoltaic demand and a strong ethylene oxide off-take limited overall damage to the markets by countering price decreases resulting from lacklustre industrial demand.

FIGURE 18: MONTHLY AVERAGE SILVER PRICES, 2012



Source: Silver fixings, LBMA, 2013

DEVELOPMENTS IN SOUTH AFRICA

Production and sales

South Africa, which does not have primary silver mines, produces the metal mainly as a by-product of gold and platinum and partly as a by-product from other minerals. South Africa's silver production declined by 8.3 percent to 2.2 Moz in 2012 (Table 30), in line with a decline in gold and Platinum Group Metals (P.G.M's) production in the same period. Local sales volume decreased by 33.3 percent to 0.2 Moz, with the corresponding value decreasing by 38.1 percent to 49.5 million in 2012 due to lower local uptake. Export sales volume increased by 0.2 percent from 531.9 Moz in 2011 to 533.2 Moz in 2012, due to an unexpected higher international uptake, with the corresponding values also increasing by 0.2 percent, despite a decline in prices in 2012.

TABLE 30: SOUTH AFRICA'S SILVER PRODUCTION AND TOTAL SALES VALUE, 2003 – 2012

		Local sales			Export sales			Total Sales	
Year	Production	Mass MOZ	Value R'1000	Unit Value R/kg	Mass MOZ	Value R'1000	Unit value R/kg	Mass MOZ	Value R'1000
2003	2.8	0.1	4 659	1 300	3.4	114 555	1 094	3.5	119 215
2004	2.3	0.2	7 483	1 556	2.3	93 995	1 309	2.5	101 478
2005	2.8	0.1	5 660	1 504	3.2	137 844	1 399	3.3	143 504
2006	2.8	0.2	11 026	2 329	3	239 595	2 532	3.2	250 621
2007	2.2	0.1	10 895	2 951	2.5	224 146	2 916	2.6	235 041
2008	2.4	0.3	28 272	3 592	2.8	318 573	3 663	3.0	346 845
2009	2.5	0.3	30 906	3 830	2.3	256 198	3 653	2.5	287 103
2010	2.5	0.2	35 639	4 548	2.5	350 439	4 442	2.7	386 078
2011	2.4	0.3	80 001	8 023	2.3	531 932	7 466	2.6	611 933
2012	2.2	0.2	49 591	8 078	2.5	533 232	7 588	2.5	582 824

Source: DMR, Directorate Mineral Economics, 2012, 2013

OUTLOOK

Global silver supply is expected to increase in 2013, driven by stronger demand for fabrication. Growth in supply, is however, expected to be slower than the 4.0 percent growth in 2012. Total silver output is expected to reach 800.0 Moz in 2013, as global gold production is expected to surge, thus impacting on the recovered volumes of silver as by-product. Growth will be mainly driven by strong increases in South America as large projects are expected to begin production. Scrap-supply is expected to rise as a result of sustained production. Government sales are expected to decrease on the back of stronger international sales data. In South Africa, silver output is expected to decrease marginally, due to lower production from major gold and P.G.M producers. The silver price is expected to increase marginally due to an expected sustainability of producer de-hedging and increased demand for fabrication.

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ENERGY MINERALS OVERVIEW

KL Revombo

INTRODUCTION

South Africa's coal and uranium resources are ranked among the top ten in the world. The country has the 8th largest coal reserves in the world and is the 7th largest coal producer. The country's uranium resources are the 6th largest in the world whereas uranium production is ranked 11th. However, Uranium is mainly produced as a by-product of gold and copper and the country has resources estimated at 279.1 kt, the second largest resources in Africa, after Niger. The country's coal reserves are located mainly in Mpumalanga, northern Kwazulu-Natal and Limpopo provinces. The Council for Geosciences is due to release a report of the country's latest estimate of coal reserves and resources.

The country has not yet fully developed its knowledge of deposits of oil and gas, but potentially hosts large quantities of shale gas in the Karoo basin. The country imports more than 60 percent of the feedstock required for liquid fuel production with the remainder derived from synthetic fuels, which are produced domestically from coal and natural gas.

PRODUCTION AND SALES

Global oil production increased by 1.9 million barrels per day (mbpd) to 86 152 thousand barrels per (tbpd) in 2012 from 84 210 tbpd in 2011. OPEC accounted for three quarters of the increase despite a decline in Iranian output of about 680 tbpd due to international sanctions. Non-OPEC output grew by 490 tbpd despite the unexpected outages in South Sudan and Syria.

In 2012, oil had the slowest global consumption growth rate among fossil fuels for the third consecutive year. Global oil consumption grew by 0.9 percent (890 tbpd) from 88 879 tbpd in 2011 to 89 774 tbpd in 2012. The largest increases were recorded by China (470 tbpd) and Japan (250 tbpd). The largest decrease was OECD's 530 tbpd. Oil prices averaged $111.67 per barrel in 2012, an increase of 0.4 percent from $111.27 in 2011.

World natural gas production grew by 1.9 percent to 3 364 billion cubic metres (bcm) in 2012 from 3 291 bcm in 2011. United States of America's 4.7 percent volumetric increase was the world's largest production. Other countries that saw significant production increases include; Norway's 12.6 percent, Qatar's 7.8 percent and Saudi Arabia's 11.1 percent. Russia with a percentage decline of 2.7 percent was the world's largest drop in volumetric terms. Gas consumption grew by 2.2 percent to 3 314 bcm in 2012 compared with 2011. Consumption surged in all regions except Europe and Eurasia. The largest volumetric growths in consumption were in USA with 31.6 bcm (4.1 percent) followed by China's 13.3 bcm (9.9 percent) and Japan's 11.2 bcm (10.3 percent).

In 2012, coal reached the highest share of global primary energy consumption (29.9 percent) since 1970. Global coal production increased by 2.9 percent to 7 830.8 Mt. Chinese growth of 3.5 percent and Indonesia's 9 percent offset the USA's decline of 7.5 percent. Global coal consumption grew by 2.5 percent to 7 696.9 Mt in 2012. China accounted for more than half of global coal consumption for the first time. OECD consumption declined by 4.2 percent with losses in the USA offsetting increases in Europe and Japan. Coal consumption increased by 5.4 percent in non-OECD countries. Coal prices ware on a downward spiral in 2012 owing to the oversupply. Overall average coal price for 2012 fell 15% from 2011 levels.

World uranium mine production increased by 9.16 percent to 58.39 ktU in 2012 compared with 53.49 ktU in 2011, due to increased production from Australia, China, Kazakhstan, Namibia and Niger. Kazakhstan remained the world's leading producer accounting for 36.51 percent, followed by Canada's 15.41 percent and Australia's 11.97 percent. Niger was the largest producer in Africa accounting for 8 percent of world production, followed by Namibia at 7.7 percent, and South Africa at 0.8 percent. In 2012 the average price slumped by 15 percent from $56.24/lb in 2011 to $48.9/lb.

TABLE 31: SOUTH AFRICA'S PRODUCTION AND SALES OF ENERGY COMMODITIES, 2012

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		kt	kt	R'000	kt	R'000	kt	R'000
Coal	2011	250 706	177 889	37 253 525	68 807	50 548 678	246 697	87 802 202
	2012	258 576	185 669	43 921 277	76 009	52 226 904	261 677	96 148 181
Uranium	2011	0.558	*	*	*	*	*	*
	2012	0.468	*	*	*	*	*	*
Subtotal	2011	250 707	177 889	37 253 525	68 807	50 548 678	246697	87 802 202
	2012	258 576	185 669	43 921 277	76 009	52 226 904	261677	96 148 181
Natural Gas	2011	1 078	1 078	2 249 668	-	-	1078	2 249 668
	2012	934	934	2 195 735	-	-	934	2 195 735
Natural Gas Condensate	2011	102	102	913 467	-	-	102	913 467
	2012	89	89	910 269	-	-	89	910 269
Subtotal	2011	1 180	1 180	3 163 134	-	-	1180	3 163 134
	2012	1 023	1 023	3 106 003	-	-	1023	3 106 003

Source: DMR, Mineral Economics Directorate

In 2012, South Africa's annual coal production increased by 3.1 percent from 250.1 Mt in 2011 to 258.6 Mt, while uranium production declined by 16 percent to 468 t (Table 31). The country's natural gas production amounted to 0.93Mt in 2012 compared with 1.08 Mt in 2011, while natural gas condensate output amounted to 89.3 kt from 102 kt in the same period. During the same period South Africa's crude petroleum production fell by 72.2 percent to 343 072 barrels compared with 590 818 barrels in 2011, as a result of the shutdown at PetroSA'sOribi plant. Seventy one percent of the coal produced was sold locally whilst 29 percent was exported. All the uranium produced was exported. Coal export volumes increased by 10.5 percent to 76 Mt compared with 2011. Total revenue generated from coal sales amounted to R96.1 billion, a 9.5 percent increase compared to 2011.

EMPLOYMENT

Employment in the energy sector increased by 6.1 percent from 78 761 in 2011 to 83 538 in 2012 (Table 32). The jobs in this sector were dominated by the coal industry which accounted for about 99.6 percent of the total jobs with both the crude oil and natural gas accounting for 0.2 percent each. Over the same period, total remuneration increased by 8.4 percent to R 17.6 billion and the average annual earnings grew by 2.2 percent to R210 800 per employee.

TABLE 32: EMPLOYMENT AND GROSS REMUNERATION ON MINES AND PLANTS IN THE SOUTH AFRICAN ENERGY INDUSTRY, 2005 – 2012

YEAR	EMPLOYEE	REMUNERATION	
	Number	R'000	R'000/Employee
2005	57 185	6 558 129	114.7
2006	57 936	7 340 151	126.7
2007	60 698	8 778 627	144.6
2008	65 739	11 138 368	169.4
2009	70 970	12 947 469	182.4
2010	75 021	14 352 946	191.3
2011	78 761	16 242 879	206.2
2012	83 538	17 612 592	210.8

Source: DMR, Mineral Economics Directorate

OUTLOOK

Eskom has recommissioned previously mothballed power stations, namely Camden, Komati and Grootvlei. In 2014, Eskom will commission the first units of the new built, Medupi and Kusile. The coal industry brought some new coal mines into operation late in 2012 and during the first half of 2013. It is expected that South Africa's demand for coal would increase, leading to coal production growth by about two percent to about 263 Mt in 2013.

The country will continue to import gas and crude oil to meet its liquid fuel requirements which are also partially met by Sasol's coal-to-liquid technology. While there is a possibility of shale gas breakthrough, exploratory fracking is still needed to determine the commercial prospects of shale gas. According to the Energy Information Administration (IEA), South Africa hosts about 485 trillion cubic feet recoverable reserves. If shale gas reserves are proven and environmental concerns are alleviated, then development of the shale gas industry should be fast-tracked as it has significant potential to contribute to South Africa's energy mix. Even though gas infrastructure and production are limited, the country has some experience in this sector and would be capable of ramping up the level of expertise required to manage the creation of a domestic gas industry.

In 2013, there are no major changes expected in the country's uranium industry. The Department of Energy (DoE) is busy finalizing the Integrated Energy Plan (IEP) for South Africa. The IEP will direct the country's energy mix going forward. The decision on the new uranium built will also be guided by this important document.

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COAL

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WORLD SUPPLY

Total global coal production increased by 2.9 percent from 7 607.6 Mt in 2011 to 7 830.8 Mt in 2012 (Table 33). China was once again the largest producer contributing 3 549.1 Mt to world total, followed by the United States of America (USA) (934.9 Mt), India (595 Mt), Indonesia (442.8 Mt) and Australia (420.7 Mt). China, with an increase of 131 Mt contributed significantly to this global increase, followed distantly by Indonesia's 82.5 Mt and Russia's 32 Mt. Other countries that contributed to the global coal production increase include Australia, India and Kazakhstan, whose production increased by 18.5 Mt, 12.8 Mt and 9.6 Mt respectively. The only biggest drop of 70 Mt was registered by the USA.

TABLE 33: WORLD COAL RESERVES, PRODUCTION AND EXPORTS, 2012

COUNTRY	RESERVES[1]			PRODUCTION[2]			EXPORTS[2]			CONSUMPTION[2]		
	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank
Australia	76 400	8.9	4	420.7	5.4	4	301.5	24.0	2	137.3	1.8	7
Canada	6 582	0.8	10	66.6	0.9	12	34.8	2.8	7	41.7	0.5	11
China	114 500	13.3	3	3 549.1	45.3	1	10.5	0.8	9	3 665.9	47.6	1
Colombia	6 746	0.8	9	89.5	1.1	11	82.2	6.5	5	7.3	0.1	12
India	60 600	7.0	5	595.0	7.6	3	1.5	0.1	11	753.1	9.8	3
Indonesia	5 529	0.6	12	442.8	5.7	6	382.6	30.5	1	60.2	0.8	10
Kazakhstan	33 600	3.9	7	126.0	1.6	9	31.9	2.5	8	94.1	1.2	8
Poland	5 709	0.7	11	144.1	1.8	8	7.1	0.6	10	139.7	1.8	6
Russia	157 010	18.2	2	353.9	4.5	5	134.2	10.7	3	251.1	3.3	4
South Africa*	30 156	3.5	8	258.6	3.3	7	76.0	6.1	6	185.7	2.4	5
Ukraine	33 873	3.9	6	71.6	0.9	10	#	-	-	79.0	1.0	9
USA	237 295	27.6	1	934.9	11.9	2	114.1	9.1	4	821.9	10.7	2
Other	92 938	10.8	-	778.0	9.9	-	78.9	6.3	-	1 459.9	19.0	-
Total	**860 938**	**100.0**	-	**7 830.8**	**100**	-	**1 255.3**	**100**		**7 696.9**	**100.0**	-

Source: [1]*BP Statistical Review of World Energy, June 2013*
[2]*Coal Information 2013, International Energy Agency – OECD/IEA*
**DMR, Mineral Economics Directorate – production and exports figures*

The Organization for Economic Co-operation and Development (OECD) countries' coal production dropped by 2.4 percent from 2 082.4 Mt in 2011 to 2 032.1 Mt in 2012 whereas non-OECD countries which include China, Russia, Indonesia, Kazakhstan, India and Colombia saw a production rise of 4.9 percent to 5 798.6 Mt.

CONSUMPTION

In 2012, global coal consumption grew by 2.3 percent to 7 696.9 Mt with China accounting for 47.6 percent of the world's coal consumption, followed distantly by the USA's 10.7 percent and India's 9.8 percent. Together these three countries accounted for 68.1 percent of world coal consumption.

TRADE

Global export trade of all types of coal rose by 9.7 percent to reach a record level of 1 255.3 Mt in 2012 when compared with 2011. Steam coal export trade grew by 12.1 percent to 962.7 Mt from 857.5 Mt in 2011, while coking coal export trade increased from 282.9 Mt to 290.1 Mt and lignite coal shrunk by 32.4 percent from 3.7 Mt to 2.5 Mt. Indonesia at 382.6 Mt, was the top exporter in 2012 followed by Australia's 301.5 Mt and Russia with 134.2 Mt. China, at 288.8 Mt, was the leading importer, followed by Japan's

183.8 Mt and India's 159.6 Mt. China also recorded the largest import growth of 106.8 Mt followed by India's 27.5 Mt and Japan's 9.7 Mt.

SOUTH AFRICA

South Africa's total run-of-mine (ROM) production grew by 4.8 percent from 315 Mt in 2011 to 330 Mt in 2012, owing to mines ramping up production and new coal mines coming online, resulting in an increase of operating coal mines from 113 to 125. Opencast mining accounted for 64 percent of ROM production, followed by board and pillar's 33.6 percent, stooping's 1.9 percent and longwall at 0.5 percent. Saleable coal production improved by 3.1 percent to 258.6 Mt from 250.7 Mt in 2011 (Table 34). The six major producers: Anglo Coal, BHP Billiton Coal South Africa (BECSA), Exxaro Resources, Xstrata Coal South Africa (XCSA) now GlencoreXstrata Coal, Sasol Mining and Optimum Coal Holdings (OCH) accounted for 79.6 percent of the country's total production and junior coal producers accounted for the remaining 20.4 percent. The four largest Black Economic Empowerment (BEE) companies, namely, Exxaro Resources, OCH, Umcebo Mining and Shanduka, accounted for 26.1 percent of the country's total production. Overall, BEE companies and junior coal miners accounted for about 41.3 percent of the country's total production.

The Witbank coalfield outperformed all coalfields, accounting for 61.2 percent of the total production, followed distantly by the Highveld's 19.5 percent and Sasol-Vereeniging's 7.5 percent. The Mpumalanga Central basin, which comprises of Witbank, Highveld and Ermelo coalfields, accounted for 83.7 percent of the country's production.

In 2012 the coal sector remained the largest revenue earner in the country. Local coal sales volume swelled by 4.4 percent from 177.9 Mt in 2011 to 185.7 Mt in 2012 (Table 34). Electricity consumed 120.4 Mt (64.8 percent) of local sales, followed by the synthetic fuels sector (40.9 Mt or 22 percent), industries (8.7 Mt or 4.7 percent) and merchants and domestic (8 Mt or 4.3 percent), (Fig 19).

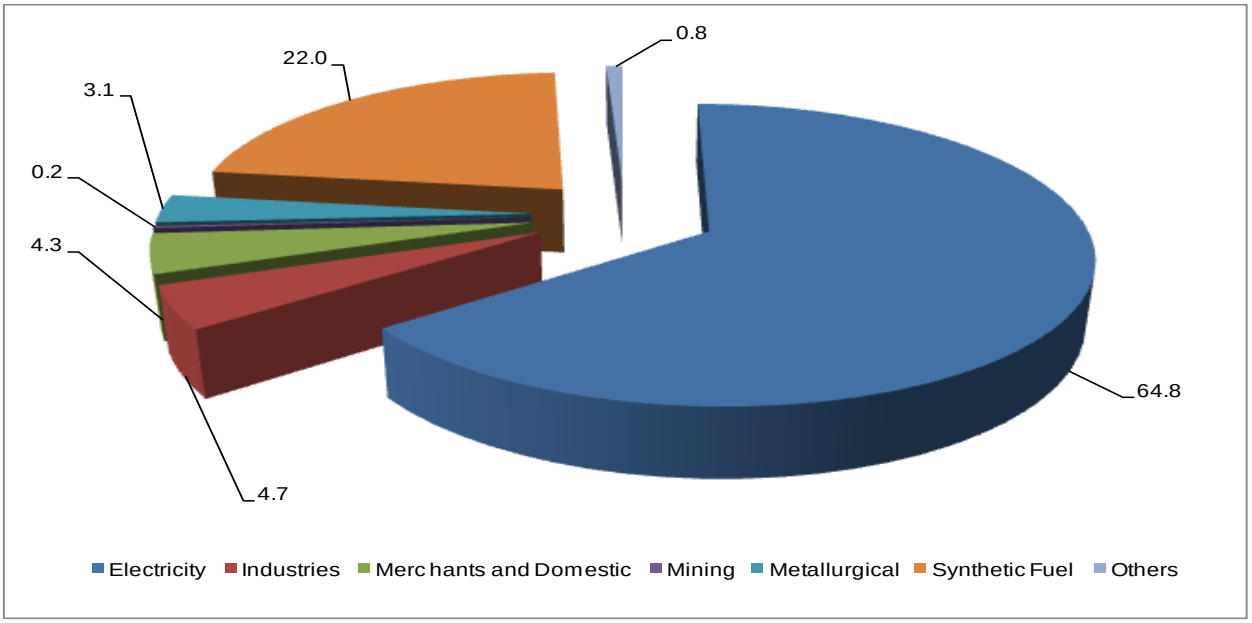
TABLE 34: SOUTH AFRICA'S PRODUCTION AND SALES OF SALEABLE COAL, 2000 – 2012

		LOCAL SALES			EXPORT SALES		
YEAR	PRODUCTION	MASS	VALUE (FOR)		MASS	VALUE (FOB)	
	Mt	Mt	R'000	R/t	Mt	R'000	R/t
2003	239.3	168.0	13 212 837	79	71.5	19 366 998	189
2004	242.8	178.3	13 606 151	76	67.9	13 490 623	213
2005	245.0	173.4	14 878 140	86	71.4	14 472 904	296
2006	244.8	177.0	16 245 861	92	68.7	21 155 176	316
2007	247.7	182.8	19 718 642	108	67.7	21 745 322	361
2008	252.7	197.0	30 104 161	153	60.6	44 706 204	737
2009	250.6	184.7	34 463 054	187	60.5	30 934 920	512
2010	257.2	186.4	33 702 229	181	66.8	37 477 184	561
2011	250.7	177.9	37 253 525	209	68.8	50 548 678	735
2012	258.6	185.7	43 921 277	237	76.0	52 226 904	687

Source: Mineral Economics Directorate, DMR

South Africa's coal exports went up by 10.5 percent to 76 Mt in 2012 from 68.8 Mt in 2011. Local sales value surged 17.9 percent from R37.2 billion to R43.9 billion due to higher sales volumes and improved unit values which leaped by 13.4 percent from R209 /t in 2011 to R237 /t in 2012. Export sales revenue also recorded an increase of 3.3 percent to R52.2 billion in 2012 from R50.5 billion in 2011 mainly due to higher sales volumes.

FIGURE 19: CONSUMPTION BY SECTOR, 2012



Source: DMR, Mineral Economics Directorate

South Africa's anthracite production, which represented one percent of the country's total coal production, surged by 17.7 percent to 3 Mt in 2012 from 2.6 Mt in 2011 (Table 35). Local sales volumes surged by 20.7 percent to 1.5 Mt due to increased demand from steel makers while export sales mass increased by 24.8 to 1.2 Mt. As a result, revenue from local and export anthracite sales increased by 29.1 percent and 32.2 percent to R1.5 billion and R1.2 billion, respectively.

TABLE 35: SOUTH AFRICA'S PRODUCTION AND SALES OF ANTHRACITE, 2000 – 2012

		LOCAL SALES			EXPORT SALES		
YEAR	PRODUCTION	MASS	VALUE (FOR)		MASS	VALUE (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	1 206	181	181 265	394	584	172 202	295
2004	1 247	545	224 882	412	917	235 667	257
2005	1 640	715	294 454	412	524	193 634	369
2006	1 584	821	374 113	455	672	258 063	384
2007	2 348	975	473 998	486	910	405 109	445
2008	2 207	961	581 207	604	1 265	762 064	602
2009	1 658	786	549 620	699	598	517 126	863
2010	2 074	1 198	933 123	779	874	717 086	821
2011	2 554	1 259	1 127 675	895	983	892 137	907
2012	3 005	1 521	1 455 444	957	1 227	1 179 215	961

Source: Mineral Economics Directorate, DMR

Bituminous coal production, which accounted for 99 percent of South Africa's total saleable coal production, increased by 3 percent to 255.6 Mt compared with 2011 (Table 36). Local sales volume grew by 4.3 percent to 184.1 Mt, whereas export sales volumes appreciated by 10.3 percent to 74.8 Mt. Local sales revenue increased by 17.5 percent to R42.5 billion boosted by a higher unit value which increased by 12.7 percent to R231 /t in 2012, while export revenue of bituminous coal increased by 2.8 percent to R50.1 billion due to higher sales volumes.

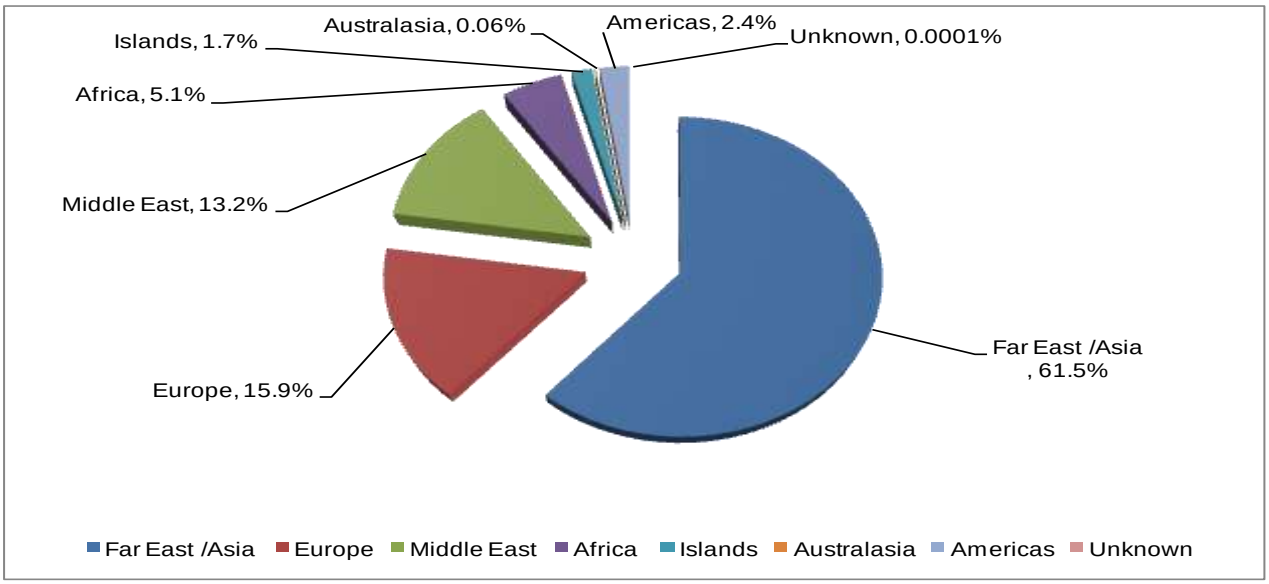
TABLE 36: SOUTH AFRICA'S BITUMINOUS COAL PRODUCTION AND SALES, 2000 – 2012

		LOCAL SALES			EXPORT SALES		
YEAR	PRODUCTION	MASS	VALUE (FOR)		MASS	VALUE (FOB)	
	Mt	Mt	R'000	R/t	Mt	R'000	R/t
2003	238.1	167.6	13 031 572	78	71.0	13 318 421	188
2004	241.5	177.8	13 381 268	75	67.9	14 237 236	212
2005	243.3	172.7	14 583 685	84	70.9	20 961 542	296
2006	244.8	176.2	15 871 748	90	68.1	21 477 286	315
2007	245.3	181.8	19 244 643	106	66.7	24 042 564	360
2008	250.5	196.1	29 522 953	151	59.4	43 944 138	740
2009	248.9	183.9	33 913 433	184	59.9	30 417 794	508
2010	255.1	185.2	32 769 106	177	65.9	36 760 098	558
2011	248.2	176.6	36 125 849	205	67.8	49 656 540	732
2012	255.6	184.1	42 465 833	231	74.8	51 047 689	683

Source: Mineral Economics Directorate, DMR

Asia continued to raise its import of South African coal, claiming 61.5 percent of South Africa's coal exports, followed distantly by Europe's 15.9 percent, the Middle East's 13.2 percent and Africa's 5.1 percent (Fig 20). Exports to Africa and the Middle East remained solid while exports to Europe fell due to slack demand in the wake of the economic slowdown.

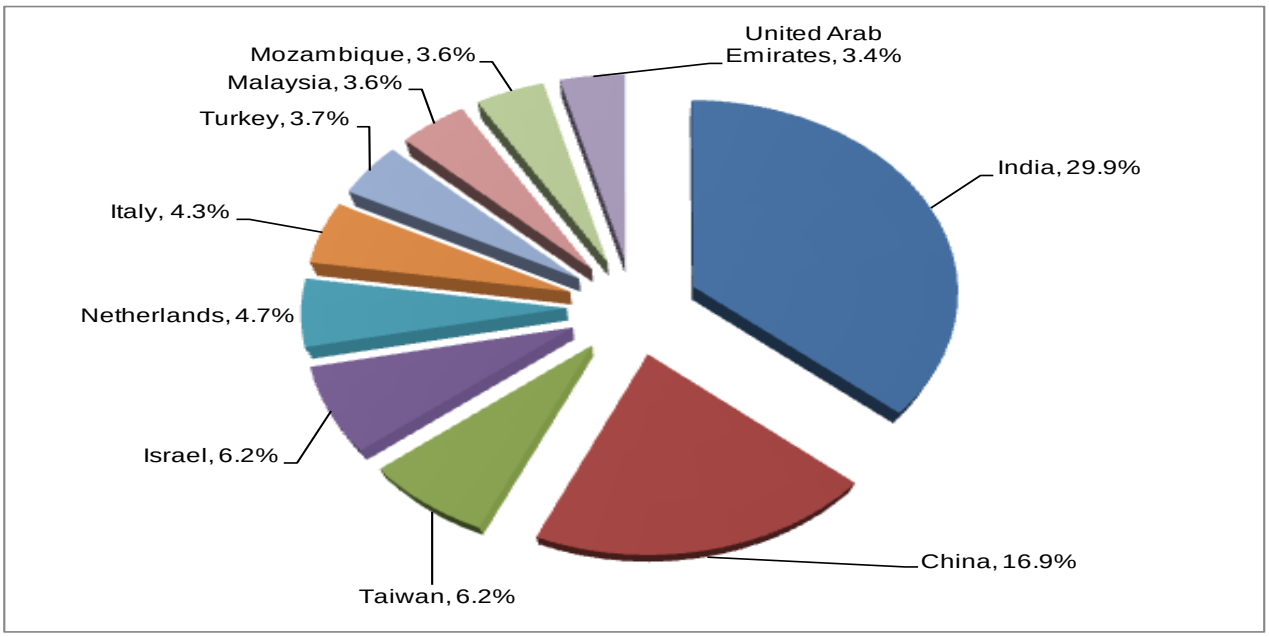
FIGURE 20: SOUTH AFRICA'S EXPORT VOLUMES BY REGIONAL DESTINATION, 2012



Source: South African Revenue Services Customs

India continued to be South Africa's leading customer, accounting for 29.9 percent of the country's coal export sales followed by China's 16.9 percent. In Africa, Mozambique continued to lead by importing 3.6 percent of South Africa's coal. Figure 21 depicts the top 10 countries that accounted for 82.5 percent of the country's exports.

FIGURE 21: TOP 10 IMPORTERS OF SOUTH AFRICA'S COAL, 2012

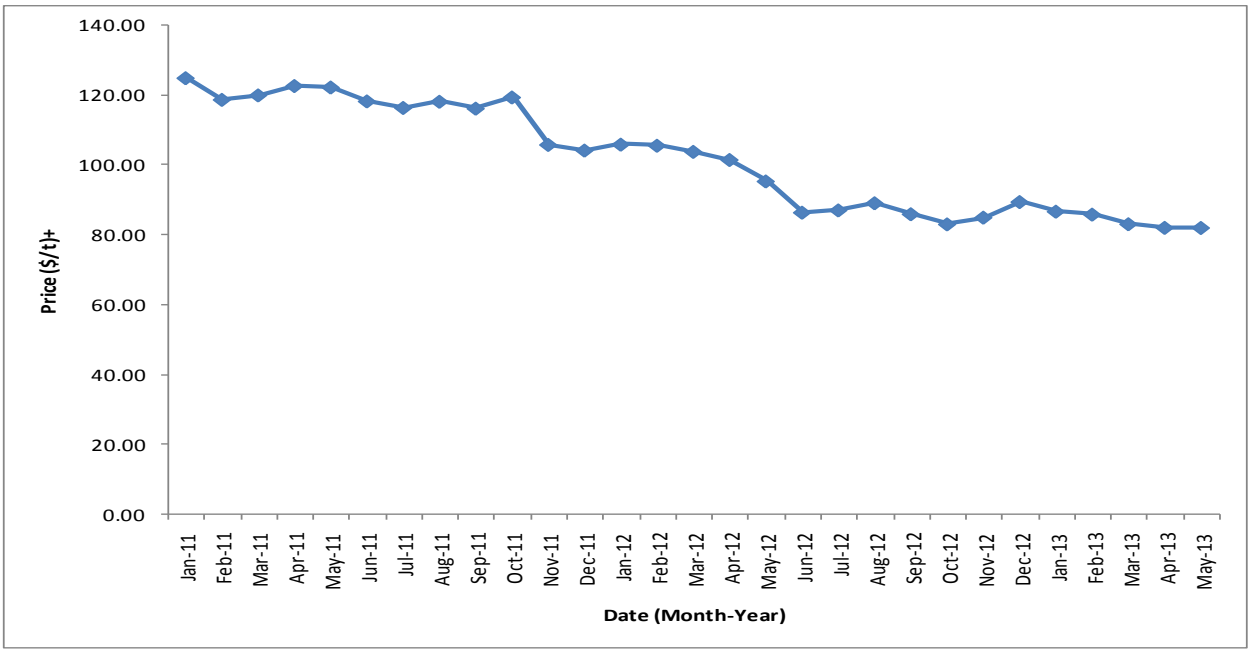


Source: South African Revenue Services Customs

PRICES

The average Richards Bay (FOB) export price of South African coal decreased by 20.6 percent to $93.18 /t in 2012 from $117.34 /t in 2011 as the market excess continued and continuous global economic concerns weighed down on prices. Coal prices started the year at $105.93 /t and gradually decreased to $86.38 /t in June 2012 due to weaker demand, especially from China and the Euro zone (Fig 22).

FIGURE 22: RBCT MONTHLY COAL PRICES, JANUARY 2011 – DECEMBER 2012



Source: Global Coal website (www.globalcoal.com)

In July 2012 and August 2012 the price slightly recovered to $87.03 /t and $89.09 /t, respectively before declining to the lowest price of $83.01 /t in October 2012. The FOB coal price closed the year at 89.44 /t as demand improved slightly in the last quarter of the year

MAJOR DEVELOPMENTS IN 2012/2013

The UK-listed Strategic National Resources (SNR) announced that its South African subsidiary, Elitheni Coal, will supply 1.4 million tons per annum (Mtpa) of coal to the Craddock Bio-ethanol project located in the Eastern Cape. In terms of this agreement, which was funded by the Industrial Development Corporation (IDC), Elitheni will supply coal for the next 20 years starting from 2013.

Effective from 1 January 2012, Xstrata Coal South Africa (XCSA) completed the sale of its Spitzkop and Tselentis collieries to Black Economic Empowerment Company, Imbawula Group. The transaction includes the open-cast and underground mining operations of the collieries as well as, prospecting and mining rights in the area that support the long-term operation of the business, infrastructure, land, moveable assets and coal beneficiation plants.

In February 2012, commodities trader Glencore International PLC and miner Xstrata PLC formally agreed to an all-share "merger of equals", to create the worlds fourth largest diversified group with a combined value of $90 billion. The combined entity listed on the London and Hong Kong Stock Exchanges, with its headquarters in Switzerland, while continuing as a company incorporated in New Jersey, in the United States. The merger obtained approval from the UK, South Africa, European Union and China. The merger was subsequently finalized on 2 May 2013 and the merged company is known as Glencore Xstrata plc (GX). GX now controls one third of the world's seaborne coal trade excluding China's coastal shipments.

In February 2012, South Africa's National Treasury announced that it will press ahead with a $414 billion infrastructure spend over the next nine years. Investments would be in energy, transport and water. The President announced that Transnet State-owned Company's budget would be increased to R300 billion ($38.5 billion) over seven years from R110 billion ($14.1 billion). As part of the implementation of infrastructure spends, South Africa's logistics group Transnet State-owned Company and Swaziland Railways agreed to build a new railway line via Swaziland that would ease congestion on the main coal export line and boost trade in the region. It is estimated that the project would cost up to R17 billion. The project includes the construction of a new 146 km rail line from Lothair (Mpumalanga) in South Africa to Sidvokodvo in Swaziland and upgrading of the existing infrastructure linking the new line with ports in South Africa and Mozambique. This project is expected to be completed in 2016.

The Presidential Infrastructure Co-ordinating Commission (PICC) has also prioritized the Strategic Integrated Projects 1 (SIP1) for supporting the unlocking of the Waterberg rail constraints and also as an investment opportunity for companies.

In another development in February 2012, Optimum Coal Holdings (OCH) confirmed the acquisition of TNC Prospecting rights from Umcebo Mining. The TNC prospecting rights have an estimated in-situ coal resource of 120 Mt of thermal coal of which 35 Mt is extractable as a Run of Mine tonnage. The deal was valued at R422 million (US$54 million).

Junior coal producer, Coal of Africa Limited (CoAL) released a definitive feasibility study regarding their flagship Makhado project in Limpopo. The project, which will make CoAL the biggest coking coal producer in the country, has a capital expenditure estimated at R3.6 billion with a peak funding required estimated at R4.2 billion. The project is expected to deliver the first coal in 2015. CoAL planned to mine 12.6 Mtpa. At a steady state, the project would produce about 2.3 Mt of coking coal and 3.2 Mt of thermal coal a year. With an estimated reserve of 8 billion tons, CoAL has forecast a 16 years life of mine for the Soutpansberg Coalfield situated Makhado project. It is estimated that about 1 600 jobs would be created at the peak of construction and 1 116 permanent jobs during steady state mining.

Resource Generation (ResGen) received an approval of construction activities from the Limpopo local authorities in March 2012 and the Integrated Water Use Licence (IWUL) for its proposed Boikarabelo mine in the Limpopo province in May 2012, The IWUL was the last requirement before ResGen could start mine construction. In July 2012, the company signed a take-or-pay agreement with Transnet in which it will rail up to 6 Mtpa on Transnet's RBCT line. The project, which has a R4.5 billion capital expenditure budget, is expected to create 1 092 direct jobs. Mine construction commenced in February 2013 and stage 1 saleable production of 6 Mtpa is expected at the end of the first quarter of 2015.
In March 2012, South Africa's Competition tribunal approved Glencore's takeover of Optimum Coal in a deal that values the company at close to $1.3 billion. The tribunal found that the transaction was unlikely to raise major competition concerns. This came after the trading company (Glencore) acquired 46.66 percent equity interest in Umcebo Mining at the end of 2011.

Continental Coal's Penumbra thermal coal mine started operating in the fourth quarter of 2012. The Penumbra coal mine will be the company's third thermal coal mining operation in South Africa. Development started in September 2011, with excavation of the box-cut to a depth of 18m, followed by development of the twin declines with the first blast in the decline completed in early February 2012. Ramp up to full production of 0.75 Mtpa was achieved by the end of the second quarter of 2013. Still on Continental Coal, in late September 2012, the company received approval from the Department of Mineral Resources to extend the Ferreira Coal Mine opencast mining operations into previously acquired adjacent and adjoining prospecting rights.

In November 2012, Eskom's R5.2 billion Majuba rail line construction was started. The line will shift the transportation mode from road to rail. The project entails the construction of a 68 km heavy-haul line from Ermelo, in Mpumalanga to the Majuba power station, in Kwazulu-Natal. Initially, the line will handle 14 Mt/a of coal sourced from various coal mines in Mpumalanga. Upon completion the rail line will have a nameplate of 21 Mt/a. The new line, which will be operated by Transnet Freight Rail (TFR), is expected to be completed in 24 months.

OUTLOOK

Globally, the coal market was oversupplied in 2012 and this is likely to continue in 2013 as depicted by the downward pressure on coal prices. However, according to the Economist Intelligence Unit (IEU), the global coal demand is expected to increase slightly in 2013 driven by demand from emerging markets, which rely on coal to power economic expansion. This growth will be influenced to a larger extent by China and India as they are the fastest developing economies and biggest coal consumers.

South Africa's domestic coal demand is expected to rise in 2013 due to the anticipated increased demand from power generation as Eskom restarted previously mothballed coal power stations. The country's coal production achieved an average growth rate of 1.2 percent over the past 10 years. It is on this background that South Africa's coal production is predicted to grow by about one percent to reach 261 Mt in 2013, also owing to several new operations. The country's coal exports are expected to breach the 78 Mt mark with Asia and Europe remaining the major importers of South Africa's coal. Coal prices are forecast to remain subdued in 2013, averaging about $75 /t, due to weak demand.

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HYDROCARBON FUELS

L Ramane

WORLD SUPPLY

World proven oil reserves amounted to 1 668.9 billion barrels in 2012 (Table 37). The Organisation of Petroleum Exporting Countries (OPEC) accounted for 72.6 percent of the world's oil reserves. The Middle East, at 48.4 percent, had the largest reserves, followed by South and Central America's 19.7 percent and North America's 13.2 percent. By country, Venezuela hosts the largest global oil reserves accounting for 17.8 percent, followed by Saudi Arabia's 15.9 percent.

TABLE 37: WORLD RESERVES AND PRODUCTION OF OIL AND NATURAL GAS, 2012

	PROVED RESERVES				PRODUCTION			
	OIL		GAS		+OIL		*GAS	
	(bbl x10^9)	%	(m^3 x 10^{12})	%	(1000 bbl/d)	%	(m^3 x 10^9)	%
OPEC COUNTRIES								
Algeria	12.2	0.7	4.5	2.4	1667	1.9	81.5	2.4
Indonesia	3.7	0.2	2.9	1.5	918	1.1	71.1	2.1
Iran	157.0	9.4	33.6	17.9	3680	4.3	160.5	4.8
Iraq	150.0	9.0	3.6	1.9	3115	3.6	0.8	0.0
Kuwait	101.5	6.1	1.8	1.0	3127	3.6	14.5	0.4
Libya	48.0	2.9	1.5	0.8	1509	1.8	12.2	0.4
Nigeria	37.2	2.2	5.2	2.8	2417	2.8	43.2	1.3
Qatar	23.9	1.4	25.1	13.4	1966	2.3	157.0	4.7
Saudi Arabia	265.9	15.9	8.2	4.4	11530	13.4	102.8	3.1
UAE	97.8	5.9	6.1	3.3	3380	3.9	51.7	1.5
Venezuela	297.6	17.8	5.6	3.0	2725	3.2	32.8	1.0
Subtotal	**1 194.8**	**71.6**	**98.0**	**52.3**	**3 6034**	**41.8**	**728.1**	**21.6**
OTHER SELECTED COUNTRIES								
Argentina	2.5	0.1	0.3	0.2	664	0.8	37.7	1.1
Australia	3.9	0.2	3.8	2.0	458	0.5	49.0	1.5
Brazil	15.3	0.9	0.5	0.2	2149	2.5	17.4	0.5
Brunei	1.1	0.1	0.3	0.2	158	0.2	12.6	0.4
Canada	173.9	10.4	2.0	1.1	3741	4.3	156.5	4.7
China	17.3	1.0	3.1	1.6	4155	4.8	107.2	3.2
Ecuador	2.2	0.1		0.0	505	0.6	#	0.0
Europe and Eurasia (EE)	140.8	8.4	58.4	31.2	17211	20.0	1035.4	30.8
India	5.7	0.3	1.3	0.7	894	1.0	40.2	1.2
Malaysia	3.7	0.2	1.3	0.7	657	0.8	65.2	1.9
Mexico	11.4	0.7	0.4	0.2	2911	3.4	58.5	1.7
Oman	5.5	0.3	0.9	0.5	922	1.1	29.0	0.9
USA	35.0	2.1	8.5	4.5	8905	10.3	681.4	20.3
Other	55.8	3.3	8.6	4.6	6788	7.9	345.7	10.3
Subtotal	**474.1**	**28.4**	**89.3**	**47.7**	**50118**	**58.2**	**2635.8**	**78.4**
TOTAL	**1668.9**	**100**	**187.3**	**100**	**86152**	**100**	**3363.9**	**100**

Source: BP Statistical Review of World Energy, June 2013

Notes: + Includes crude oil, shale oil, oil sands and natural gas liquids and excludes liquid fuels derived from other sources such as coal

* Excludes gas flared or recycled
# Figure not available

Global oil production increased by 2.2 percent to 86.15 million barrels per day (bbl/d) in 2012, as a result of the 215 percent rise in oil production from Libya after it recovered from its political instability. Regionally, the Middle East, at 32.5 percent, was the world's largest producer, despite the fall in Iranian output due to international sanctions, followed by Europe and Eurasia's 20.3 percent and North America's 17.5 percent. Africa's growth was modest at 7.7 percent boosted by the recovery in Libya that offset the 81.9 percent drop in oil production in Sudan, which resulted from a voluntary production shut down by South Sudan over oil transit fees with Sudan.

The world's proven gas reserves amounted to 187.3 trillion m^3 in 2012. The Middle East, Europe and Eurasia accounted for 74.2 percent of the world's total reserves. Global gas production increased by 1.9 percent to 3 363.9 billion m^3 in 2012 compared with 3 291.3 billion m^3 in 2011. Europe and Eurasia accounted for 30.7 percent of the global production, followed by North America and Middle East at 26.8 percent and 16.3 percent, respectively. The largest increases were recorded in Libya (54.8 percent) albeit from a low base.

WORLD DEMAND

Global primary energy consumption increased by 1.8 percent in 2012, Qatar recorded the largest increase at 14.3 percent followed by Norway's 11.1 percent and Algeria's 9.3 percent. China, at 21.9 percent, is still the largest consumer of energy followed by the USA's 17.7 percent. Africa's energy consumption is still the lowest at 3.2 percent. Oil and natural gas contributed 63 percent of the fuels required for energy production.

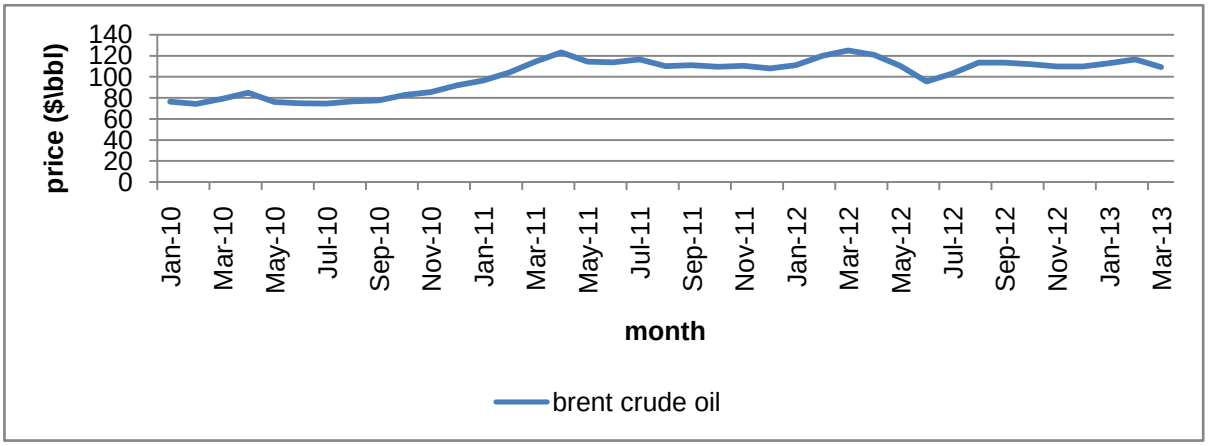
Global oil consumption increased by 0.9 percent to 89.77 million bbl\d in 2012 from 88.88 million bbl\d in 2011, as a result of the continued demand for energy. Africa, at 5.1 percent recorded the highest increases, followed by the Middle East and Asia at 4.5 and 3.7 percent, respectively. The USA was the largest consumer at 19.8 percent followed by China's 11.7 percent.

Global natural gas consumption grew by 2.2 percent to 3 314.4 billion m^3 in 2012, compared with 3 232.4 billion m^3 in 2011. Europe and Eurasia was the only region that recorded a decline of 2.3 percent in consumption, while Africa recorded the highest increase at 7.5 percent. The USA was the largest consumer of natural gas accounting for 21.9 percent.

PRICES

The Brent crude oil price started to increase in 2010 and continued on this growth trajectory in 2011 where it averaged $110.95/bbl. The rise in price was due to production disruptions in Libya and other major oil producing countries in the Middle East, which resulted in supply shortages. The price continued to rise in 2012, reaching an annual average of $111.96/bb. In 2012, the price started the year at $110.99/bbl and peaked at $124.93/bbl in March (Fig.23). In April the price started falling reaching $95.59/bbl in June. However, the price recovered from July and ended the year at $103.14/bbl. The lack of Iranian output put pressure on the price, however, that was offset by the production growth in the USA, the recovery in Libya and production increases from Saudi Arabia and other OPEC countries. The oil price continued to increase throughout the first quarter of 2013, but began to drop in April 2013. These price fluctuations were a reflection of many different factors including changes in global economic growth expectations, oil supply disruptions (such as those in Syria, Sudan and Yemen), Iran sanctions and rising oil production.

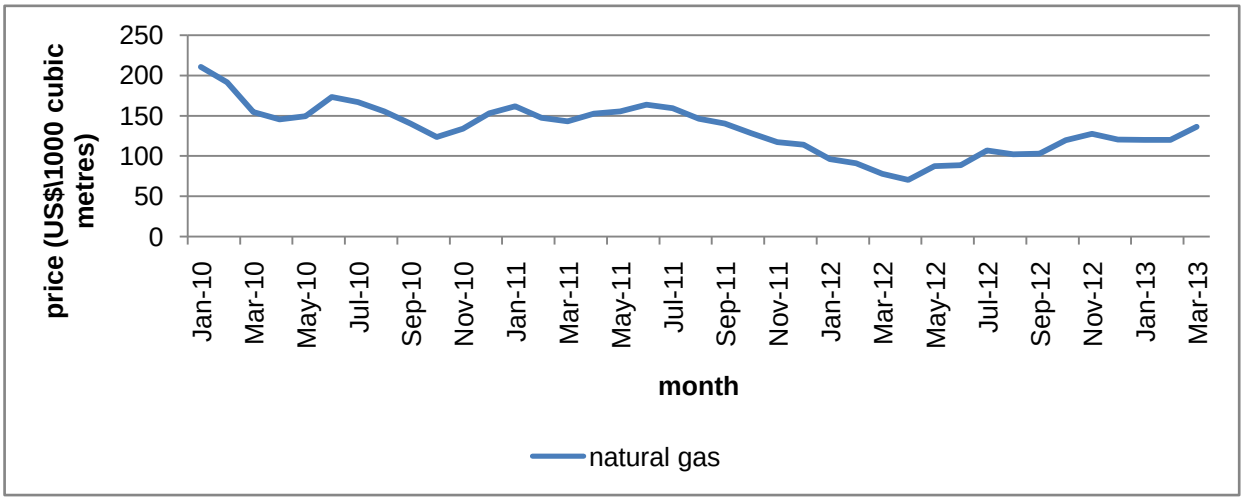
FIGURE 23: MONTHLY AVERAGE BRENT CRUDE OIL PRICES, JANUARY 2010 – MARCH 2013



Source: indexmundi (www.indexmundi.com)

The natural gas price has been under pressure for a couple of years, due to the discovery of vast new resources of natural gas from shale formations and other unconventional reservoirs as a result of new drilling technologies. The price fell by 31.12 percent to \$99.17/1000m^3 in 2012, compared with \$143.98/1000m^3 in 2011 (Fig.24). The price began at \$96.1/1000m^3 in January, dropping to \$87.56/1000m^3 in May. However, the price increased and reached a peak at \$127.42/1000m^3 in November 2012, due to demand from major consuming countries. Subsequently, it began to fall through to the first two months of 2013 and started rising again in March 2013 to a staggering \$136.33/1000m^3.

FIGURE 24: MONTHLY AVERAGE NATURAL GAS PRICES, JAN 2010 – MAR 2013



Source: indexmundi (www.indexmundi.com)

SOUTH AFRICA'S HYDROCARBON FUELS INDUSTRY

South Africa's reserves are located offshore in the Bredasdorp basin and off the west coast of the country near the border with Namibia. South Africa has no significant crude oil production; and depends on imports for its refinery feedstock requirements.

In 2012, South Africa's refining capacity was at 703 000 bbl/d. Major refineries include Sapref (180 000 bbl/d) and Enref (120 000 bbl/d) in Durban, Chevref (100 000 bbl/d) in Cape Town, and Natref (108 000 bbl/d) in Sasolburg. Additionally, the country has two synfuels facilities, namely; Sasol (150 000 bbl/d) which uses the coal to liquid fuels technology and PetroSA (45 000bbl/d) uses the gas to liquid fuels technology.

In 2012, South Africa's crude petroleum production fell by 72.2 percent to 343 072 barrels compared with 590 818 barrels in 2011, as a result of the shutdown at PetroSA's Oribi plant. PetroSA, in partnership with

China's state-owned Sinopec petroleum and petrochemicals conglomerate, is going ahead with its plan to build a world-class crude refinery in the Coega Industrial Development Zone in the Eastern Cape, named project Mthombo. This refinery, which has the potential to be the biggest crude refinery in Africa, is expected to provide security of fuel supply as well as the much needed investment and employment opportunities to the South African economy. The $10 billion project Mthombo will produce about 360,000 barrels a day and is anticipated to create 27,500 direct and indirect jobs at the height of its construction and 18,000 direct and indirect jobs when it starts operating. Commissioning of the refinery is scheduled between 2018 and 2020.

The country's natural gas production amounted to 0.93Mt in 2012 compared with 1.08 Mt in 2011, while natural gas condensate output amounted to 89.3 kt from 102 kt in the same period, due to diminishing reserves.

In September 2012, the South African government lifted a moratorium on shale gas exploration to determine the extent of reserves that are place. It was decided that only normal exploration will take place until proper and relevant regulatory framework are put in place to guarantee that they will be satisfied that they can deal adequately with the consequences of hydraulic fracturing. According to the Real Economy Year Book 2012, if 10 percent of the technically recoverable reserves were to be economically viable, this would provide feedstock for gas-to-liquids (GTL) fuel production equivalent to nearly 50 years of current petroleum consumption. Fracking could add between R80 billion and R200 billion to the country's GDP and create more than 300 000 jobs if a small portion of the shale resource base were exploited. Companies seeking shale gas exploration permits in South Africa will need to apply for a water usage licence as well as an environmental management authorization. The relevant state departments are currently working on a process to streamline all three processes, so that the permits can be obtained at the same time.

In April 2013, cabinet approved the Gas Amendment Bill for public comments. The amendments to the Gas Act (2001) seek to address ambiguities, omissions and challenges experienced in the process of implementing and enforcing the Gas Act by the Department of Energy and the National Energy Regulator of South Africa (NERSA). Also, the act will grant a constitutional mandate to set, monitor, approve and regulate distribution tariffs in a prescribed and transparent manner. The act will review compliance, monitoring and enforcement in the natural gas sector, to incorporate new transportation technologies of natural gas as well as other unconventional gases not included in the current Gas Act. It also seeks to support mobile gas storage through regulations to enhance health and safety matters.

South Africa plans to diversify its energy mix by increasing the role of gas as indicated in the Integrated Resource Plan (IRP) 2010. This is further supported by the National Development Plan (NDP), which promotes the exploration of gas to compliment energy production from coal. Accordingly, the contribution of gas to the country's energy portfolio is expected to increase to 11 percent by 2030 from the current 5 percent. According to the NDP, the partial substitution of coal with gas will reduce the country's carbon intensity and greenhouse-gas emissions. Increasing the country's natural gas contribution could be a major economic game changer for South Africa if challenges such as improving infrastructure investment needed for development can be addressed.

OUTLOOK

The hydrocarbons fuels markets were unstable in 2012 as a result of a volatile macro-economic environment; uncertainty in North Africa and the Middle East, the European financial crisis and fluctuating exchange rates. However, worldwide oil supply is expected to increase by 1 million bbl\d in 2013 and by 1.7 million bbl\d in 2014 with most of the growth coming from producers outside the Organization of Petroleum Exporting Countries. Non-OPEC production is expected to rise by 1.4 million bbl\d in 2013 and by 1.3 million bbl\d in 2014, with continued increased production from the USA tight oil formations and Canadian oil sands with North America estimated to account for two thirds of the projected growth in non-OPEC supply.

Global demand for oil is expected to continue to slow down in the short term reflecting Europe's debt worries, a faltering USA economic recovery and deceleration of growth in emerging markets. OPEC, which produces a third of global oil, indicated that healthy output levels from non-OPEC producers in 2013 would be enough to cover the modest growth in demand without the need for OPEC to increase output.

According to the US Energy Information Administration, Brent crude oil price will fall to an annual average of $105 per barrel and $100 per barrel in 2013 and 2014, respectively, reflecting the increasing supply of liquid fuels from non-OPEC countries.

Natural gas production is expected to grow by 2 percent per annum reaching 459 billion cubic feet/day by 2030. Most of this growth will originate from non-OECD countries, which will account for 73 percent of world gas production growth. Demand is expected to grow the fastest in Asia and the Middle East. Significant increases in supply are expected from Australia, China and the US. The natural gas price is expected to be depressed in anticipation of an excessively oversupplied market.

In South Africa, crude oil production is forecast to decrease to 202 413 bbl/y in 2013 and less than 100 000 bbl/y in 2014, mainly due to the country's diminishing reserves. However, synthetic oil production is expected to add nearly 200 000 bbl\d to the country's output. This figure is expected to exceed 300 000 bbl\d by 2021, due to increased capacity from the current and new refineries.

Demand for crude oil in South Africa is anticipated to reach 600 000 bbl\d by 2021. Consumption is expected to rise steadily over this period in line with economic growth. Exploitation of shale gas could contribute significantly to South Africa's growing economy by generating significant investment in new infrastructure, help meet South Africa's greenhouse gas emissions reduction goals and create many new jobs. .

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URANIUM

L Ramane

WORLD RESOURCES

Global uranium resources were estimated at 5.3 MtU in 2012. Australia has the world's largest known recoverable uranium resources accounting for 31 percent, followed by Kazakhstan's 11.8 percent and Russia's 9.1 percent (Table 38). South Africa, at 5.2 percent is ranked 6th in the world and hosts Africa's second largest resources after Niger.

TABLE 38: WORLD URANIUM RESOURCES AND PRODUCTION, 2012

	URANIUM RESOURCES*			PRODUCTION+			
	RAR#			2011	2012		
COUNTRY	(ktU)	%	Rank	(t U)	(t U)	%	Rank
Australia	1 661	31.2	1	5 983	6 991	11.97	3
Brazil	276.7	5.2	7	265	231	0.40	13
Canada	468.7	8.8	4	9 145	8 999	15.41	2
China[e]	166.1	3.1	10	885	1 500	2.57	9
India[e]	80	1.5	13	400	385	0.66	12
Namibia	261	4.9	8	3 258	4 495	7.70	5
Niger	421	7.9	5	4351	4 667	7.99	4
Kazakhstan	629	11.8	2	19 451	21 317	36.51	1
Russia	4 87.2	9.1	3	2 993	2 872	4.92	6
South Africa[*]	279.1	5.2	6	556	467	0.80	11
Ukraine[e]	119.6	2.2	11	890	960	1.64	10
USA	207.4	3.9	9	1 537	1 596	2.73	8
Uzbekistan	96.2	1.8	12	2 500	2 400	4.11	7
SUBTOTAL	5 073		-	5 2240	56 878		
Others	254	3.3		1 254	1 516		
World Total	**5327.3**	**100**		**53 494**	**58 394**		

Sources:*OECD's NEA & IAEA, Uranium 2011: Resources, Production and Demand
+World Nuclear Association, Market Report data, 2011

Notes:
- # Reasonably Assured Resources (RAR) plus Inferred Resources, to $130/kg U
- e Estimate
- * Department of Mineral Resources, South African production

WORLD SUPPLY

World uranium mine production increased by 9.16 percent to 58.39 ktu in 2012 compared with 53.49 ktU in 2011, due to increased production from Australia, China, Kazakhstan, Namibia and Niger (Table 38). Kazakhstan remained the world's leading producer accounting for 36.51 percent, followed by Canada's 15.41 percent and Australia's 11.97 percent. Niger was the largest producer in Africa accounting for 8 percent of world production, followed by Namibia at 7.7 percent, and South Africa at 0.8 percent. South Africa produces uranium as a by-product from gold mines, and exports it via the Nuclear Fuel Corporation (Nufcor) as uranium oxide (U_3O_8).

In 2012, global uranium was produced by in situ leaching (45 percent), underground (28 percent), by-product (6.6 percent) and open pit (20.4 percent).

WORLD DEMAND

Global uranium demand was mainly driven by nuclear power generation, which accounted for 11 percent of world electricity generation in 2012 (Table 39). This nuclear power was generated from 433 nuclear reactors globally. The USA, at 24 percent (104 reactors) has the highest number of reactors, followed by France's 13 percent (58 reactors) and Japan's 12 percent (50 reactors). The USA derived 19.2 percent of its electricity from nuclear energy, while France and Japan drew 78.8 percent and 2.1 percent respectively. South Africa generates 5.1 percent of its electricity from two nuclear reactors. Globally, nuclear energy reactors consumed 68 kt of uranium in 2012.

TABLE 39: WORLD NUCLEAR POWER REACTORS AND URANIUM REQUIREMENTS, 2012-2013

	NUCLEAR ELECTRICITY GENERATION 2012		REACTORS OPERABLE 2012		URANIUM REQUIRED 2012	REACTORS OPERABLE 2013		URANIUM REQUIRED 2013
COUNTRY	**billion kWh**	**% of elec**	**No**	**MWe**	**(t U)**	**No**	**MWe**	**(t U)**
USA	770.7	19	104	101 607	19 724	100	98 951	18 983
France	407.4	74.8	58	63 130	9 254	58	63 130	9 254
Japan	17.2	2.1	50	44 396	4 636	33	24 253	5 073
Germany	94.1	16.1	9	12 003	1 934	50	44 396	4 425
Korea (South)	143.5	30.4	23	20 787	3 967	23	20 787	3 769
Russia	166.3	17.8	33	24 164	5 488	9	12 003	1 934
UK	64	18.1	16	10 038	2 096	19	13 553	1 906
China	131.4	2.0	15	11 881	6 550	15	13 168	2 356
Spain	58.7	20.5	8	7 448	1 355	17	13 842	5 999
Canada*	89.1	15.3	17	12 044	1 694	16	10 038	1 775
Sweden	61.5	38.1	10	9 399	1 394	10	9 388	1 469
Ukraine	84.9	46.2	15	13 168	2 348	7	7 002	1 355
Belgium	38.5	51	7	5 943	995	7	5 943	995
South Africa	12.4	5.1	2	1 800	304	2	1 800	304
SUBTOTAL	2 139.7		367	337 808	61 739	366	338 254	59 597
Others	206.3		66	33 614	6 251	66	33 616	6 915
World	**2 346**	**11**	**433**	**371 422**	**67 990**	**432**	**371 870**	**66 512**

Notes:

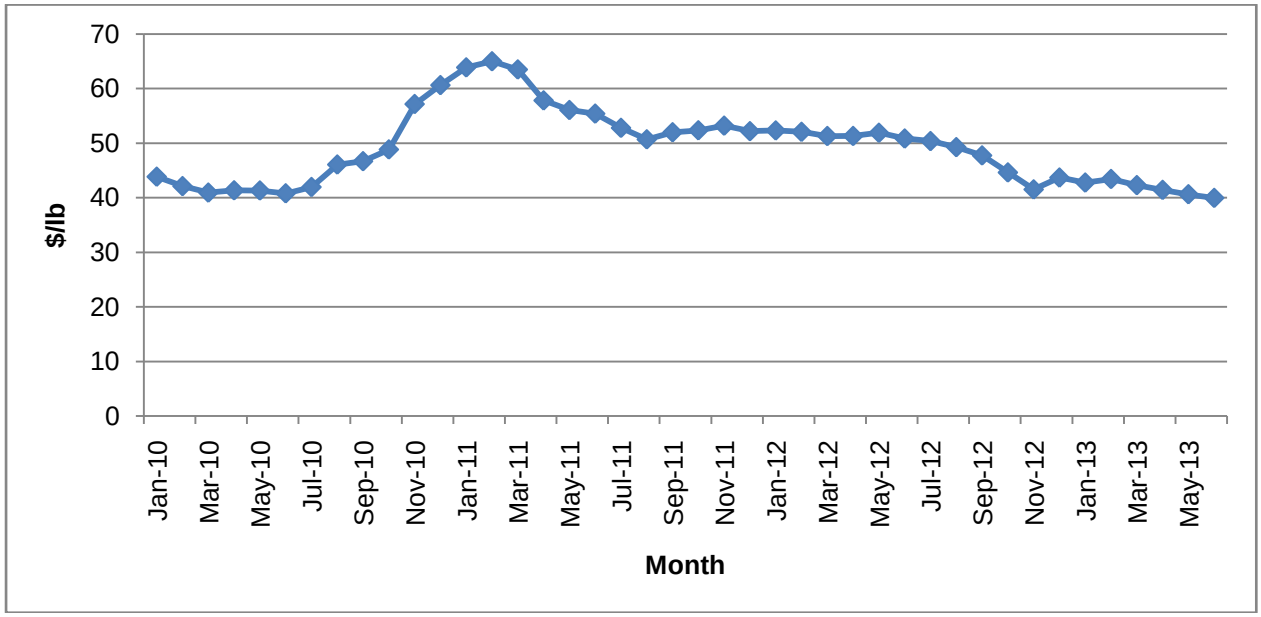
% of elec: percent contribution to national electricity production
MWe: Megawatt net (electrical as distinct from thermal)
kWh: kilowatt-hour
* Estimate

Sources: World Nuclear Association, 2012-2013

PRICES

The uranium price has been under pressure since the second quarter of 2011 due to reduced demand following the earthquake that damaged the Fukushima nuclear power plant in March 2011. In 2012 the price continued on a downward spiral averaging at $48.9/lb from $56.24/lb in 2011 (Fig.25). In fact, prices are hovering at levels not seen since the end of 2005. Many investors have been trying to time the bottom of the market to take advantage of the upswing, but prices have continued to struggle, making those efforts even more difficult.

FIGURE 25: NUEXCO SPOT URANIUM PRICE, 2010-2013 (MONTHLY AVERAGES)



Source: index mundi
Notes: pound (lb)

DEVELOPMENTS IN AFRICA

In Namibia, there are seven ongoing prefeasibility and three construction-stage uranium projects, with a combined worth of $5.0 billion, in the Erongo region. Uranium production in the country is expected to quadruple in the near term, owing to the increase in exploration and expansion activities in the Erongo region, with four new mines expected to become operational by 2014. There are other uranium expansion projects in the Sub Saharan region including exploration projects in Botswana, Mozambique and Zambia. These projects are expected to increase the region's contribution to global output; some of which are indicated in Table 40.

TABLE 40: URANIUM PROJECTS IN THE SUB-SAHARAN REGION

PROJECT	INVESTMENT	OWNERS	COMMISSIONING DATE
Husab Mine	$2.5 billion	Swakop Uranium	Third quarter 2015
Omahola Project	$340 million	Deep Yellow	2016
Trekkopje Mine	$1 billion	Areva Resources	2016
Norasa Uranium Project	$249.7 million	Forsys Metals	Prefeasibility stage
Etango Uranium Project	$870 million	Bannerman Resources	Prefeasibility stage
Marenica Uranium Project	Not available	Marenica Energy (75%), Xanthos Mining (20%) and Millennium Minerals (5%)	Prefeasibility stage
Kayelekera Mine	Not available	Paladin Energy	First quarter 2014
Livingstonia Uranium Project	Not available	Resources Star	Prospecting stage
Letlhakane Uranium Project	$500 million	A-Cap Resources	2015

Source: Creamer media

The RystKuil project owned by Areva Resources Southern Africa was placed on hold in December 2011 owing to feasibility issues caused by a global drop in uranium stocks. However in 2012, an Australian company, Peninsula Energy entered into an agreement to purchase Areva's interest in the project, which is situated in the Karoo basin. Peninsula Energy is planning to develop a conventional uranium mining and milling operation by 2017.

Namakwa Uranium which is owned by Aardvark Uranium Limited (74 percent) and Giltra Exploration (26 percent), their black economic empowerment partner, acquired a prospecting right in 2007 for the Henkries deposits situated in the Northern Cape Province and is yet to start developing the asset. However, Xtract Resources, has shown interest in buying Aardvark's 74 percent stake in the project, they have three months to conduct a due diligence study into these deposits starting from November 2013. Henkries has an estimated resource ranging from 8 to 10 million pounds of uranium.

In 2012, Gold One completed its $70 million purchase of Ezulwini Mine from First Uranium Corporation. Ezulwini is adjacent to the company's Cooke Underground and Randfontein Surface Operations. Access to Ezulwini's uranium production facility will allow for near term production of uranium from underground ore mined from the Cooke Shafts. In addition, the sharing of services between Ezulwini and the Cooke Underground Operations will facilitate a reduction in operating costs. An integrated plan incorporating Ezulwini into the greater Cooke Underground Operations is underway, and Ezulwini will be known as Cooke 4 as was historically known. This project has an estimated 83 Mt of ore and, is estimated to produce 2.5 million lbs of uranium a year over a 17 years life of mine (LOM).

However, in August 2013, Gold One agreed to sell its Cooke underground and surface operations to Sibanye Gold, in exchange for a 17 percent shareholding in the company. Sibanye anticipates that the operations, which are adjacent to its Driefontein and Kloof gold mines, will add 570 000 pounds of uranium a year to its production for the next five years.

Gold One has also completed the acquisition of Rand Uranium for $250 million. The company has also undertaken a review of the existing feasibility study for the uranium plant, which was previously undertaken by Rand Uranium, with a view to starting uranium production by 2015.External consultants have been appointed to assist with the feasibility review and, discussions have also been initiated with international banks to evaluate third-party vendor financing for the plant's construction, which will be completed in the last quarter of 2013.

Gold ore from Harmony's Free State mines contains uranium as an associated mineral. Accordingly, Project Tshepong, Phakisa and Masimong (TPM) were established to evaluate the potential for economic recovery of uranium from ore mined at these mines in the Free State. The resource totals 202 Mt and contains 76 million pounds of uranium, and the reserve is 49 Mt containing 13 million pounds of uranium.

The project is expected to produce 850 000 pounds of uranium per annum at peak production over a 20-years LOM. This project is still being evaluated further.

Government has consistently stated its intent to add nuclear energy to the South African energy mix in line with the Integrated Resource Plan (IRP) 2010, which was revised in March 2011. The IRP is a 20-years electricity security plan which recognises the need for South Africa to utilise diverse energy sources including nuclear and is currently being reviewed by the Department of Energy (DOE). This will ensure security of supply that complements the national commitments on the reduction of emissions from fossil fuels and, will be cost effective in the long run. The IRP states that nuclear energy will provide 9 600MW of energy by 2030. The government has appointed a structure that will take decisions linked to this programme in line with the Nuclear Energy Policy of June 2008. The structure, which is the National Nuclear Energy Executive Coordinating Committee (NNEECC), is made up of the President and 6 Ministers of relevant departments, supported by the Nuclear Energy Technical Team which consists of the heads of all relevant Departments. In order for the government to be able to make the appropriate decisions for the new nuclear build, it will continue to interact with various parties with the requisite capacity to take on a project of this magnitude.

The National Development Plan (NDP) offers a long-term perspective of where the country needs to be in 2030. It defines a desired destination for the country and identifies the roles that different sectors of society need to play in reaching those goals. The NDP, states that South Africa needs a thorough investigation of the implications of nuclear energy, including its costs, financing options, safety, environmental costs and benefits, employment opportunities, and uranium enrichment as well as fuel fabrication possibilities. Although some of these issues were investigated in the IRP, a potential nuclear fleet will involve unprecedented investment in South Africa. The NNEECC is tasked with making a final decision on South Africa's nuclear future, particularly after actual costs and financing options are revealed.

The NDP also indicates that an alternative source of energy must be investigated should nuclear energy prove to be too expensive, insufficient funds or timelines too tight. All possible alternatives need to be explored, including the use of gas, which could provide reliable base load for power generation through combined-cycle gas turbines. While their operational costs are arguably higher than those of nuclear stations, their unit capital costs are cheaper, they are more easily financed and are more able to adjust their output to make up the shortfall from variable renewable energy sources.

OUTLOOK

The average global uranium demand is expected to grow by 4.7 percent per year through to 2020, driven primarily by nuclear power growth in China. China, the world's biggest energy user and third-largest uranium consumer, is building 28 reactors, to add to the 17 it already operates. The country is seeking to increase its nuclear- power capacity to 40 million kilowatts by 2015. Furthermore, as confidence in the nuclear energy sector recovers, global demand for uranium will also improve. This confidence will be fuelled by the restart of Japan's nuclear reactors.

Despite the uranium price remaining under pressure from low demand, long term uranium prospects remain bullish. The price is expected to begin to gain momentum in the latter part of 2013 in response to progress on the restart of Japanese reactors. According to KPMG commodity insight, the uranium price is expected to continue to improve in the longer-term, and is anticipated to reach $76/lb by 2015, which is needed to sustain mining operations in the next few years. The anticipated increase in the price will be driven by the Japanese expected clearer nuclear outlook post the election victory of the Liberal Democratic Party;granting of approvals for new nuclear reactors in China and clarity over Russian supplies post expiry of the Highly Enriched Uranium (HEU) supply agreement in 2013.

The long term future prospects for South Africa in infrastructure, job creation and economic growth depend on a constant reliable, clean energy supply and, nuclear power will contribute significantly towards that. Considering that this country has also completed the International Atomic Energy Agency (IAEA) Integrated Nuclear Infrastructure Review, which reviewed the country's infrastructure before continuing with its plans for nuclear energy expansion. This plan anticipates that the expansion will create about 15 000 new construction, service and operational jobs in the country. In addition, South African companies will also benefit from the revenue that will be generated through localisation efforts.

The additional capacity that will be generated from the prospective uranium projects will boost uranium requirements for the planned nuclear reactors and the existing Koeberg Power Plant. South Africa will require 2 000 tU per annum to meet future demand.

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NON-FERROUS METALS AND MINERALS OVERVIEW

L Maphango

INTRODUCTION

South Africa hosts rich resources of non-ferrous minerals, some of which are rated amongst the largest in the world. The country is the second biggest producer of titanium and zircon minerals in the world and is ranked fourth and second, respectively, in terms of global reserves of these minerals. South Africa is also the producer of copper, cobalt, nickel, lead, zinc and antimony. Titanium and zircon resources are found in heavy mineral sands in Kwa-Zulu Natal, Eastern Cape and Western Cape. Copper is mainly mined in the Palabora Complexin the Limpopo Province,with zirconium and nickel being produced as by-product. Lead and zinc deposits associated with copper are mined nearAggeneys, Northern Cape. Nickel deposits are mined in the Uitkomst Complex near Badplaas in the Mpumalanga Province. Antimony deposits are located in the Limpopo Province. Cobalt, copper and nickel base metals are also produced as by-products of platinum mining in the Bushveld Complex.

PRODUCTION AND SALES

In 2012, South Africa's production of primary non-ferrous metals and minerals, excluding titanium and zircon, decreased by 8.0 percent to 209.5kt compared with the previous year,primarily as a result of weak global demand and declining ore grades and labour disputes to a lesser extent (Table 41). Local sales volumes declined by 28.3 percent to 66.0 kt, while export sales volumes rose by 22.8 percent to 156.6 kt. Total sales volume increased slightly by 1.4 percent to 222.6 kt. Local sales revenue fell by 20.5 percent to R5.1 billion, while export revenue increased by 16.9 percent to R8.0 billion.Total sales revenue decreased by a marginal 1.2 percent to R13.2 billion.

South Africa's total production of non-ferrous metals and minerals (primary and processed), excluding titanium and zircon minerals decreased by 20.6 percent to 880.5kt in 2012 when compared with 2011. Total sales volumes and revenue, excluding titanium and zircon minerals and aluminium,declined by 25.8 percent and 10.5 percent to 226.3 kt and R13.2 billion, respectively. Local sales volumes and revenue decreased by 60.7 percent and 34.3 percent to 69.8 kt and R5.2 billion, respectively, mainly due to the closure of Zincor refinery in December 2011. Export sales volumes and revenue increased by 22.8 percent and 16.9 percent to156.6 kt and R8.0 billion, respectively. South Africa is now sourcing zinc metal from the international markets.

TABLE 41: SOUTH AFRICAN PRODUCTION AND SALES OF NON-FERROUS METALS AND MINERALS, 2011 AND 2012

	PRODUCTION		LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
COMMODITY	Year	(t)	(t)	R'000	(t)	R'000	(t)	R'000
	2012	3 066	38	1974	2 600	183 435	2 638	185 409
Antimony (mic)	2011	3 175	10	964	2 699	212 294	2 709	213 258
	2012	1102	33	7 439	614	147 320	647	154 759
Cobalt	2011	862	43	10 789	450	114 456	493	125 245
	2012	69 859	54 633	3 575 955	26 594	1 579 105	81 227	5 155 061
Copper	2011	89 298	60 425	3 937 749	25 522	1 495 100	85 946	5 432 849
	2012	52 489	0	0	53 628	811 498	53 628	811 498
Lead	2011	54 460	0	0	52 368	762 929	52 368	762 929
	2012	45 945	11 308	1 539 962	35 507	4 892 384	46 815	6 432 346
Nickel	2011	43 321	14 457	2 326 440	26 645	4 075 750	41 102	6 402 190
	2012	***	***	***	***	***	***	***
Titanium minerals	2011	***	***	***	***	***	***	***
	2012	37 034	0	0	37 646	444 536	37 646	444 536
Zinc (mic)	2011	36 629	17 083	169 416	19 800	233 150	36 883	402 566
	2012	***	***	***	***	***	***	***
Zirconium minerals	2011	***	***	***	***	***	***	***
	2012	209 495	66 012	5 125 330	156 589	8 058 278	222 601	13 183 609
Primary subtotals	2011	227 745	92 018	6 445 358	127 484	6 893 679	219 501	13 339 037
	2012	667 576	***	***	***	***	***	***
Aluminium metal	2011	809 773	***	***	***	***	***	***
	2012	***	***	***	***	***	***	***
Titanium slag	2011	***	***	***	***	***	***	***
	2012	3 425	3 744	63 845	0	0	3 744	63 845
Zinc metal	2011	72 020	85 467	1 457 613	0	0	85 467	1 457 613
	2012	671 001	3 744	63 845	0	0	3 744	63 845
Processed subtotals	2011	881 793	85 467	1 457 613	0	0	85 467	1 457 613
	2012	**880 496**	**69 756**	**5 189 175**	**156 589**	**8 058 278**	**226 345**	**13 247 454**
Non-Ferrous Totals	**2011**	**1 109 538**	**177 485**	**7 902 971**	**127 484**	**6 893 679**	**304 968**	**14 796 650**

Source: DMR, Directorate Mineral Economics

*** *Withheld*

PRICES

Prices of most non-ferrous metalsexperienced a declining trend in 2012 before bottoming in the last quarter of 2013 due to the fragile global economy which is fuelled by the Euro zone debt woes, the slowing Chinese economy, excess supply, high London Metal Exchange(LME) inventory levels and negative market sentiments. According to Metal Bulletin, the base metals market has also been impacted by geopolitical events, such as the instability in Syria, which have led to volatility in prices. According to the National Australian Bank Research, base metal prices decreased by an aggregate of 11 percent in 2012, compared with 2011. In 2012, theaverage annual nickel price dropped by 23.4 percent to $17 577/t when compared with 2011.

Zinc price decreased by 11.0 percent to $1 952/t, lead declined by 13.9 percent to $2 064/t and aluminium fell by 15.1 percent to $2 023/t, copper decreased by 9.9 percent to $7 957/t and cobalt decreased by 20.5 percent to $14.97/lb.

EMPLOYMENT

Employment in the South African non-ferrous metals and minerals sector increased by 3.6 percent to 16 603 in 2012 compared with 16 027 employees in 2011 (Table 42). The higher employment levels are primarily attributable to additional jobs at Richards Bay Minerals, Hillside Aluminium and Nkomati Nickel mine. Total remuneration went up by 12 percent to R4.8 billion due to higher employment and average remuneration per person. Average remuneration per person rose by 8.1 percent to R290 371. A crude measure of average productivity per employee in terms of turnover increased by 1.5 percent to R2.5 million.

TABLE 42: SOUTH AFRICA'S NON-FERROUS METALS AND MINERALS: EMPLOYMENT AND GROSS REMUNERATION, 2008-2012

YEAR	EMPLOYEES	REMUNERATION	
	Number	R'000	R/employee
2008	17 502	2 638 370	150 746
2009	16 158	2 736 715	169 372
2010	15 805	3 573 415	226 094
2011	16 027	4 303 902	268 540
2012	16 603	4 821 036	290 371

Source: DMR, Directorate Mineral Economics

OUTLOOK

South Africa's production of Non-ferrous metals and minerals is forecast to increase in 2014 on the back of expected stability in the domestic mining landscape, particularly PGM mining which contributes significantly to domestic supply. The global economy is expected to recover in 2014, albeit at a slow pace. The International Monetary Fund (IMF) estimatesworld economic growth at 2.9 percent and 3.6 percent in 2013 and 2014. The base metals market is expected to improve at a relatively modest level in the short to medium term. Emerging economies will continue to be the main drivers of demand for non-ferrous metals and minerals in 2014 and beyond. China, alone, is responsible for more than 40 percent of global demand for base metals. Demand is also expected to pick up in the Euro zone and the US on the backdrop of improving economicconditions.

Zinc prices are projected to decrease by 2.2 percent to an average of $1 909/t in 2013 and strengthen in 2014 as several big mines are approaching the end of their mine-lives due to depleting resources.Nickel price is expected to decline by 14.8 percent to $14 984/t in 2013, due to excess supply in the market and soft demand from the stainless steel sector, which consumes about 65 percent of nickel. Nickel price is projected to remain unchanged in 2014 as the oversupply and high inventory levels are unlikely to change significantly. Lead price is expected to increase by 3.5 percent to $2 136/t in 2013 and is forecast to rise further in 2014 due toimproving demand andlow inventory levels in the LME.

Aluminium price is expected to decrease by 8.5 percent to $1 847/t in 2013 and increase slightly in 2014 in anticipation of firmer demand from end-use sectors, such as the automobile, construction and aerospace. Copper price is expected to decline by 22.6 percent to $7 316/t in 2013. Urbanisation projects in China are envisaged to raise the consumption of copper in that country and, industry analysts expect China to import more copper in 2014 as the country accelerates the construction of power networks, rail lines and low-cost houses. Global demand for and price of copper are forecast to increase in 2014 as China consumes a lion's share of world supply.Cobalt price is projected to decrease by 4.2 percent to $13.38/lb in 2013 but is expected to climb in 2014 due to declining stock levels and strong growth from the batteries and superalloys consuming sectors.

The expected increase in the construction activities in the BRICS (Brazil, Russia, India, China, and South Arica) countries could translate into a positive outlook for copper mining and investment in South Africa, as the metal is closely linked to infrastructure and urbanisation.South Africa's infrastructure projects, which are on the pipeline, are expected to lead to higher domestic consumption of copper. The envisaged positive price development in the zinc market augurs well for South Africa's Gamsberg zinc project.

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ALUMINIUM

T Chili

WORLD SUPPLY

According to CRU, world refined aluminium productionrose by 6.9 percent to 47.7 Mt in 2012 compared with2011(Table 43), due to capacity expansions in the Middle East and Asia.Major producers were China(22.0Mt), Russia (4.0Mt) and Canada (5.8Mt), collectivelyaccounting for 60.3percent. South Africa contributed 1.4 percent and was ranked 10th in terms of global output.

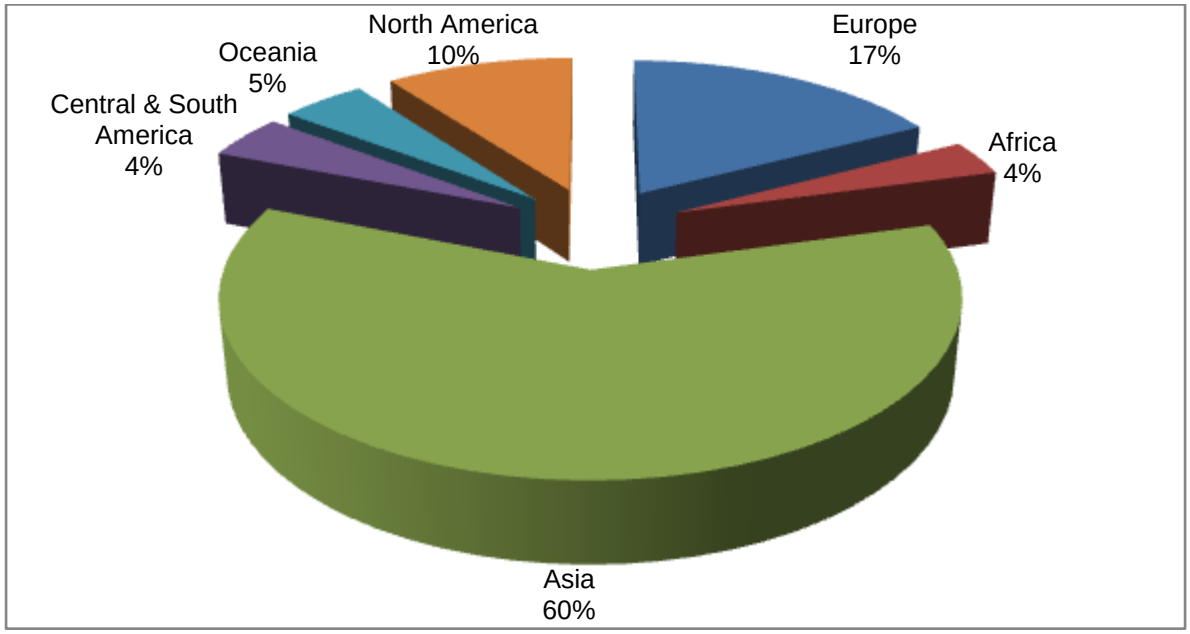
TABLE 43: WORLD ALUMINIUM SMELTER CAPACITY, PRODUCTION AND EXPORTS, 2012

COUNTRY	SMELTER CAPACITY	PRODUCTION			EXPORTS		
	Kt	kt	%	Rank	kt	%	Rank
Australia	1 980	1 862	3.9	5	1 652	8.1	3
Bahrain	970	888	1.9	9	-	-	9
Brazil	1 700	1 436	3.0	7	524	2.6	7
Canada	3 020	2 781	5.8	3	2 400	11.7	2
China	25 000	22 000	46.1	1	631	3.1	5
India	3150	1 714	3.6	6	316	1.5	10
Norway	1 230	1 140	2.4	8	1 354	6.6	4
Russia	4 450	4026	8.4	2	5 453	26.7	1
South Africa	900	*668	1.4	10	472	2.3	6
USA	2 900	2 070	4.3	4	528	2.6	8
Other	11 100	9 133	19.1	-	7 105	34.8	
TOTAL 2012	**55 900**	**47 718**	**100.0**		**20435**	**100.0**	
2011	**55 900**	**44624**			**20 875**		

Sources:United States Geological Survey, 2013, p 17
CRU
**Department of Mineral Resources (DMR), Directorate Mineral Economics*
World Bureau of Metal Statics

Refined aluminium outputdeclined in all the regions except in Asia whereproduction climbed by11.4 percent, driven by robust growth in automobiles. Europe and Oceaniaboth registered a decline of 5.2 percent while Africa's 9.2 percentdecrease resulted from power supply challenges, which led to smelters' production curtailments. Asia, at 28.7Mt continued to dominate world refined aluminium output, contributing 60 percentto total world production followed by Europe's17percent and North America's 10 percent (Fig.26).

FIGURE 26: WORLD ALUMINIUM PRODUCTION BY REGION, 2012

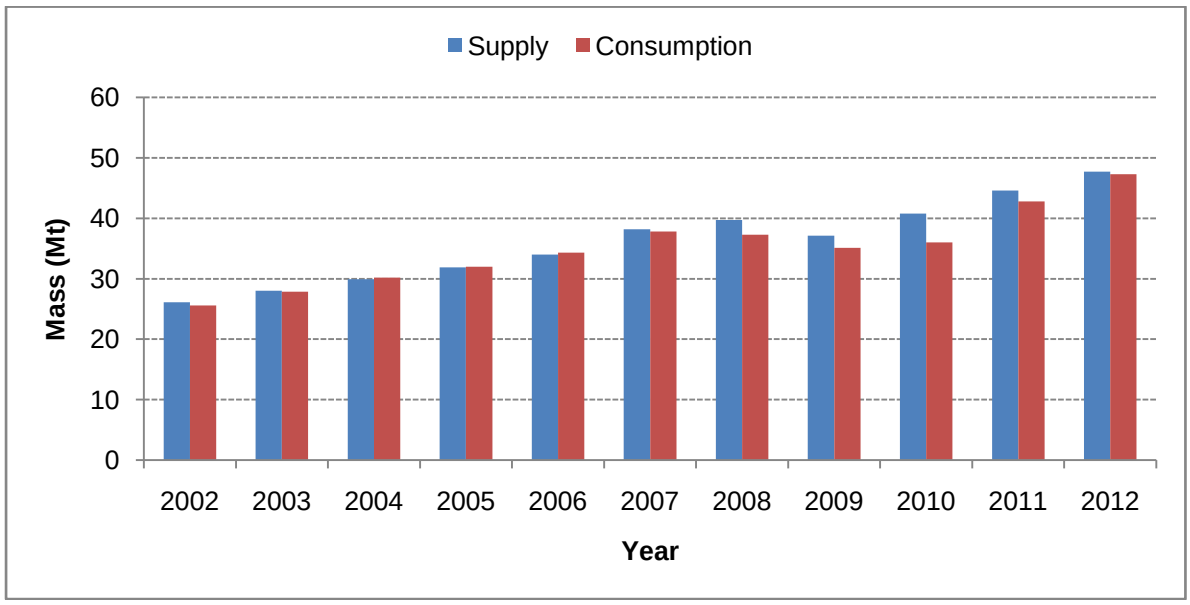


Source: CRU, 2013

CONSUMPTION

According to CRU, global demand for the light metal increasedby 5.1 percent to 42.4 Mt in 2012 (Fig. 27)comparedwith 2011, fuelled by Chinese demand for automobiles.Growth in the automobile industry was driven byEU's requirements for lighter fuel efficient vehicles in a bid to curb carbon dioxide emissions.

FIGURE 27: WORLD ALUMINIUM SUPPLY AND DEMAND 2002-2012



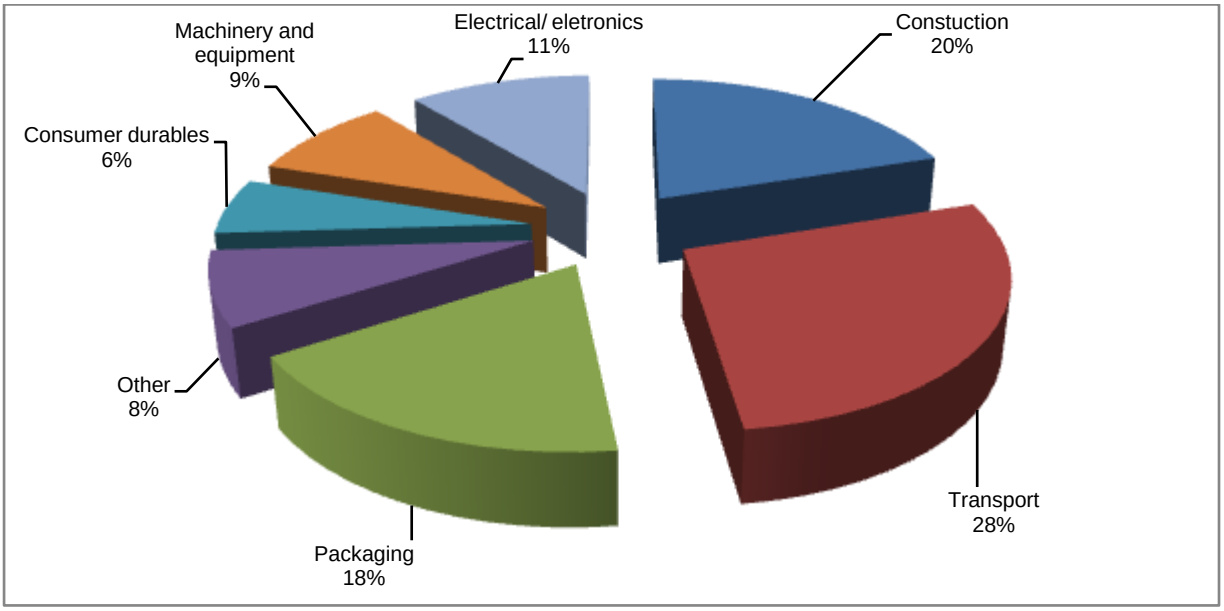
Source: CRU, 2013

In 2012, Asia was the largest consumer of aluminium at 65 percent,followed by Europe's 17 percent and the Americas collectively accounted for 15 percent. Africa and Oceania accounted for 1 percent each.

Demand for refined aluminium was driven by the transport sector, which accounted for 28 percent of total consumption, followed by construction sector (20 percent) and the packaging sector (18 percent) as

depicted in Figure 28. Electrical industrial sectors and machinery consumed 11 percent and 9 percent respectively while consumer durables accounted for 6 percent.

FIGURE 28: INDUSTRIAL DEMAND FOR HIGH GRADE PRIMARY ALUMINIUM, 2012



Source: MetalBulletinFocus, 2012

WORLD TRADE

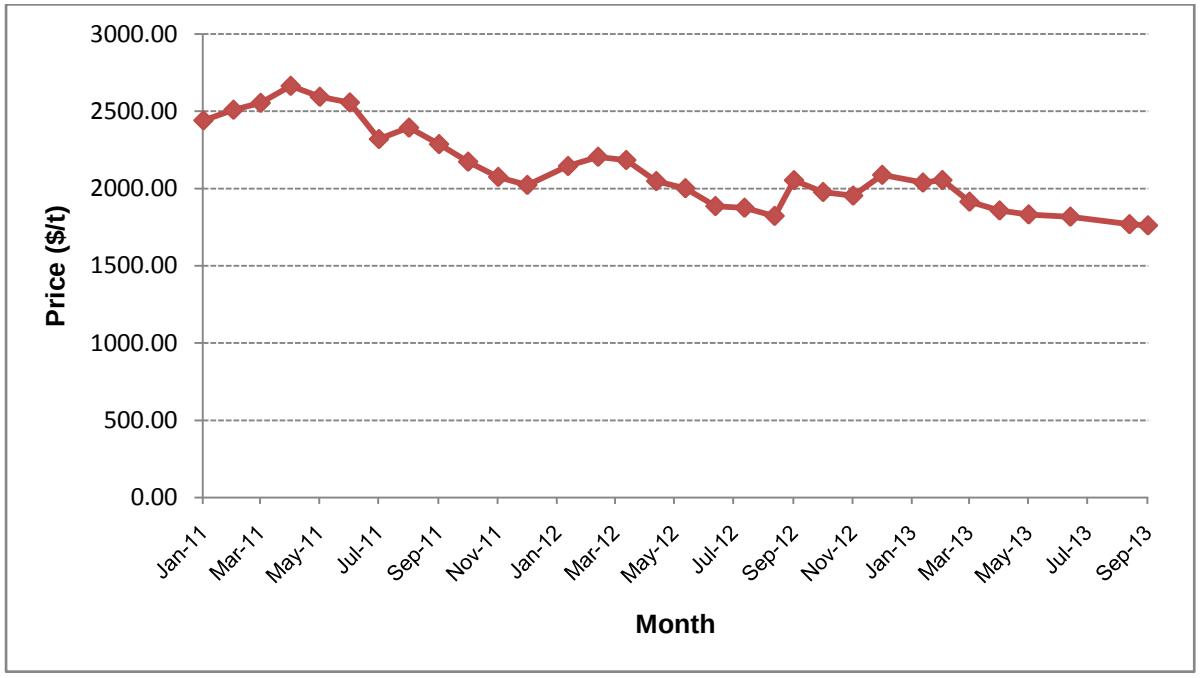
In 2012, world refined aluminium exports declined by 7.6 percent to 22.4 Mt compared with 2011. Russia's exports, the world's largest exporter of aluminium, fell by 1.8 percent due to dampened aluminium market fundamentals. Also, the second major exporter, Canada's exports plunged by 4.5 percent while Netherlands and Australia's were relatively stable. South Africa's primary aluminium exports rose by 20.5 percent to 471.1 kt of aluminium ingots in 2012, which indicates that the country still exports electricity and jobs.

World aluminium imports declined by 0.96 percent to 20.9 Mt in 2012 when compared with 2011.USA and Japan dominated the world aluminium imports accounting for 13.5 percent 13.1 percent respectively. South Africa imported 64 kt of beneficiated aluminium, particularly from China in 2012.

PRICES

In 2012, the London Metal Exchange (LME) cash settlement price declined by 15.1 percent to an annual average of $2 023.52/t compared with 2011 (Fig.29) as a result of an oversupplied aluminium market and high inventory levels. Aluminium price ranged between $2 144.14/t and $2 086.63/t as the year progressed. The negative trend continued to a second half yearly average of $1 917.81/t due to the contagion of global market surplus. Economic Times observed that aluminium market was oversupplied from 2008 due to weak demand, low price and high stock levels.

FIGURE 29: LONDON METAL EXCHANGE CASH SETTLEMENT PRICE (MONTHLY AVERAGES), 2011 TO 2013



Sources: London Metal Exchange, 2011-2013

GLOBAL DEVELOPMENTS

Alcoa and Brazilian federal power holding group, Eletrobras, reached an agreement for 200MW power supply from the Tucuruí hydro-plant to Alcoa's Alumar smelter and São Luis in Maranhão state. The new contract wasscheduled to be effective from1st April 2013 to 31st March 2014 while Poços de Caldas smelter is scheduled for 11 percent reduction in power price.The two aluminium smelters,Poços de Caldas (MG) and São Luis (MA) are expected to have capacities to produce 95 kt/a and 269 kt/a, respectively.

The United Arab Emirates (U.A.E) is set to merge its two flagship state aluminium firms. The new entity, Emirates Global Aluminium, will be jointly held by Dubai Aluminium (Dubal) and Emirates Aluminium (EMAL) combined investment is estimated at $15 billion, which include Emal's Phase IIexpansion plan, which will double its production capacity to 1.3 Mtof aluminium per annum and Dubal is expected to have a capacity of 1Mt/a. Emirates Global Aluminium will have an aluminium production capacity of 2.3 Mt/a afterthe completion of EMAL's phase two smelters in mid-2014.

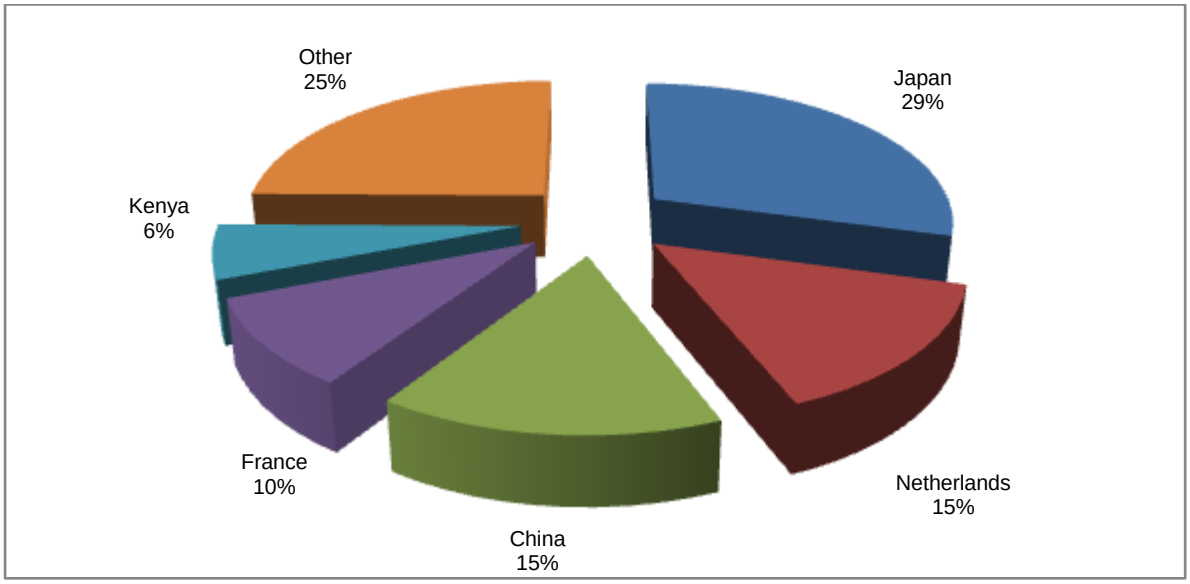
DEVELOPMENTS IN AFRICA

A Canadian based Anglo Aluminium Corp; a mineral exploration company is in the process of evaluating and developing its bauxite (aluminium ore) in Guinea, West Africa. Its properties comprise an exploration permit covering two titles (536 km^2) situated in the Boke Bauxite Belt North West of Guinea, and another covering 1 800 km^2 situated in the Mamou-Dalaba Area of southern Guinea. Permits are directly surrounded by several of the world's major bauxite miners. The Boke Bauxite Belt hosts the world's largest and highest quality bauxite deposits with grades of 40 percent to 60 percent of aluminium oxide.

SOUTH AFRICA

South Africa's aluminium production declined by 17.5 percent to 668 kt in 2012 compared with 810 kt in 2011. This decline was mainly attributed to the following factors: technical problems in smelters, depressed aluminium prices, declining domestic demand and incremental electricity costs.In 2012, South Africa exported 70.5 percent of refined aluminium and the balance was consumed locally. Twenty nine percent of the total refined aluminium exports in South Africa were shipped to Japan, followed by Netherlands and China at 15 percent each. France and Kenya imported 10 percent and 6 percent, respectively (Fig.30).

FIGURE 30: SOUTH AFRICA'S REFINED ALUMINIUM EXPORTS BY DESTINATION, 2012



Source: DMR, Directorate Mineral Economics, 2013

OUTLOOK

RBC Capital Marketspredicts an increase of 3.8 percent in world refined aluminiumproduction in 2013 amounting to 47.92 Mt and a further 6.8 percent increase to 51.13Mt in 2014. This growth is expected to be from Abu Dhabi, China, India, Russia and Saudi Arabia driven by smelter capacity restarts.

World aluminium consumption is projected to increase by 4.8 percent to 49.73Mt in 2013and by a further 6.7 percent to 51.14 Mt in 2013. Consumption growth is expected to remain strong, particularly in the transport sector, where aluminium is extensively used in the manufacture of automobiles in the face of lighter vehiclesrequirements in a bid to curb carbon dioxide emissions. LME aluminium cash settlement price is forecastto fall by 8.5percent to $1847.74/t compared with $2023.52/t in 2012 as a result of the oversupplied aluminium market. The expected stronger demand from automobile, construction and aerospace sectors could lift the aluminium price in 2014.

South Africa's aluminium production is expected to be stagnant in 2013 due to low prices, but is expected to rise in 2014 due to the anticipated Rosslyn expansion in the manufacture of aluminium vehicles in the medium term.

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ANTIMONY

L Maphango

WORLD SUPPLY

According to the US Geological Survey (USGS), global reserves of antimony were estimated at 1.8 Mt in 2012. China holds the most reserves of antimony in the world at 950 kt, followed by Russia (350 kt), Bolivia (310 kt), Tajikistan (50 kt) and South Africa (27 kt).In 2012, world antimony production decreased marginally by 0.3 percent to 177.4 kt compared with 2011. China, with an output of 150 kt, was still the world leader in terms of production, accounting for 84.5 percent, followed at a distant second place by South Africa's 2.8 percent, Bolivia's 2.3 percent, Russia's 1.9 percent and Takijistan's 1.1 percent.

TABLE 44: WORLD RESERVES AND PRODUCTION OF ANTIMONY CONCETRATES, 2012

COUNTRY		RESERVE			PRODUCTION		
		kt	%	Rank	kt	%	Rank
Bolivia		310	16.9	3	4	2.3	3
China		950	51.7	1	150	84.5	1
Russia		350	19.0	2	3.3	1.9	4
South Africa		27	1.5	5	5	2.8	2
Tajikistan		50	2.7	4	2	1.1	5
Other		150	8.2	-	13.1	7.4	-
Total	2012	1 837	100.0		177.4	100.0	
	2011	1 831			178.0		

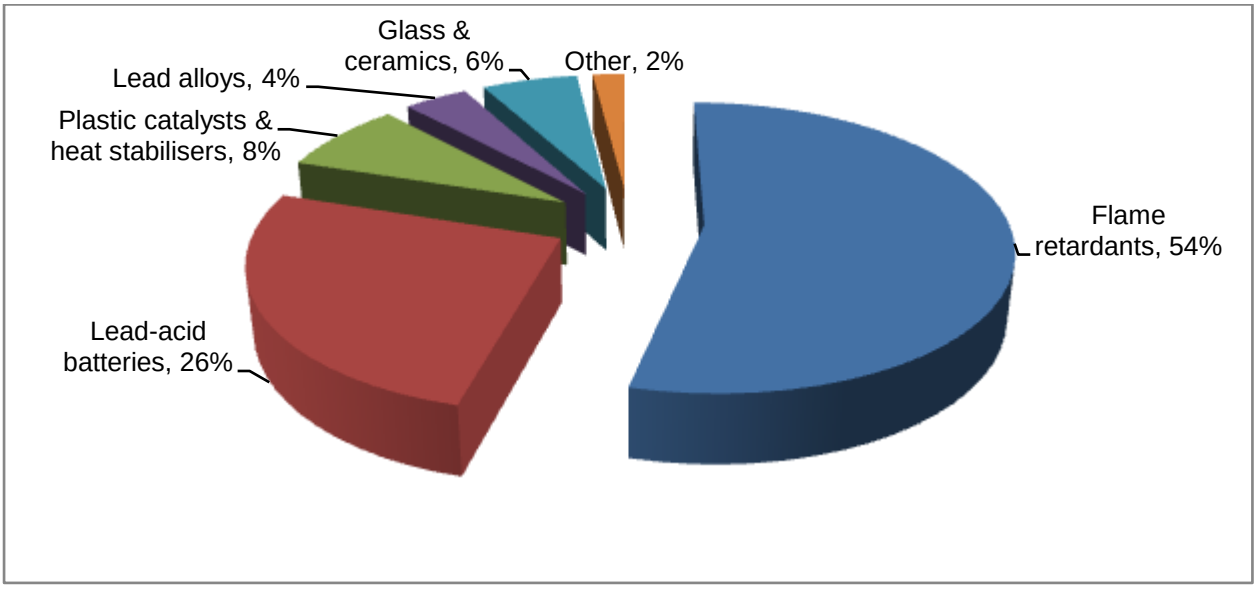
Source: USGS, Mineral Commodity Summaries, January 2013

Antimony exploration activities gained momentum in 2012 as miners set sight on increasing the global supply.According to Visual Capitalist's estimates, 17 percent of antimony production is derived from small, illegal and polluting mines in China. These mines are increasingly being uncovered and closed down by the government of that country, leading to limited antimony supply and exports by China. According to USGS, new antimony mine projects are being evaluated and developed in Armenia, Australia, Canada, China, Georgia, Italy, Laos, Russia and Turkey.

WORLD DEMAND

The year 2012, was characterised by weak antimony market conditions due to poor demand from the fire-retardant and battery consuming sectors, emanating from the sluggish global economy. The world economy was mainly impacted by the Euro zone debt woes and the slowing Chinese economy. The major application of antimony is in flame retardants in the form of antimony trioxide (Fig. 31). The flame retardants sector accounts for about 54 percent of global primary antimony consumption, followed by lead-acid-batteries (26 percent), plastic catalysts & heat stabilisers (8 percent), glass and ceramics (6 percent), and lead alloys (4 percent).

FIGURE 31: GLOBAL ANTIMONY CONSUMPTION BY SECTOR, 2012



Estimates from various sources

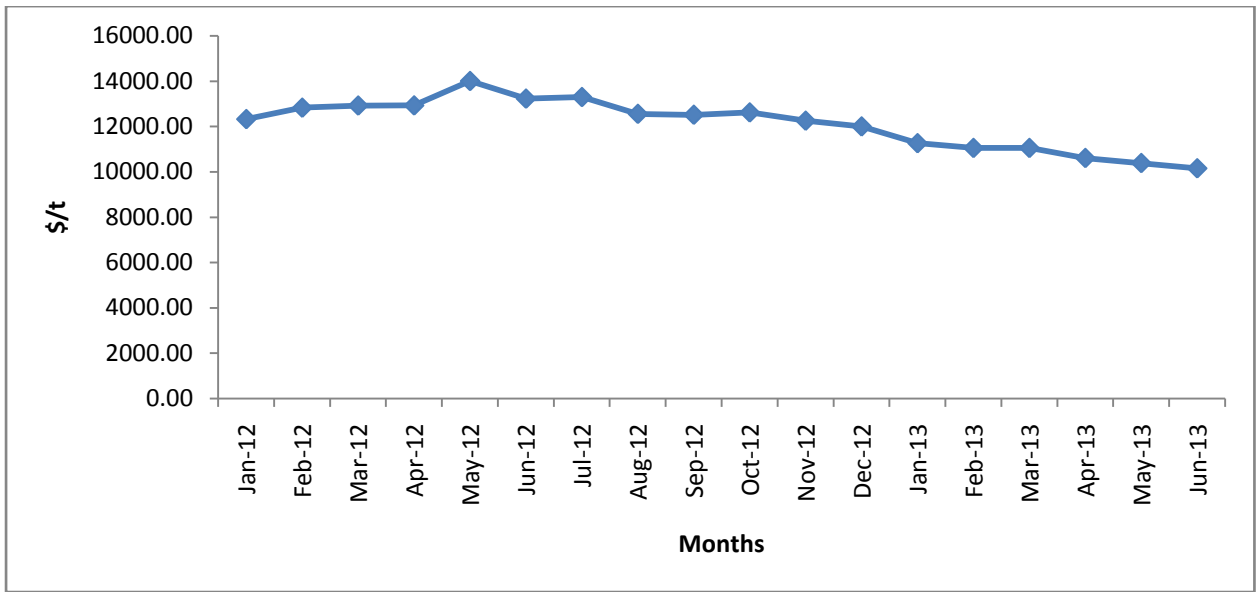
Antimony trioxide is used in flame retardants as a synergist to improve the performance of primary flame retardants. The presence of antimony trioxide substantially reduces the amount of primary flame retardants required to achieve the desired level of performance. The enhanced flame retardants are used in various products including plastics, textiles, rubber, adhesives, toys, electronics, building materials and in seat covers of aircrafts and automobiles.China dominates the global antimony consumption, accounting for more than 50 percent of total consumption. The following new uses of antimony are emerging in the market:

- New applications of antimony in solar panels which are used in the green energy sector have been developed by China.
- And new generation of memory devices are expected to replace flash drive memory devices currently used in USB memory devices, computers and mobile phones. The new phase-change devices are made of an alloy of antimony and other metals.

PRICES

The price of antimony was range-bound during 2012 and averaged at $12 778/t per annum, representing a decrease of 13.3 percent compared with the previous year. In February 2012, the average price increased by 4.1 percent to $12 824/t compared with the previous month, as a result of smelter stoppages in China's Guangxi province, following a cadmium poisoning incident during the month. The price remained stable until April and ascended to $14 000/t in May, on the back of stronger demand. Thereafter, the price followed a declining trend reaching $10 152/t in June 2013, due to high inventories and lower domestic consumption in China.

FIGURE 32: ANTIMONY METAL BULLETIN, FREE MARKET PRICES, 2011 – 2013



Source: Metal Bulletin Free Market, 2011 - 2012

DEVELOPMENTS IN SOUTH AFRICA

South Africa's output of antimony concentrate decreased by 3.4 percent to 3 066 t in 2012 compared with the previous year. The decrease in production was attributable to a labour dispute at Cons Murch mine, the only producer of antimony in South Africa. Village Main Reef owns 74 percent of the mine and the remaining 26 percent is held by the Employee Share Trust. According to Village Main Reef, current operations at Cons Murch have a life of mine (LOM) of about 11 years, but the LOM could be extended due to the open-endedness at the bottom of the mine.

DEVELOPMENTS OUTSIDE SOUTH AFRICA

In early 2013, United States Antimony Corporation (USAC), a USA based company, opened the antimony oxide mineral circuit at its Puerto Blanco antimony flotation mill in Guanajuato, Mexico. The circuit is expected to raise the milling capacity at the plant from 150 to 225 tonnes per day. In February 2013, China's Hunan Province, the biggest antimony producing province, announced its plans to inspect environmental facilities of all antimony producers in the province. The inspections which begun in March 2013 are expected to be completed over a period of 8 months. The Office of Environmental Protection of Hunan province has warned producers that they would face legal action if they do not cooperate with the inspection team.

Tri-Star Resources, a UK based company, is developing its Roaster project to process antimony and antimony trioxide in the Sultanate of Oman. The Roaster project will source its feed from the company's upstream resource projects in Turkey and Canada and from third party producers according to Tri-Star Resources. The environmentally advanced Roaster facility is expected to produce about 20 000 tonnes of antimony metal and trioxide. Tri-Star's operations are scheduled to commence in 2016 and will target Japan and the European market. Tri-Star aims to become the leading vertically integrated antimony producer in the world. The Beaver Brook mine in Canada, which is owned by Hunan Nonferrous, was shutdown. According to Metal-Pages the closure is expected to last for about two years. Australasia Antimony, an Australian based junior mining company, is raising capital with the aim of resuscitating two non-operating antimony mines in Australia and South America. The mines are expected to come on stream in 2015, but the reserves and expected production capacity have not yet been made available.

OUTLOOK

Global output of antimony concentrate is forecast to remain at the same level in 2013 as several new mine projects are still in the development stage. The environmental inspections at Hunan, a province that accounts for more than 80 percent of China's antimony output, are expected to have an adverse effect on

the global supply of antimony. South Africa's production of antimony concentrate is projected to decline in 2013, due to the strike action. However, production is anticipated to go up in 2014 in view of the trackless mining which is expected to improve productivity, cost-effectiveness and margins at Cons Murch mine.

The rising trend of increasing consumption of fire retardants is expected to continue to drive the global demand for antimony. Demand is forecast to strengthen in 2014 and beyond, due to the anticipated improvement in the global economy. According to Metal-Pages, producers are optimistic about the future prospects of the antimony market and, prices of antimony are expected to pick up in 2014. Producers' bullish outlook is premised on the view that the market is likely to fall into a significant deficit due to rising consumption of fire-retardants coupled with the dwindling Chinese resources.According to Metal-Pages, global demand for antimony is projected to rise to about 250 kt by 2016.According to a study conducted by the US-based research firm, Fredonia Group, global demand for flame retardant additives is forecast to grow by 6.1 percent per annum, reaching 2.2 Mt tones by 2014.

Roskill's report, predicts metallurgical markets to increase by 2 percent per annum fuelled by increasing use of lead alloys in construction applications in emerging economies. The report also expects non-metallurgical markets for antimony to rise by approximately 4 percent per annum through to 2016, mainly driven by higher growth in flame retardants, plastic catalysts and heat stabilisers. However, lower growth in ceramics and other uses is anticipated. New uses of antimony in solar panels and memory devices are expected to support the growth of global demand for antimony in the future. These developments bode well for South Africa's antimony industry as they have the potential to extend Cons Murch's LOM.

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COBALT

T Chili

SUPPLY

According to the United States Geological Survey (USGS), world cobalt reserves remained stagnant at 7.5 Mt in 2012 (Table 45). At 45.3 percent, the Democratic Republic of Congo (DRC) still dominated global reserves followed by Australia (16.0 percent) and Cuba (6.7 percent). South Africa accounted for 0.9 percent of the world reserves and ranked 10th in the world. The large expansion at the Nkomati mine resulted in the country's increase in reserves and will boost the country's output as cobalt is sourced as a by-product of PGMs mines. Globally, 57 percent of cobalt is derived from nickel mining, 37 percent is sourced from copper mining and the balance of 6 percent is recovered from primary cobalt operations.

World cobalt mine production improved by a minor 0.9 percent to 110 kt in 2012, compared with 109 kt in 2011 (Table 45), complemented by technological advancement on laterite projects from Australia, Brazil, Cuba Russia and China. The DRC was the world's largest producer of cobalt accounting for 53.1 percent followed by China's 6.6 percent. South Africa contributed 0.9 percent to global cobalt mine output, derived mainly as a by-product from Platinum Group Metals (PGMs) mines.

TABLE 45: WORLD RESERVES AND MINE PRODUCTION OF COBALT, 2012

	RESERVES			MINE PRODUCTION		
COUNTRY	kt	Percent	Rank	t	Percent	Rank
Australia	1 200	16.0	2	4 500	4.1	5
Brazil	89	1.2	8	3 700	1.7	8
Canada	140	1.9	7	6 700	7.3	3
China	80	1.1	9	7 000	6.6	4
Cuba	500	6.7	3	3 700	3.7	6
DR Congo	3 400	45.3	1	60 000	53.1	1
Morocco	20	0.3	11	1 800	2.6	7
New Caledonia	370	4.9	4	3 500	2.0	9
Russia	250	3.3	6	6 200	6.4	5
South Africa±	70	0.9	10	1102	0.9	10
Zambia	270	3.6	5	3 000	12.5	2
Other	1 111	14.8		8 798	5.8	
TOTAL 2012	**7 500**	**100**		**110 000**	**100**	
2011	**7 500**			**109 000**		

Sources: USGS, January 2013, (for Reserves and Mine Production)
±DMR, Mineral Economics Directorate (mine production)
eEstimate

In 2012, world refined cobalt production dropped by 5.8 percent to 77.5 kt compared with 2011, due to reduction in output from major producers in DRC, China and Zambia (Table 46). This decline was also compounded by a dampened market which resulted in reduction of production. Despite a decline of 2.7 percent in refined cobalt production in China, the country remained the largest producer, accounting for 38.7 percent of global refined cobalt output, followed by Finland's 13.5 percent and Canada's 7.2 percent. South Africa and Zambia collectively contributed 8.4 percent to global output.

TABLE 46: REFINED COBALT PRODUCTION BY COUNTRY, 2011 AND 2012

COUNTRY	2011		2012		
	t	%	t		Rank
Australia	4 722	5.2	4 800	6.2	5
Belgium	3 187	3.3	4 200	5.4	6
Canada	5 923	5.9	5 600	7.2	3
China	34 969	45.3	30 000	38.7	1
D R of Congo	3 083	5.3	3 250	4.2	7
Finland	10 441	11.7	10 500	13.5	2
Japan	2 007	2.4	2 500	3.2	9
Morocco	1 788	1.9	1 300	1.7	11
Norway	3 067	4.0	3 000	3.9	8
Russia	2 337	3.1	2 100	2.7	10
South Africa*	862	1.1	1 100	1.4	12
Zambia	5 956	4.4	5 400	7.0	4
Other	3 905		3 750	4.8	
TOTAL	**82 247**	**100**	**77 500**	**100**	

Source: CDI 2013
Mineral Economics Directorate, DMR

The Cobalt Development Institute (CDI) members' cobalt production rose by 28.2 percent to 36.5 kt in 2012 (Table 47). The increase was supported by rises in production from all CDI members except BHPB/QNPL in Australia and CTT in Morocco, which fell by 10.0 percent and 26 percent, respectively.

TABLE 47: CDI MEMBER COMPANIES' REFINED COBALT PRODUCTION, 2011 AND 2012

COMPANY	COUNTRY	2011	2012	RANK
		t	t	
CDI MEMBERS				
BHPB/QNPL	Australia	2 631	2 369	6
Chambishi	Zambia	4 856	5 435	2
CTT	Morocco	1 788	1 314	8
Vale Inco	Canada	2 070	1 890	7
Eramet	France	354	326	10
Gécamines	DRC	650	870	9
ICCI	Canada	3 853	3 792	3
FMI Co (was OMG)	Finland	10 441	10 547	1
Sumitomo	Japan	2 007	2 542	5
Rubamin[μ]	India	579	200	11
Umicore	Belgium*	3187	1 890	7
Xstrata	Norway[+]	3 067	2 969	4
TOTAL		**35 483**	**36 454**	

Source: Cobalt Supply and Demand 2013
[μ=]Rubaminresigned in 2012

Additional refined cobalt came from the recycling sectors such as the re-melting facilities. This sector was also impacted by the dampened global markets, resulting in a 12.9 decline in output.

TABLE 48:OTHER REFINED COBALT PRODUCTION, 2012

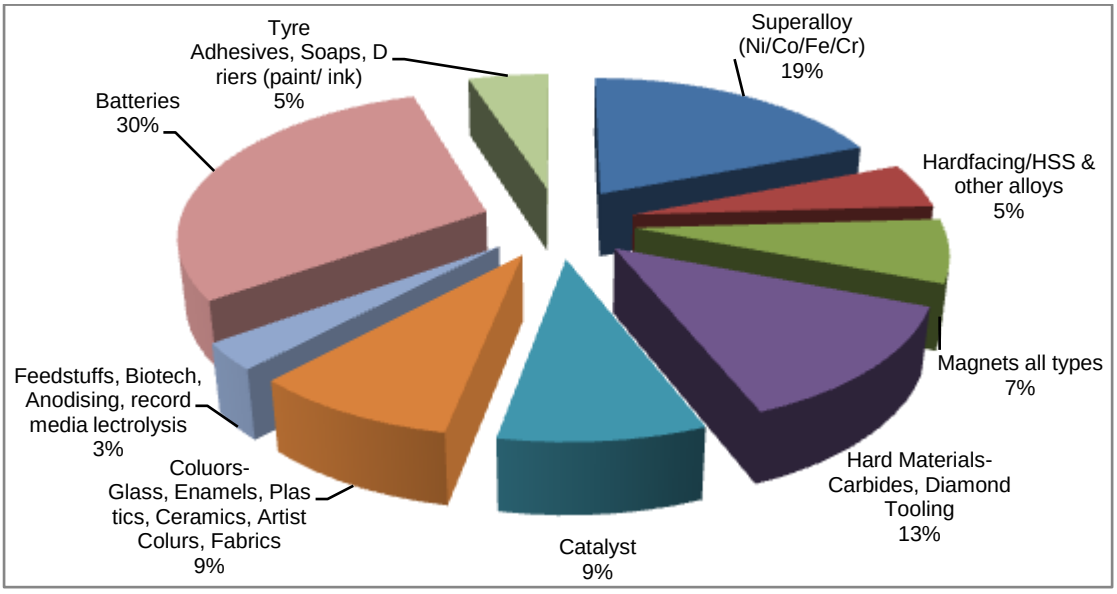
PRODUCER	COUNTRY	2011	2012	RANK
		t	t	
	Brazil	1 613	1 750	7
	China	34 969	29 784	1
	India	720	600	6
Kasese	Uganda	661	556	7
Katanga Mining	DRC	2 433	2 129	4
Mopani Copper	Zambia	2 091	230	8
Minara	Australia	2 337	2 400	2
Norilk	Russia	2 460	2 186	3
	South Africa	840	1 100	6
TOTAL			**46 764**	**40 735**

Source: Cobalt Supply and Demand 2013

DEMAND

Market conditions in 2012 continued to deteriorate due to Chinese economic slowdown, which led to refined and unrefined cobalt supply surpluses. According to the CDI, global cobalt demand decreased by 4 percent to 72 kt in 2012 compared with 2011. The demand for cobalt is tied to batteries (hydroxide, powder and $LiCoO_2$), which accounted for 30 percent, followed by super-alloys (19 percent), harding material-carbides (diamond tooling materials) 13 percent and others (Fig.33).

FIGURE 33: CONSUMPTION BY SECTOR, 2013



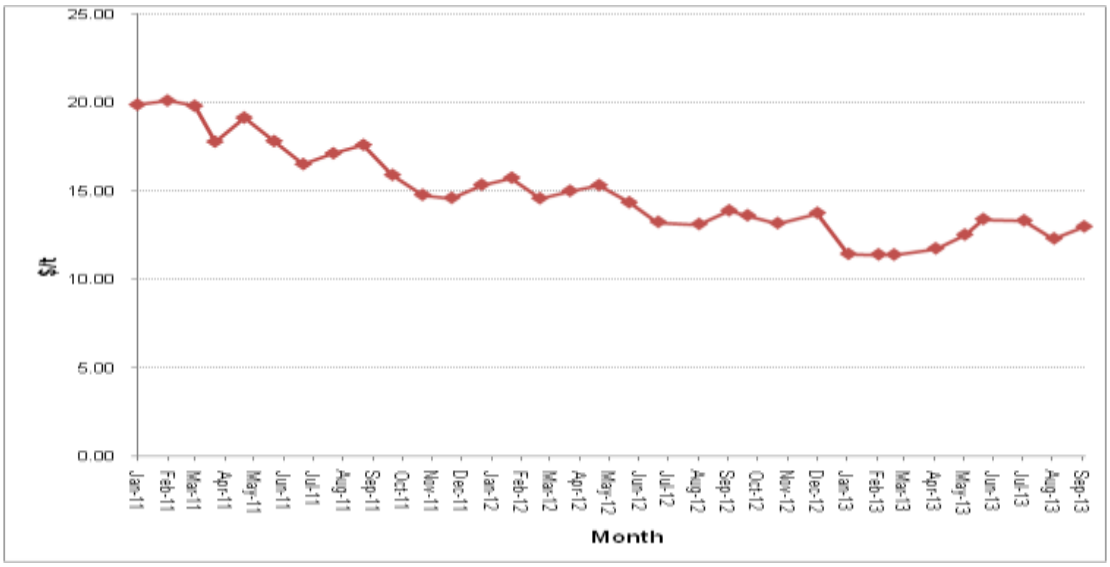
Source: Cobalt Facts, Supply and Demand, 2013 (The CDI)

Consumption from the battery sector registered a robust growth on the back of demand for tablet and smart phone devices. Demand from the super-alloy sector continued to grow from the aerospace and industrial gas turbine markets. Strong demand growth in 2012 led to a significant de-stocking of both unrefined and refined cobalt material in China. Consequently, the overall supply-demand balance undermined the cobalt market.

PRICES

In 2012, cobalt price followed a downward trend and settled at an annual average of $14.26/lb, 18.9 percent lower than in 2011. The price reached a low of $13.2/Ib in August and closed the year at an average of $13.5/Ibin December 2012. The depressed cobalt price, attributable to supply excess, persisted throughout the first half of 2013.

FIGURE 34: COBALT PRICE, 2011 – 2013



Sources: Metal Bulletin, 2013

GLOBAL AND AFRICAN DEVELOPMENTS

Chinese companies are increasingly becoming involved in copper and cobalt exploration and mining in the Democratic Republic of Congo (Kinshasa). Table 48 depicts Chinese investment in cobalt while Table 49 show future potential projects in that country.

TABLE 49: CHINESE PROJECTS IN DRC IN AFRICA

PROJECT	MEASURE	CONTRACTOR	COST ($M)
Boulevard de 30 Juin, Kinshasa (Pt. 1)	Refurbishment	CREC	24.1
Boulevard de 30 Juin, Kinshasa (Pt. 2)	Refurbishment	CREC	19.3
Esplanade in front of People's Palace, Kinshasa	Refurbishment	Sinohydro	19.7
Avenue de Tourism, Kinshasa	Refurbishment	CREC	24.3
Boulevard Triomphale et Sendwe, Kinshasa	Refurbishment	CREC	29.2
Central Hospital, Kinshasa	Construction	Sinohydro	99.9
Lutendele Road, Kinshasa	Refurbishment	CREC	21
Beni-Luna, North Kivu	Refurbishment	Sinohydro	57.8
Road between Lubumbashi and Kasomeno, Katanga	Refurbishment	CREC	138
Donation of solar panels	Donation	Sinohydro	11
Donation of generators	Donation	CREC	6.5
Factory for construction of pre-fabricated houses	Construction	CREC	7.5
TOTAL			**458.4**

Source: Roskill, 2013

TABLE 50: POTENTIAL FUTURE PROJECTS

COMPANY	PROJECT	STATUS
African Metals Corporation	Luisha South	Development
African Rainbow Minerals	Kalumines	Exploration
Africo Resources	Kalukundi	Development
Comide	Kii, Mashitu, Pangalume	Exploration
Comilu	Luisha	Exploration
Highwind Group (RTR)	Kolwezi Tailings	Targeted Second half 2014
Managem	Pumpi	Development
Phelps Dodge Congo	Kisanfu	Exploration
Société de Kabolela et de Kimpese	Kabolela	Exploration
SociétéMiniere de Kolwezi	Mutoshi	Placed on care and maintenance in 2008. Testing and exploration required
Tiger Resources	Kipoi, Lupoto, La Patience HMS Plant + SX/EW	Targeted first half 2014

Source: Roskill, 2013

Furthermore, in DRC, TenkeFungurume (Tenke) a copper-cobalt mine located in the southern part of Katanga Province, Democratic Republic of Congo (DRC) completed phase II of its expansion project in June 2013. Tenke now has an annual production capacity of 195 kt of copper cathode and 15 kt of cobalt hydroxide.

Ambatovy is one of the largest African cobalt mining projects located in Madagascar with an estimated project cost of $6.9 billion in January 2013, the largest foreign investment in that country and one of the biggest in sub-Saharan Africa and the Indian Ocean region. Ambatovy is expected to deliver 56 kt of refined cobalt when completed in June 2013. The project has four partners namely; Sherrit International Corporation, SNC-Lavin Incorporated both from Canada and Korea Resources Corporation and Sumitomo Corporation from Korea and Japan, respectively.

SOUTH AFRICA

South Africa's cobalt is derived as a by-product of platinum-group metals (PGMs) and nickel mining. Cobalt production (metal in concentrate) increased by 29.9 percent to 1 102 t in 2012 (Table 51) when compared with 2011, and the supply was characterized by accumulated stocks, which led to a resilient local market. Local sales volumes declined by 2.4 percent due to weaker demand, impacting on revenues, which dropped by 31.1 percent to R7.4 million. However, exports rose by 36.5 percent and generated revenue of R147.3 million.

TABLE 51: SOUTH AFRICA'S LOCAL AND EXPORT SALES OF COBALT, 2001 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOR)	
	kg	kg	R' 000	R/kg	kg	R' 000	R/kg
2001	373 259	36 928	6 437	174	316 941	63 759	201
2002	352 000	33 790	5 996	177	311 591	55 225	177
2003	271 383	19 133	3 053	161	241 054	36 238	151
2004	308 929	18 517	5 671	306	309 848	83 232	269
2005	267 962	32 702	4 439	136	241 025	51 615	214
2006	266 875	44 320	8 882	200	220 921	46 975	213
2007	306 834	30 259	10 578	350	248 575	99 539	400
2008	244 407	43 134	26 231	608	261 494	167 774	642
2009	237 812	75 109	20 435	272	182 659	63 181	346
2010	840 285	57 988	16 110	278	493 098	135 424	275
2011	862 198	42 912	10 789	251	450 061	114 457	254
2012	1 102 438	32 800	7 439	226	614 480	147 320	240

Source: Directorate Mineral Economics, DMR

OUTLOOK

Copper-cobalt projects in the world renowned copper belt of the Democratic Republic of Congo and the start-up of greenfields projects indicates that the supply is expected to rise. Cobalt production is forecast to reach 88.8 kt in 2013 and 95 kt in 2014. The additional output is expected to come from DRC, Madagascar and Philippines. The DRC's intention to ban raw cobalt minerals exports will not have a negative impact on the global supply as the country has large volumes of cobalt and lacks significant modern cobalt processing facilities.

Cobalt price slumped in 2013 but robust growth from battery and super-alloys could encourage refined producers to restart stalled projects to raise production. In 2013, refined cobalt production is expected to grow by 2.7 percent to 79.6kt and by a further 4 percent in 2014 when projects from DRC and Madagascar come on stream.

Global demand for cobalt is anticipated to continue to decrease in 2013 due to the poor Chinese demand, leading to cobalt market surplus.Roskill predicts prices to continue to fall in 2014 with the ramp-up of new projects bringing additional cobalt into the market and exacerbating the current oversupply conditions. However, beyond 2014, market conditions are expected to improve, fuelled by rising growth from cobalt super-alloys used in aircraft jet engines, rechargeable batteries for hybrid and electric vehicles and gas-to-liquid facilities set to come on stream. The market situation is also expected to be supported by increasing vehicle production in new generation of Hybrid Electric Vehicles (HEV) and Electric Vehicles (EV), which consumed 30 percent of cobalt in 2012.

In South Africa, cobalt production is expected to rise in 2013 as a result of the ramp-up in production at the Nkomati nickel mine.

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COPPER

T Chili

WORLD SUPPLY

According to the World Bureau of Metal Statistics (WBMS), global copper mine production increasedby4.8 percentto 17Mt in 2012when compared with 16 Mt in 2011(Table 52).Chile continued to be the world's largest copper mine producer, contributing 5.4Mt followed by China's1.6Mtand Peru's 1.3Mt. In Africa, Zambia, DRC and South Africa collectively contributed 1.5Mt toglobal copper mine output.

TABLE 52: WORLD RESERVES, MINE PRODUCTION AND EXPORTS, 2012

COUNTRY	RESERVES			PRODUCTION			EXPORTS		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
Australia	86	12.6	2	914	5.3	5	371	4.3	4
Canada	10	1.5	12	579	3.4	9	117	1.3	10
Chile	190	27.9	1	5 434	31.8	1	2820	32.5	1
China	30	4.4	5	1 602	9.4	2	274	3.2	7
DRC	20	2.9	9	608	3.6	8	****	****	****
Indonesia	28	4.1	7	400	2.3	12	69	0.8	11
Kazakhstan	7	1.0	13	490	2.9	10	298	4.2	5
Peru	76	11.2	3	1 299	7.6	3	367	2.9	8
Poland	26	3.8	8	427	2.5	11	334	3.8	6
Russia	30	4.4	5	725	4.2	7	397	4.6	3
South Africa*	11	1.6	11	70	0.5	13	27	0.3	12
USA	39	5.7	4	1 195	7.0	4	163	1.9	9
Zambia	20	2.9	9	782	4.6	6	776	8.9	2
Other	107	15.7	-	2 839	14.9	-	2 710	31.2	
TOTAL 2012	680	100.0		17085	100.0		8 680	100.0	
2011	690			16 076			8 527		

Sources: *USGS, 2013, p49*
WBMS,2013

Notes: **Department of Mineral Resources(DMR), Directorate Mineral Economics: Copper concentrates, blister anode, and refined copper*
**** Not available*

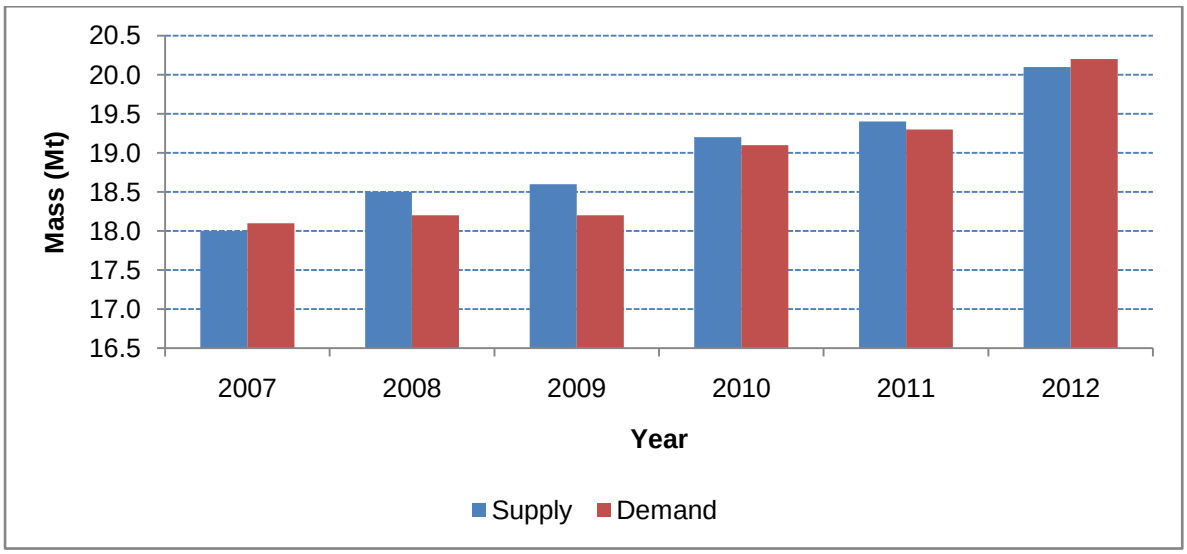
Mine output from Chile, the world's leading copper producer, rose by 3.3percent in 2012. Production in Chinaand DRC, climbed by 26 percent and 26.8 percent, respectively.These increases were driven by mining projects which came on stream. China contributed 31.8 percent, Peru (7.6 percent) and the United States (7.0 percent) to total world copper mine production. South Africa and Zambia collectively contributed 5.1 percent to total world copper mine output. Mine production increased in all regions except in Oceania, which recorded a decline of 4.8 percent. Africa was up by 8.7 percent followed by the Americas (4.8 percent), Europe (2.8 percent), and Asia (7.5 percent).

In 2012, world refined production increased by 3.3 percent to 20.5Mt compared with 2011.The higher production was mainly attributed to increases in Japan (9.4 percent), China (12.8 percent) and DRC (29.8 percent), which offset the declines in Chile (6.2.6 percent), the United States (2.9 percent) and South Africa(21.3 percent). Regionally,Africa'sand Asia's refined copper output rose by 8.8 percent and 8.3 percent, respectively. Oceania and Americas recorded declines of 3.4 percent and 4.6 percent, respectively, due to economic slowdown from industrial sectors.

CONSUMPTION

The demand for the red metal rose by 4.4 percent to 20.4Mt in 2012, driven by copper cable sector due to the ongoing investment in power and railway infrastructure. The Chinese andKazakhstan demand rose by12.5 percent and71.0 percent,respectively. Chinese strong growth was from automobiles while that of Kazakhstan was from power supply. The demand for copper was dominated by China and USA, accounting for 43 percent and 8.6 percent of total global output, respectively. Regionally, consumption rose by 8.0 percentin Asia as well as by 4.7 percent in Americas and by 1.2 percent in Africa,while in Europe and Oceania, it declined by 6.5 percent and 1.2 percent, respectively. Europe's slowing growth was mainly attributed to declines in industrial production and automobile sector, which lowered demand for copper wire, while that of Oceania was due to lower production of wire rod.

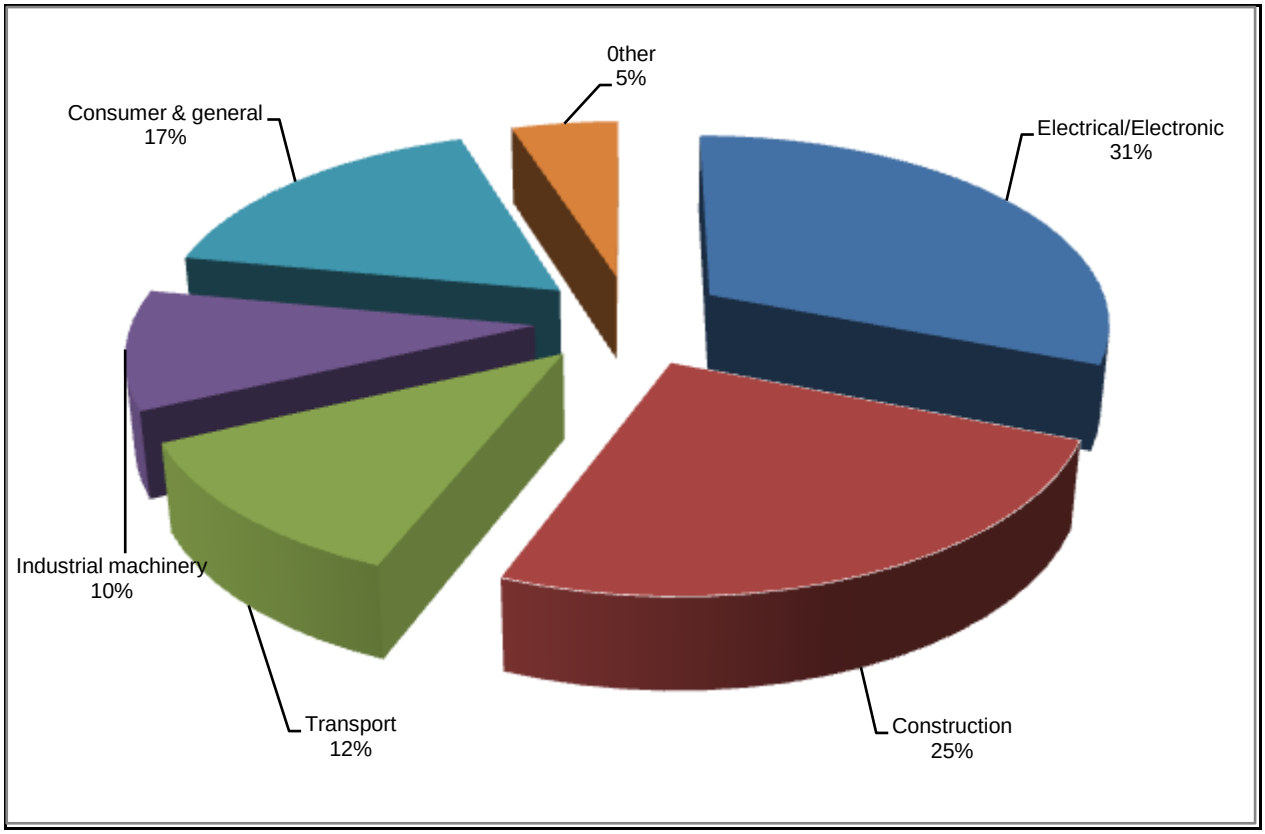
FIGURE 35: GLOBAL REFINED COPPER PRODUCTION AND CONSUMPTION, 2007-2012



Source: World Bureau of Metal Statistics 2013

In 2012, demand for refined copper was driven byelectrical/electronic sector, which accounted for 31percent, followed by construction and transportation sectors at25 percent and 12 percent, respectively (Fig.36).The balance of demand was from consumer durables and industrial machinery, which consumed 17 percent and 10 percent, respectively.

FIGURE 36: WORLD INDUSTRIAL REFINED COPPER DEMAND BY SECTOR, 2012

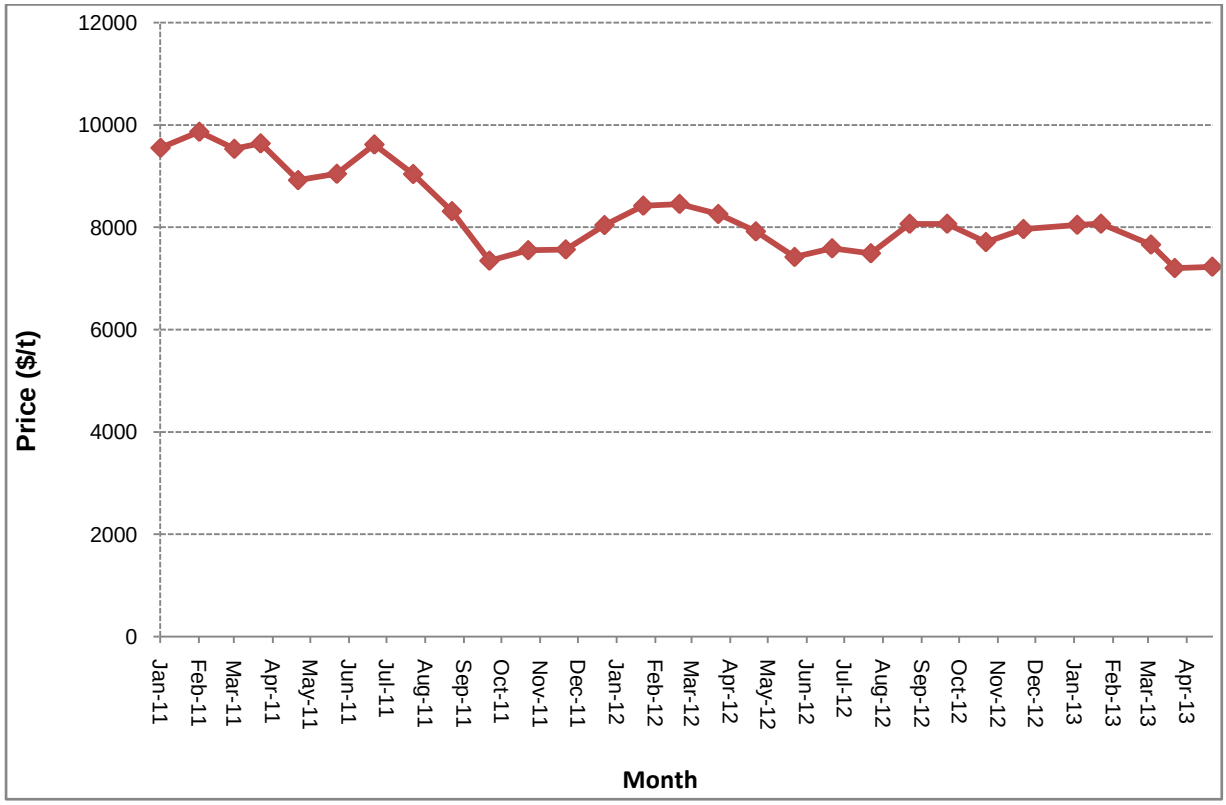


Source: London Metal Exchange (LME), 2012

PRICES

In 2012, the London Metal Exchange (LME) copper cashsettlement pricefluctuated as the year progressed following anecdotal copper data from China, which impacted on supply demand. Thedampened copper markets exerted a downward pressure on copper price to a low level of $7420/t in June 2012. However, copper price improved during the second half of the year and closed at $7966/t in December 2012. Continuedvolatility of LME copper price dragged down the annual average price by 10 percent to $7 952/t in 2012 when compared with 2011.During the first quarter of 2013, copper price was held in a narrow band between $8043/t and $7662/t and slid to $7229/t in May 2013 as the economic slowdown intensified in China, whileeconomic recovery in Europe and the US remained lethargic.

FIGURE 37:LME CASH SETTLEMENT COPPER PRICES (MONTHLY AVERAGES), 2011-2013



Source: London Metal Exchange, 2013

SOUTH AFRICA

South Africa's copper production (cathode, copper in concentrate) declined by 21.3 percent to 70kt in 2012 compared with 2011 (Table 53). The reduction in copper output was mainly due toplant refurbishment coupled with operational difficulties and lower copper ore grades associated with Lift I project from the major producer,PMC, which accounts for more than 70 percent of the country's output. Copper production from Platinum Group Metals (PGMs) mines rose by 1.6 percent to 25.6 kt.Local consumptiondeclined by 8.3 percent to 55kt while exportsclimbed by 3.8 percent to 27kt.Localunit values increasedby0.4percent to R65 454/twhile export unit values went up by1.4 percent toR59378/t.Local salesrevenues dropped by 9.2 percent to R3.57 billion owing to lower local sales volumes, while revenue from export sales rose by 5.6 percent to R1.58 billion as a result of higher export volumes and unit values.

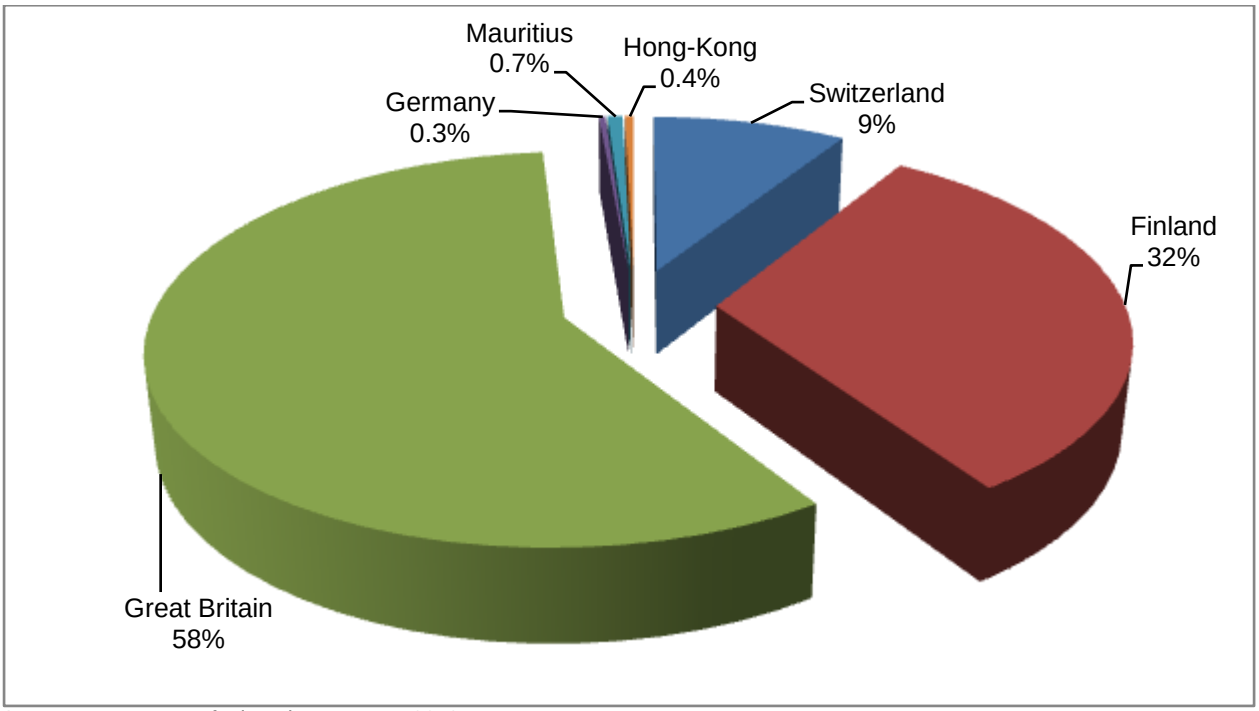
TABLE 53: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF COPPER, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value (FOR)		Mass	Value (FOR)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	121	76	1 073 734	14 114	46	567 502	12 229
2004	103	84	1 542 829	18 381	29	583 293	16 495
2005	99	82	1 926 378	23 496	30	656 721	21 882
2006	110	84	3 892 035	46 452	24	1 064 092	43 598
2007	113	77	4 025 725	52 242	36	1 772 305	49 683
2008	97	68	4 120564	60168	33	1 507 356	45 860
2009	93	68	2 835 737	41 695	27	1 022 782	38 152
2010	84	57	3 160 029	55 750	25	1 209297	48 718
2011	89	60	3 937 749	65 168	26	1 495 100	58 581
2012	70	55	3 575 956	65 454	27	1 579 105	59 379

Notes: Exports include cathode, blister and concentrates. The mass shown is that of metal and contained metal

Of the total exports of copper produced locally, 58 percent were shipped to Great Britain (UK), 32 percent went to Finland, followed by Switzerland and Mauritius at 9.0 percent and 0.7 percent, respectively (Fig.38). Hong-Kong andGermany consumed 0.3 percent and 0.4 percent of South Africa's copper,respectively.

FIGURE 38: SOUTH AFRICA'S EXPORTS DESTINATION BY COUNTRY, 2012



Source: Department of Mineral Resources, 2012

DEVELOPMENTS IN AFRICA

In Zambia, Chibuluma Mines, a subsidiary of the Meterox Group of South Africa, submitted an Environmental Impact Report to Zambia Environmental Management Agency to develop an underground copper project to extend the life of Mine of Chibuluma South Mine by five years. The project's reserve is estimated at 2.2 Mt at a grade of 2.5 percent copper ore. First Quantum, which plans to build a $640 million plant at Kasanshi, has also received an environmental approval from the agency. The company plans to commission the smelter in the second half of 2014. The smelter is expected to have a capacity of 300 kt per annum of copper. This project forms part of First Quantum's plan to triple copper output to 900 kt per annum in 2016.

A Chinese company, China Non-ferrous Metals (CNM), plans to restart mining operations atLuanshya Copper Mine. The mine is 85 percent owned by CNM and the remaining 15 percent is owned by Zambian Consolidated Copper Mines Investment Holding (ZCCM IH). In April 2012,one of its projects, Muliashi Copper, was completed at an investment of $368 million. The project is expected to deliver 41 ktof copper per annum in 2015.Also, in Zambia, maintenance is underway at Konkola Copper Mine's Nchanga smelter following technical problems at the smelter which is expected to resume production during the second half of 2013.

The other project is the restart of Lubambe underground mining, which is located near Chililabombwe town, and includes plant construction and infrastructural development. The production capacity is expected at 45 kt per annum. Lubambe is a 50-50 joint venture between African Rainbow Minerals (ARM) and Vale. Capital expenditure is estimated at $400 million on surface infrastructure, underground development and refurbishment of two shafts. The development process and the mine's ramp up are expected to continue and production at full capacity is expected in 2015.

In South Africa, PMC has accelerated and completed a pre-feasibility study for Lift II in line with June 2013 schedule. The study has enhanced optimal business and technical options for completing Lift I and transitioning to Lift II. The study was aimed at determining ore body strata as well as the most appropriate mine design. The engineering design was completed to the required Pre-feasibility study (PFS) level.The project has progressed welland is expected to be completed in the second quarter of 2014. Studies have been undertaken on the smelter to assess future technical options regarding copper processing. The smelter requires a targeted engineering solution to maintain its full compliance with the new South African Air Quality Regulations (introduced in 2010), before the end of 2015.

GLOBAL DEVELOPMENTS

In Peru, Jacobs Engineering Group has been commissioned to undertake the feasibility study for MineraChinalco Peru's Toromocho expansion project. The project is under construction and is expected to ramp-up production late in 2013 to a capacity of 210 kt per annum of copper-in-concentrate.

In Kazakhstan, Central Asia Metals, which operates and owns 60 percent of a 10 kt per annum copper plant at the Kourandmine located at Balkhash, is set to develop slime dumps copper facilities, which were previously classified as waste originate from Kourand copper mine. The mine has the potential to produce 20 to 25 kt per annum. The plant was constructed at a value of $39 million in 2011. Design capacity was 5.7 kt with the potential to reach 10 kt in 2013.

Chile'sCollahuasi mine, jointly owned by Glencore Xstrata and Anglo American,commenced negotiations with labour in May 2013 with an effort to improve labour relations and avert potential labour unrest.Thelabour agreement is set to expire in mid 2014.

OUTLOOK

World copper mine production remained stagnant for the past three years.However, analysts, envisage copper mine production to increase by 6.5 percent to 17.3 Mt in 2013 compared with 2012. Output is expected to continue to increase by 5.1 percent to 18.1Mt in 2014. Most of the new production is expected to be in the form ofcopper-in-concentrate.

In 2013, world refined copper production is expected to improve due to electrical infrastructure development and plant refurbishments that could offset 2012 production constraints. In 2013, the red metal production is expected to rise by 4.3 percent to 21.4 Mt in 2013 and by a further 5.1 percent to 22.5 Mt in 2014, fuelled by the start-up and capacity expansion of plants in Africa and China.In 2013, world refined

demand is anticipated to grow by 0.5 percent to 20.6 Mt and by a further 3.9 percent in 2014, complemented by the world economic recovery. Chinese demand for the red metal is expected to rise by 5 percent, fuelled by growth in the industrial sector.

According to analysts, in 2013, LME copper price is expected to range between $7 800/t and $8 500/t, while in 2014 price is forecast to range between $7 200/t and $8 900/t and to average $8 000/t annually. But the decline of Chinese inventory is likely to lead to a firmer price.

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LEAD

LE Pitso

WORLD SUPPLY

According to International Lead and Zinc Study Group (ILZSG), global lead mine production increased by 11.6 percent to 5 244 kt in 2012, due to an increase in output of zinc in most countries including China, Australia, the US, Mexico, Peru, Russian and Turkey. However, the increase was principally due to a reported 20 percent increase in China, the largest producer at 2 838 kt, followed by Australia's 573 kt and the USA's 346 kt (Table 54). Africa collectively accounted for about 2 percent (104 kt) of the world lead mine production. South Africa, at 56 kt, had Africa's largest lead mine production followed by Morocco at 27 kt.

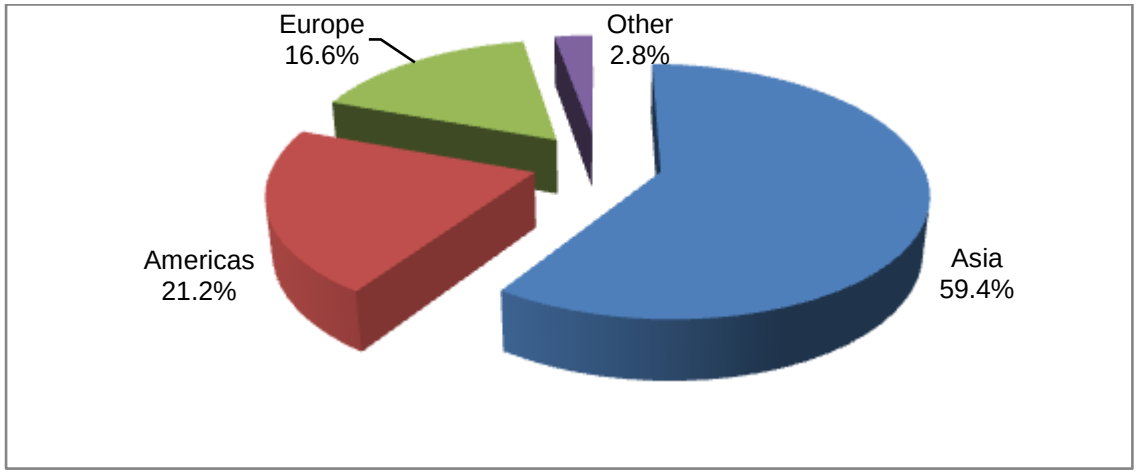
TABLE 54: WORLD RESERVES, MINE PRODUCTION AND EXPORTS OF LEAD, 2012

	RESERVES			PRODUCTION			EXPORTS		
COUNTRY	Mt	%	Rank	kt	%	Rank	kt	%	Rank
Australia	28	20	2	573	10.9	2	480	14.3	1
Canada	9	6.4	4	67	1.2	8	147	4.4	5
China	36	25.7	1	2 838	54.1	1	2	0.1	25
India	X	-	-	117	2.2	6	-	-	-
Ireland	X	-	-	47	0.9	10	49	1.5	11
Mexico	2	1.4	7	237	4.5	5	281	8.4	3
Morocco	1	0.7	8	27	0.5	14	40	1.2	13
Peru	4	2.9	5	249	4.7	4	349	10.4	2
South Africa*	3	2.1	6	52	1.1	9	47	1.4	14
Sweden	1	0.7	8	64	1.2	7	87	2.6	12
USA	20	14.3	3	346	6.6	3	264	7.9	15
Other	36	25.7	-	623	11.9	-	1 606	47.9	-
TOTAL	140	100		5 244	100	-	3 352	100	-

Sources: *ILZSG, October 2013*
USGS, April 2012
**DMR, Directorate Mineral Economics*
Note: *X not specified, but estimates have been included in other countries*

World refined lead production increased marginally by 0.2 percent to 10 617 kt in 2012 compared with 10 549 in 2011. Declines in Australia, Kazakhstan, Morocco, New Zealand and Spain were offset by increases in Korea, India, UK and the US. Regionally, Asia dominated lead metal production contributing 59.4 percent to total output, followed by America's 21.2 percent and Europe's 16.6 percent, (Fig.39). Production from Africa decreased by 21.2 percent compared with 2011, accounting for 0.9 percent of world refined metal production. At 52 kt, South Africa was the largest producer in Africa, although the country's production was 3.7 percent lower than in 2011.

FIGURE 39: REFINED LEAD PRODUCTION BY REGION IN 2012

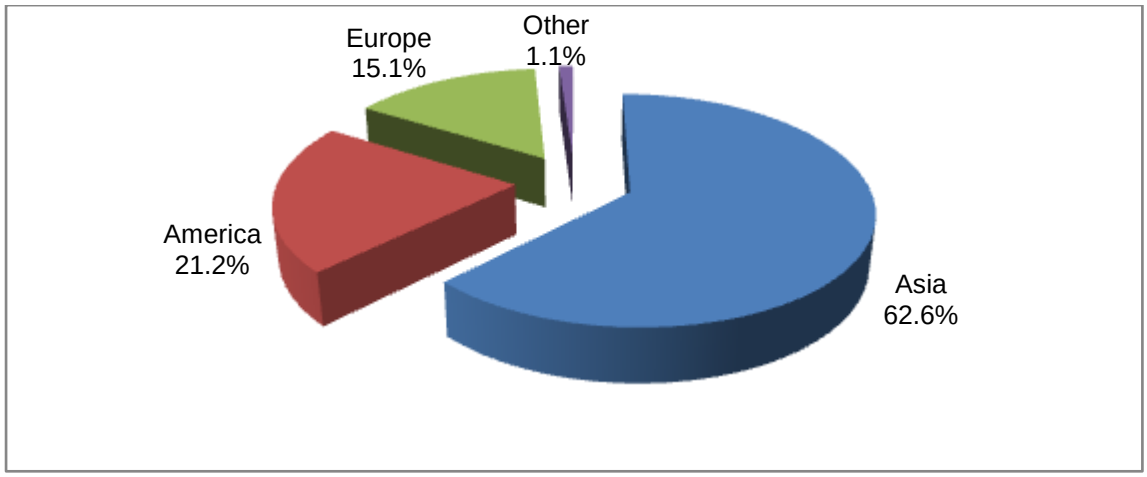


Sources: *ILZSG, October 2013*
**DMR, Directorate Mineral Economics*

WORLD DEMAND

Global refined metal consumption grew by 1.9 percent to 10 584 kt in 2012 compared with 10 389 kt in 2011. China, whose consumption rose by 0.9 percent to 4 628kt continued to dominate global demand. Regionally, Asia remained the leading metal consumer, with a contribution of 62.6 percent to world consumption, followed by the Americas' 21.2 percent and Europe's 15.1 percent (Fig. 40). Africa consumed 0.9 percent of world consumption. South Africa dominated Africa's demand, accounting for 65 percent followed by Morocco at 6 percent.

FIGURE 40: REGIONAL LEAD METAL CONSUMPTION IN 2012.



Sources: *ILZSG, October 2013*
**DMR, Directorate Mineral Economics*

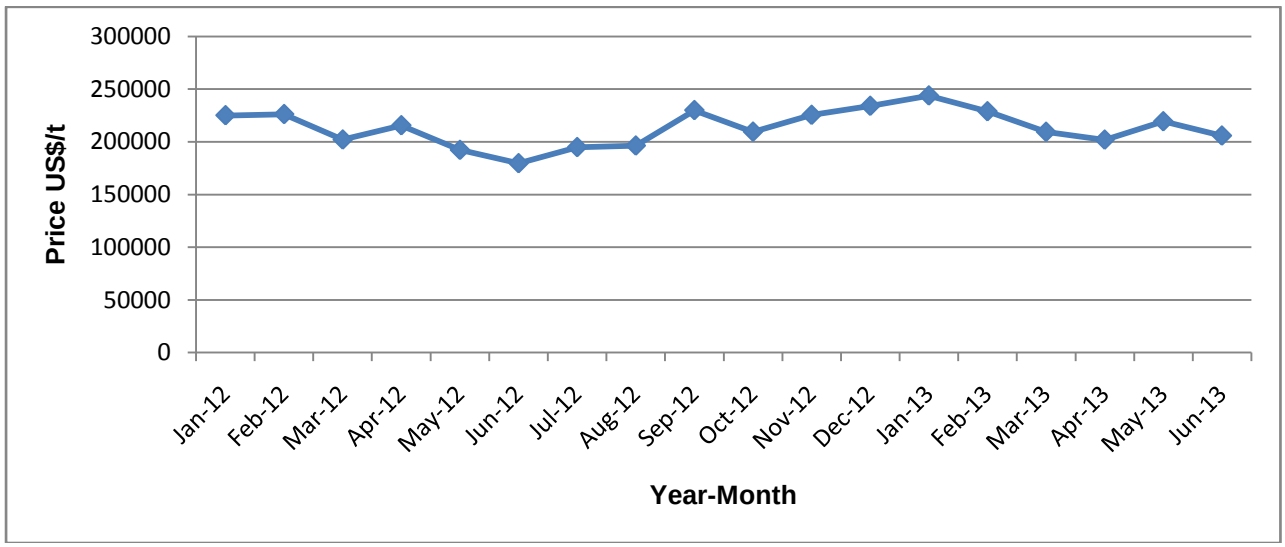
DEVELOPMENTS

The Mount Isa in Australia has pioneered several significant mining industry innovations including the Isa copper refining technology, the Isamelt Smelting technology, and the Isamill fine grinding technology while its Jameson Cell column flotation technology has been commercialized. In 2009, the company started upgrading the concentrator from 6.5 to 8 Mt of throughput per annum. The project incorporated increased grinding capacity with the addition of a new 11.5 MW ball mill and additional flotation capacity with 20 x 100 m^3 tank cells. The project also included the design, construction and commissioning of a 75 MVA extension to the existing 132 kV Mt Isa Terminal switchyard. The project was completed in 2012.

PRICES

The annual London Metal Exchange (LME) lead price averaged $2 061.45/t in 2012, 14 percent lower than $2 397.83/t in 2011.The lowest lead cash settlement price was recorded in June, averaging $1 796 while the maximum price was recorded in December at $2 340, (Fig.41). In the first half of 2012, lead price generally decreased mainly due to slowing automobile production in Europe. Although the slowing automotive output continued intothe second half of 2012, the price generally increased owing to an increase in batteriesreplacement in automotives.

FIGURE 41: LEAD CASH SETTLEMENT PRICES (MONTHLY AVERAGE) IN 2012



Sources: *Fry's Metals, 2012*
ILZSG, October 2013
**DMR, Directorate Mineral Economics*

SOUTH AFRICA

South Africa'slead mine production decreased by 3.7 percent to 52 kt in 2012 compared with 54 kt in 2011. The decrease in production was mainly due to lower grade ore in July, October and November 2012. South Africa exports all its lead concentrate. Although there was a decrease in production, exports sales increased by 3.8 percent to 54 kt in 2012 compared to 52 kt in 2011(Table 55)...

TABLE 55: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF LEAD, 2003-2012

		LOCAL SALES			EXPORT SALES		
YEAR	PRODUCTION	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	t	R'000	R/t	kt	R'000	R/t
2003	40	339	1 284	3 789	44	108 600	2 470
2004	37	-	-	-	31	120 599	3 895
2005	42	-	-	-	47	211 458	4 497
2006	48	-	-	-	46	313 232	6 809
2007	42	-	-	-	37	492 678	13 315
2008	46	-	-	-	50	612 042	12 180
2009	49	-	-	-	44	482 903	11 002
2010	51	-	-	-	53	696 738	13 123
2011	54	-	-	-	52	762 929	14 569
2012	52	-	-	-	54	811 498	15 132

Source: DMR, Mineral Economics Directorate

OUTLOOK

According to the International Lead and Zinc Study Group (ILZSG), global lead mine output is expected to rise by 4.2 percent to 5.78 Mt in 2013, and by a further 5.7 percent to 5.55 Mt in 2014,due to the potential increase in output from Australia and China. Australia's higher lead mine output will be mainly due to the re-opening of Ivernia's Paroo Station mine in March 2013 which is anticipated to add 85 kt to output, after it was under care and maintenance since April 2011.

World refined lead metal production is also expected to increase by 4.7 percent to 11.02 Mt in 2013, primarily due to a 6.2 percent increase expected from China. A further increase of 4.2 percent to 11.48 Mt is expected in 2014. Additional capacity is expected in Italy, Kazakhstan, Korea Republic, Mexico and the US. It is anticipated that global refined lead consumption will increase by 4.8 percent to 11.00 Mt in 2013 and by 4.6 percent in 2014, influenced by an expected 6.7 percent demand increase from China, mainly driven by an anticipated increasedautomotives and e-bikesproduction as well as continuous development of mobile phone network. Demand from Europe and the US is also forecast to rise by 1.9 percentand 1.2 percent respectively in 2013. Consumption of lead is also expected to increase in Brazil, India, Indonesia, the Republic of Korea, Mexico, Thailand and Turkey.

It is anticipated that the global market for refined lead metal will remain over supplied in 2013 with an estimated 42 kt surplus. According to Metal-Pages, while falling car sales appear to be stabilizing, major European car makers like Volkswagen, PSA Peugeot, Citroen and Ford are expected to cut jobs due to staunch losses. That will likely cut into demand for metals like lead.Despite the small excess, prices of lead are expected to improve slightly in 2013 and 2014 due to improving demand.

Although the orebody is mostly zinc, South Africa'sGamsberg project could raise the country's lead output, since lead can be mined as an associated mineral.

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NICKEL

T Chili

WORLD SUPPLY

According to the US Geological Survey (USGS), world nickel reserves were estimated at 75 Mt in 2012. Australia hosts the world's largest reserves at 26.7 percent, followed by New Caledonia at 16.0 percent, Brazil (10.0 percent) and Russia (8.1 percent). South Africa accounts for 4.9 percent of world reserves and is ranked 7th (Table 56). Seventy three percent of the world's known nickel resources are sourced from laterite nickel ore deposits occurring in the tropical areas of Indonesia, Cuba, Columbia and New Caledonia. The balance is sourced from sulphides, particularly in Canada and Russia.

In 2012, world nickel mine production rose by 14.7 percent to 2.1 Mt when compared with 2011, spurred by commissioned projects in Africa, Australia and BrazilPhilippines that dominated mine production, contributing 15.7 percent while Indonesia relegated Russia and Australia to third and fourth positions, respectively. South Africa contributed 2.1 percent to the world nickel mine output and ranked 10th.

TABLE 56: WORLD NICKEL RESERVES AND MINE PRODUCTION, 2012

COUNTRY	RESERVE			#MINE PRODUCTION		
	kt	Percent	Rank	kt	Percent	Rank
Australia	20 000	26.7	1	230.0	11.0	4
Brazil	7 500	10.0	3	140.0	6.7	6
Canada	3 300	4.4	8	220.0	10.5	5
China	3 000	4.0	9	91.0	4.3	7
Colombia	1 100	1.5	12	80.0	3.8	8
Cuba	5 500	7.3	5	72.0	3.5	9
Indonesia	3 900	5.2	6	320.0	15.2	2
Madagascar	1 600	2.1	10	22.0	1.0	11
New Caledonia	12 000	16.0	2	140.0	6.7	6
Phillippines	1 100	1.5	11	330.0	15.7	1
Russia	6 100	8.1	4	270.0	12.9	3
South Africa*	3 700	4.9	7	44.0	2.1	10
Other	6 200	8.3		141.0	6.7	
Total : 2012	75 000	100		2 100.0	100	
2011	80 000			1 831.4		

Source; USGS, Mineral Commodity Summaries, page 109 *
DMR, Mineral Economics Directorate
#World Bureau of Metal Statistics

In 2012, global refined nickel production increased by 9.3 percent to 1.77 Mt supported by new production from Australasia, Central South America and Africa (Table 57). China, at 30.0 percent, was the world's largest producer of refined nickel, followed by Russia's 14.5 percent and Japan's 9.4 percent. South Africa contributed 2.6 percent to the global refined nickel production and ranked 9th.

TABLE 57: WORLD REFINED NICKEL PRODUCTION, 2012

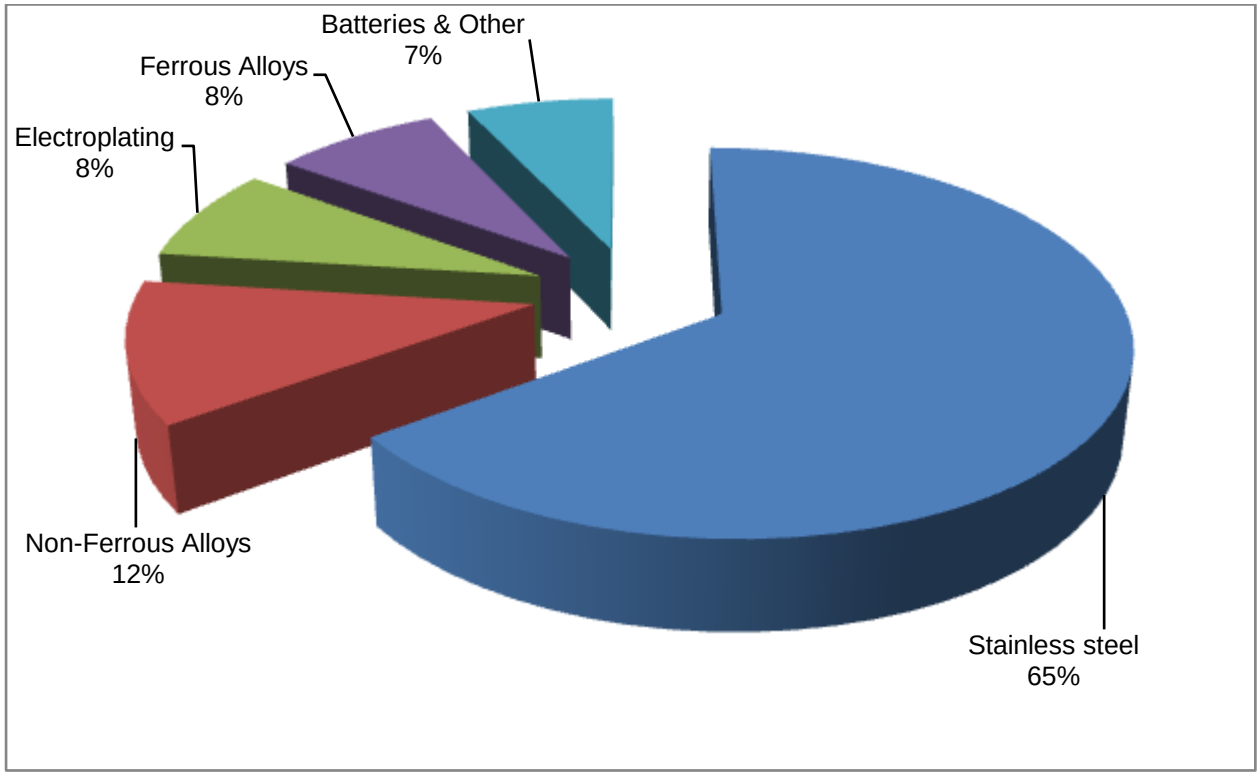
COUNTRY	REFINED PRODUCTION		
	kt	Percent	Rank
Australia	129.0	7.3	5
Brazil	59.0	3.3	13
Canada	151.0	8.5	4
China	531.0	30.0	1
Colombia	52.0	2.9	10
Cuba	27.0	1.5	12
Finland	46.0	2.6	8
Japan	167.0	9.4	3
New Caledonia	47.0	2.7	7
Norway	92.0	5.2	6
Russia	257.0	14.5	2
South Africa	46.0	2.6	8
UK	35.0	2.0	11
Other	132.0	7.5	
TOTAL: 2012	1 771	100	
2011	1 621		

Source: CRU,2013

WORLD DEMAND

Demand for nickel is tied to austenitic grade 304 stainless steel as a main end-user accounting for approximately 65 percent of world refined nickel demand (Fig.42), Electroplating and ferrous alloys accounted for 8 percent each. Non-stainless steel applications (non-ferrous), which include nickel super-alloys, used in aerospace consumed 12 percent; oil and gas industries and nickel-metal-hydride (NiMH) batteries consumed 7 percent from nickel industry.

FIGURE 42: THE PRIMARY END-USES FOR NICKEL 2012



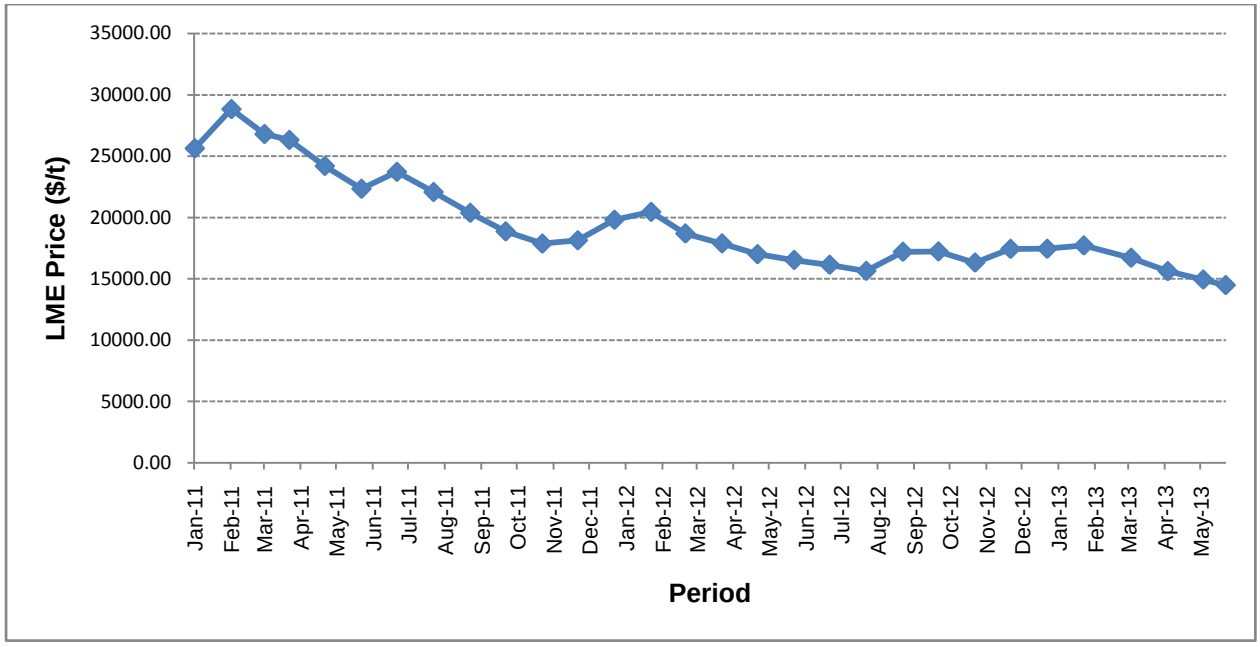
Source: Basemetals. Com, 2013

World demand for nickel increased by 5 percent to 1.67 Mt in 2012 driven by strong demand from South Korea and Japan. China, continued to dominate nickel consumption, at 47.0 percent, followed by Japan and the United States at 8.0 percent and 7.8 percent, respectively. However, nickel market was oversupplied during the second half of 2012, dragging stainless steel producers to tap from accumulated nickel refined stock.

PRICES

Analyst envisaged that the replacement of nickel in stainless steel production with low cost Nickel Pig Iron (NPI) and the decelerating demand growth due to a weak global economy contributed to the oversupplied nickel market since 2011 and the suppressed nickel prices.In 2012, this situation was compounded by the lesser-than-average industrial growth in China and the persistent Euro zone economic woes. In the first quarter of 2012, LME nickel price averaged $19 973/t, a 26 percent declined compared with thefirst quarter of 2011. This decline could primarily be attributed to a surplus in the nickel market and a slowdown in the growth of global steel consumption. The market continued to be oversupplied throughout 2012 resulting in a further decline in prices. LME nickel prices improved marginally in fourth quarter as a result of speculative fund trading on the LME after continuously declining during the first three quarters of 2012. LME nickel prices declined by 23.5 percent to an annual average of $17 540.67/t in 2012 compared with 2011. The negative trend continued to second half of 2013 and settle atahalf yearly average of $16 166.61/tas supply surpassed consumption.LME nickel price has fallen more than 50 percent since 2011, from $29 065/t in February 2011 to $13 310 in July 2013.

FIGURE 43: MONTHLY AVERAGE NICKEL PRICES, 2010-2012



Source: Metal Bulletin, 2012

GLOBAL PROJECTS/DEVELOPMENTS

Indonesia, the world's top exporter of nickel laterite ore, is considering imposing a ban on export of unprocessed nickel ore, according to Indonesian officials who were quoted by Bloomberg. The country's raw nickel ismostly shipped to China where it is used to produce nickel pig iron,a cheap substitutes for refined nickel in stainless steel production. The ban on ore exports by Indonesian government is considered in order to manage the exploitation of that country's mineral resources and to boost the country's processing industry. The restriction of exports would support the demand for refined nickel resulting in a short term upswing in prices. Also, the Indonesian government is planning to cap foreign ownership of mines at 49 percent in order to extract a larger share of domestic resource earnings from its mining activities.

According to KPMG, nickel operators continue to re-evaluate existing projects and industries with a focus on developing large size and low cost projects to earn higher profit margins to overcome high capital cost. Table58 depicts developments in nickel mining in other parts of the world.

TABLE 58: GLOBAL NICKEL MAJOR PROJECTS

Project	Country/Region	Operators/Owners	Potential start year	Nickel production (kt/a)	Project Cost
Koniambo Laterite Nickel Mine	New Caledonia	Xstrata plc	2013	60	N/a
Long Harbour Hydrometallurgy Nickel Smelter	Canada	Vale S.A	2013	50	$2.8 billion
Minago Nickel Project	Canada	Victory Nickel Inc.	2014	11	$500-600 million
Honeymoon Well Nickel Project	Australia	OJSC MMC Norilsk Nickel	2016	40	$1.5 billion
Taganito HPAL Nickel Refinery	Philippines	Sumitomo Metal Mining Co.Ltd	2013	30	$1.4 billion
FeNiHaltim Nickel Project	Indonesia	PT AntamTbk	2014	27	$1.6 billion
Acoje Laterite Nickel Mine	Philippines	ENK plc	2014	24.5	$33.6 million
Fenix Laterite Nickel Operation	Guatemala	Solway Group	2014	24.3	$170 million
Sheba's Ridge PGE/Nickel/Copper project	South Africa	Aquarius Platinum Limited	2014	23.9	N/a

Source: KPMG, 2013

In South Africa, URU Metals acquired a 50 percent interest in the Southern African Nickel (SAN) joint venture (JV), which is developing a portfolio of large-scale nickel projects in Southern Africa. URU Metals has estimated its expenditure in the SAN JV at $4.2 million since 2010. In March 2012, the joint venture committed an additional $685 000 towards the economic evaluation of the Zebediela Nickel project situated in Limpopo Province of South Africa, and in June 2012 URU Metals announced a positive Preliminary Economic Assessment (PEA) for the Zebediela Nickel Project. The project has a potential to host large disseminated, economic, open-pittablesulphide nickel deposits with a possible production of 20 kt to 30 kt per annum at a cost of less than $1 5000\t. According to URU, the deposit (NI 43-101) compliant study indicated resources of 485.4 Mt at a grade of 0.25 percent Ni with additional inferred resources of 1 115.1 Mt at a grade of 0.25 percent Ni. A PEA which indicates that the project is likely to be a low quartile cost nickel producer has been completed. Progress on this project is likely to be delayed by the dispute between URU's JV partners, SAN and Umnex Mineral Holdings (Umnex), its Black Economic Empowerment (BEE) partner, which is part of the Umbono Capital Group. Also in South Africa, The Burgersfort nickel project, a joint venture between SAN and BSC Resources which had been previously explored by identified several shallow disseminated nickel targets and three deeper massive sulphide nickel targets. Diamonddrilling was done at the locations and metallurgical work which will be used in the scoping study is to becarried out by Mintek and other metallurgical research institutions are expected to conduct the metallurgical work, which will be used in the scoping study.

SOUTH AFRICA

In 2012, 57.9 percent nickel output was sourced from Platinum-group metals (PGMs). Nkomati mine, the primary nickel producer, accounts for 42.05 percent of nickel production. In 2012, South Africa's nickel production rose by 6.0 percent to 45.9 kt due to improved output from Nkomati Mine.

TABLE 59: SOUTH AFRICA'S PRODUCTION AND SALES OF NICKEL, 2002 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value	Unit Value	Mass	Value	Unit value
	kt	kt	R'000	R/t	Kt	R'000	R/t
2002	38.5	22.6	1 579 025	69 868	15.9	1 060 113	66 674
2003	40.8	24.0	1 647 992	68 666	16.1	1 081 275	67 160
2004	39.9	25.0	2 139 682	85 587	17.8	1 513 381	85 021
2005	42.4	20.3	1 909 468	94 062	22.2	2 013 553	90 701
2006	41.8	25.6	4 154 730	162 294	18.2	2 620 855	144 003
2007	37.9	15.5	3 724 689	240 303	21.4	5 599 739	261 670
2008	31.7	6.7	1 151 894	171 924	23.5	4 103 711	174 626
2009	34.6	9.0	949 855	105 539	27.3	3 251 353	119 097
2010	40.0	7. 3	1 073 290	147 168	33.1	4 911 462	148 522
2011	43.3	14.5	2 326 440	160 924	26.6	4 075 750	152 962
2012	45.9	11.3	1 539 962	136 182	35.5	4 892 384	137 786

Source: DMR, Mineral Economics Directorate

Local sales volumes declined by 22.1 percent to 11.3 kt as a result of lower demand for nickel from the domestic stainless steel sector.Revenue generated followed a similar downward trend, declining by 33.8 percent to R1.54 billion as a result of lower prices and sales volumes.Export volumes declined by 33.5 percent to 35.5kt while revenue rose by 17.0 percent to R4.89 billion owing to higher exports especially to Europe.

OUTLOOK

Due to low production costs and accessibility advantage in China, NPI has replaced other nickel resources such as refined nickel, nickel oxide, ferronickel ins stainless steel production and is estimated it will contribute over 50 percent of nickel supply in stainless steel production in 2013. According to the International Nickel Study Group (INSG), nickel market surplus is estimated to reach a significant 90 kt by the end of 2013 which could dampen prices further. The current nickel prices have impacted negatively in the development of the majority of the sector's greenfield and expansion projects. However, the anticipated nickel laterite ore exports ban from Indonesia is expected to provide short term relief and push prices up in the near-term. The Deutsche Bank expects nickel prices to average in $18 000/t in the first quarter of 2014, and stabilise at around $16 875/t for the rest of 2014 followed by further drops to an average $15 800/t in 2015 due to some resolution of the Indonesian ore export ban.

According to the International Nickel Study Group (INSG), world primary nickel production is expected to reach 1.91 Mt in 2013 and increase further to 1.97 Mt in 2014driven by capacity expansion projects from New Caledonia, Madagascar and other commissioned projects in Australia, Africa and Brazil.World primary nickel consumption is estimated to reach 1.77 Mt in 2013 and increase to around 1.85 Mt. Stock build up are anticipated in both 2013 and 2014 due to new capacity from new projects and existing projects ramp ups. According to KPMG, the oversupplied nickel market is expected to continue and, may worsen in 2013 leading to an increase in quarterly commercial stocks to a more than 150kt levels. The Chinese apparent nickel consumption is forecast to decrease in 2014 as stainless steel producers start running their purported accumulated stocks down to meet their demand while the European Union is expected to experience limited recovery in 2013. Japan and South Korea are expected to increase nickel consumption in 2013 and 2014 as stainless steel

producers operate at high capacity. Asian countries' demand will continue to drive the market back on the growth track. Expansion of urban infrastructure, housing developments and ongoing industrialization and urbanization is expected to result in increased demand. This growth will be underpinned by the current low per capita nickel consumption in these economies compared with most developed economies.

The use of nickel in nickel-based super alloys other than stainless steel is one of the principal markets for nickel. There is a potential for considerable growth in usage of super alloys in the aircraft manufacturing and electrical power generation industries. Efforts to reduce carbon emissions and improve fuel efficiency in jet engines can be expected to continue driving demand for nickel-based super alloys and may lead to the development of new generations of super alloys.Also, the use of nickel super alloys in steam turbines used in power generation will drive demand for nickel in support of projected future energy demand.

In South Africa, the capacity ramp up at the Nkomati Large-Scale Expansion Project as well as the two significant projects in Zebediela and Burgersfort could position the country well when market conditions improve in the future, raising the country's position in world rankings. The two projects could add economic value to South Africa in terms of the capital investment required and contribute to the country's taxes and royalties. These projects are also sources of long-term employment.

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TITANIUM

L Maphango

WORLD SUPPLY

World production of titanium mineral concentrates (ilmenite, rutile leucoxene, and titanium slag), usually referred to as titanium dioxide (TiO_2) feedstock, amounted to 7.00 Mt in 2012, representing an increase of 4.5 percent compared with the previous year (Table 60). This increase in supply was the continuation of producers' undertaking to match rising global demand for titanium minerals. Australia, at 1.42 Mt remained the top producer of TiO_2 feedstock, contributing 20.3 percent to total world production. South Africa at 1.16 Mt was the second major producer, followed by China's 0.70 Mt and Canada's 0.70 Mt, both at third place (Table 60). The TiO_2 feedstock market is highly concentrated as it is controlled by the big three conglomerates, which are Tronox, Rio Tinto and Iluka Resources.

TABLE 60: WORLD RESERVES AND MINE PRODUCTION OF TITANIUM CONCENTRATES, 2012

	RESERVES			PRODUCTION*		
COUNTRY	Mt	%	Rank	kt	%	Rank
Australia	118.0	16.9	2	1 420	20.3	1
Canada	31.0	4.4	8	700	10.0	3
China	200.0	28.6	1	700	10.0	3
India	92.4	13.2	3	575	8.2	5
Mozambique	16.5	2.4	9	388	5.5	7
Norway	37.0	5.3	7	350	5.0	9
South Africa	71.3	10.2	4	1 161	16.6	2
Ukraine	8.4	1.2	10	360	5.1	8
USA	2.0	0.3	13	300	4.3	10
Vietnam	1.6	0.2	14	500	7.1	6
Other	121.8	17.4	-	546	7.8	-
TOTAL 2012	700.0	100.0		7000	100.0	
2011	690.0			6 700		

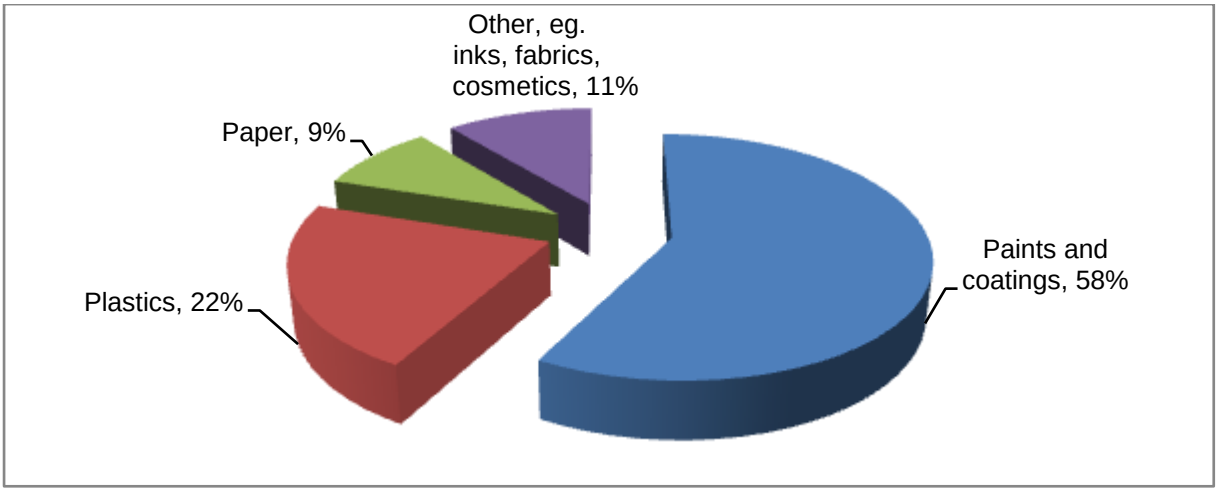
Sources: USGS, January 2013, p 175
*Notes: *TiO_2 content of ilmenite and rutile*

According to TZMI, a mineral sands consulting company, the production capacity of TiO_2 pigment rose by 6.7 percent from 6.0 Mt in 2011 to 6.4 Mt in 2012. The titanium dioxide pigment market is currently plaguedwith high inventory levels and, this has prompted producers to restrict production in 2013 with the aim of running down inventories. The inventory build-up emanates from consumers' advance purchases in 2011 aimed at mitigating against escalating pigment prices.Excessive stockpiling and subdued demand for TiO_2 pigment resulting from the slowing housing market in China, have led to a decline in prices during 2012.The situation was exacerbated by higher production costs experienced by TiO_2 pigment producers mainly due to increasing prices of TiO_2 feedstock, a key ingredient in the manufacture of TiO_2 pigment, thus causing profit margins to decline.However, the continuing production cutbacks seem to have led to market tightness and consequential rise in prices in the third quarter of 2013. According to Roskill, a metals and minerals research company, world titanium metal sponge production increased by 26.5 percent to 241 kt in 2012, due to capacity expansions.

WORLD DEMAND

About 90 percent oftitanium dioxide (TiO_2) feedstock is used in the manufacture of TiO_2 pigment and the remaining 10 percent is used in the production of titanium metal and welding electrode fluxes. Demand for TiO_2 pigment was strong during the first half of 2012 but weakened towards the end of the year, due to drawing down of inventories by consumers and the fragile global economy, as well as restrained construction sectors in Europe and Asia. Demand for titanium metal in the commercial aerospace industry continued its rise during 2012. The paint and coatings industry is the major consuming sector for TiO_2 pigment, accounting for about 58 percent of global demand, followed by plastics' 22 percent, paper's 9 percent and other accounting for 11 percent balance (Fig. 44).

FIGURE 44: GLOBAL CONSUMPTION OF TITANIUM DIOXIDE PIGMENT BY SECTOR

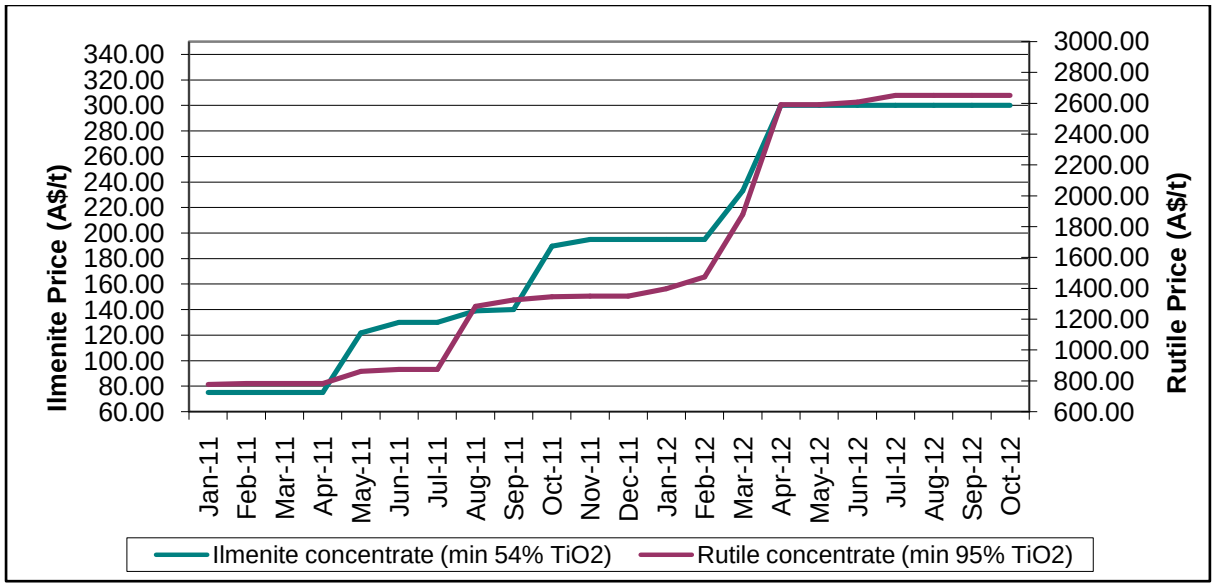


Source: Rio Tinto and TZMI 2012

PRICES

Prices of titanium mineral concentrates continued trending sharply upward during the first quarter of 2012, before reaching a plateau in April until the end of the year. The steep rise in prices which started in May 2011 was due to growing demand which outstripped supply. During 2012, ilmenite (min 54% TiO_2) prices soared by 53.8 percent from a monthly average of A$195/t in Jan to A$300/t in April. Similarly, rutile (min 54% TiO_2) prices ballooned by 85.4 percent fromA$1 397/t to A$2 590/t. Slowing demand for titanium feedstock and rising production arrested feedstock prices since the second quarter of 2012 to date. As a result, prices of ilmenite and rutile remained flat at A$300/t and A$2 650/t, respectively, in the second half of 2012.

FIGURE 45: METAL BULLETIN PRICES FOR RUTILE AND ILMENITE, 2011 - 2012



Source: Metal Bulletin, 2012

DEVELOPMENTS IN SOUTH AFRICA

BHP Billiton sold 37 percent of its shares in Richards Bay Minerals (RBM) for $1.7 billion to Rio Tinto, its former joint partner in RBM. This doubled Rio Tinto's shareholding in RBM to 74 percent with effect from 3 September 2012. This transaction was necessitated by BHP exercising a put option agreed with Rio Tinto as part of RBM's restructuring in 2009.

Tronox, an Australian holding company, is expected to commence mining operations at its Fairbreeze mineral sands project in Richards Bay, KwaZulu-Natal, in the second half of 2014. Tronox holding company owns 74 percent of the shares in Fairbreeze and the remaining 26 percent is owned by Exxaro Resources, a BEE company. Fairbreeze, which is expected to have a life of mine (LOM) of between 12 and 15 years, has a planned annual capacity of 500 ktilmenite and 60 kt zircon. The new heavy mineral sands mine is expected to absorb almost all the 1 000 employees from Hillendale mine which came to the end of its life in the first half of 2012.

Mineral Commodities (MRC), an Australian-based company, has begun with the construction of Tormin mine in the third quarter of 2013. MCR has a 74 percent shareholding in Tormin and the balance of the shares belong to Blue Bantry, an empowerment partner. Tormin mine is a heavy mineral sands project located about 400 km north of Cape Town, in the Western Cape Province. Tormin's planned run-of-mine is about 1.1 Mt per annum, producing 47.8 kt per annum of non-magnetic concentrate grading at approximately 12 percent rutile and 80 percent zircon. The concentrates will be shipped to China for further processing into a final product. However, the mine is expected to produce about 100 kt per annum of finished ilmenite, which could also be destined for China. The project, which is projected to cost approximately $A16 million, is anticipated to produce its first concentrate by December 2013. Tormin is expected to have a life of mine spanning 5 years with a potential to be extended for another 5 years. During the construction phase, the mine will employ about 40 local people and, about 100 permanent jobs will be created during the operation of the mine.

There is a great potential for heavy mineral sands development in the Pondoland, Eastern Cape Province of South Africa. MRC is the owner of the Xolobeni Mineral Sands Project, which is situated approximately 250 km south west of Durban and about 60 km south east of Mbizana and 30 km south of Port Edward. The Xolobeni Mineral Sands Project is a major heavy mineral sands deposit of an estimated 346 million tonnes graded at about 5 percent heavy minerals.Pre-feasibility study estimates a 25-year LOM and capital development costs of US$200 million including the construction of a mineral separation plant and a smelter. MRC has re-applied for prospecting rights for the Kwanyama block of the Xolobeni project, after its conditional right was revoked by the DMR in 2011, due to environmental concerns which were raised by interested and affected persons. The company has already renewed prospecting rights for the other four blocks at Xolobeni. MRC is currently conducting prospecting work with the aim of applying for a mining right for the Xolobeni project. The Xolobeni project is expected to create about 300 jobs during the construction of the mine and 600 permanent jobs when the mine becomes operational.

The Council for Scientific and Industrial Research (CSIR), through the support of the Department of Science and Technology (DST) is at advance stages of developing a novel process to produce titanium metal powder. The CSIR-Ti process produces titanium metal powder in a continuous process from titanium tetrachloride. This process significantly lowers the energy requirements and costs of production. According to CSIR, this process is being developed in phases to manage the inherent scale-up risks.The construction of the bench-scale pilot plant for this process, which uses less energy than the Kroll batch process, commenced in the fourth quarter of 2012 at the CSIR complex in Pretoria. The bench-scale pilot plant is expected to produce titanium powder at a rate of 2 kg per hour. When the Minister of Science and Technology, Derek Hanekom, officially inaugurated the CSIR-Ti powder pilot plant on the 7th of June 2013 at the CSIR campus, he indicated that this project "is moving South Africa from a resource-based to a knowledge-based economy that will create high quality jobs". The next phase of the project is the construction of a semi-commercial test facility, which should begin around 2017. This plant is expected to have a capacity of 500 t/y and its success could see the construction of a full commercial plant in about a decade from now.

Following the inauguration, CSIR and Boeing, a US aerospace company, signed a memorandum of understanding (MoU) on the 11th of June 2013 which seeks to advance research synergies and pull resources between the two organisations with the aim of using titanium powder in industrial manufacturing, particularly in making aircraft components and spare parts. The titanium metal in aircrafts is lighter and more durable than aluminium.

Titanium powder technology has the potential to change the face of the global titanium industry and is viewed by many as the product of the future. Titanium in a powder form gives rise to the following and numerous other advantages.

- Production of titanium metal-based products from powder yields a superior component and eliminates the costs associated with melting and milling the metal.
- Over and above the titanium powder process, CSIR has made major technological inroads in the production of fabricated products using metal powder.

Rare Metals Industries (RMI), in conjunction with the South African government, through the Industrial Development Corporation (IDC) and National Empowerment Fund has completed a R50 million pre-feasibility study of the RMI Specialty Metals Complex project. Saldana Bay in the Western Cape is the possible location for the plant. This plant is expected to be the world's first integrated specialty metals plant that could beneficiate titanium, zirconium, and silicon. According to RMI, part of the pre-feasibility study was earmarked at identifying alternative sources of power supply. The construction of a cogeneration plant to feed the plant's electricity requirements could also be considered.The entire project will require an investment of approximately R20 billion and could create about 5 000 jobs during the building phase and 2 500 permanent jobs in the operation of the plant. The Definitive Feasibility Study (DFS) which is estimated to cost R315 million is projected to commence in November 2013. Construction of the plant is expected to start in the second quarter of 2015 and could take about 30 months to complete. Commissioning of the plant is planned towards the end of 2017. When operating at full capacity, the plant is projected to produce approximately 15 kt/y of titanium, 2 kt/y of zirconium, 1.9 kt /y of silicon and derivative products.

OUTLOOK

According to TZMI and Ti Insights global output of TiO_2 pigment is predicted to grow by approximately 3 percent to 6.6 Mt in 2013. Titanium dioxide pigment capacity growth over the next decade is expected to be driven by demand growth in emerging markets. Most of this growth is expected to come from China, as it continues to expand production capacity. Demand for TiO_2 pigment is expected to improve in 2013 and 2014, particularly, in North America, China and Asia Pacific which could raise pigment prices. Feedstock prices are forecast to rise until 2014, which could trim margins of pigment producers even further.

The involvement of Tronox, an integrated producer of titanium, in South Africa's titanium industry has created the opportunity for the country to beneficiate its titanium minerals to TiO_2 pigment in line with the Beneficiation Strategy and the New Growth Path. The possible economic spinoffs in the form of economic growth and employment are likely to be huge, taking into account that 95 percent of global titanium mineral concentrates are used in the manufacture of TiO_2 pigment.

Roskill predicts world output of titanium metal sponge to decrease by 4.6 percent from 241 kt in 2012 to 230 kt in 2013, due to rising stockpiles and softer demand. However, after 2013, production is expected to increase again. Expansions are expected to come from China, Japan and Russia. Titanium metal sponge capacity is expected to reach 400 kt per annum by 2015 from the current 330 kt per annum, an increase of 21.2 percent driven by new capacity from expansion plans in China, Japan and Russia.

According to Roskill, the new generation of high-titanium content aircrafts that carry large number of passengers such as Boeing's A787 and Airbus' A380 and A350, are using incremental mass of carbon fibre reinforced polymers (CFRPs) which are more compatible with titanium than aluminium. CFRPs do not exhibit fatigue and thus reduce the frequency of costly downtime and maintenance. This development is expected to increase the demand for titanium metal in the aerospace industry. Taking into account estimates from various sources, the demand for titanium metal is projected to grow by a compounded 6 percent per annum, owing to expected increase in consumption of the metal in the commercial aircraft and industrial applications.

The imminent low-cost technology for producing titanium metal is expected tolead to many new uses and much higher consumption of the metal in existing applications. Roskill expects the use of titanium metal in medicine to increase in the future, driven by the aging baby boomer generation, the trend toward more active lifestyles, and the need to curtail health care costs. Commercialisation of the CSIR-titanium powder process, which is on the horizon, is expected to be followed by the establishment of the titanium industry and related industries in line with the country's Beneficiation Strategy.

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ZINC

LE. Pitso

WORLD SUPPLY

Global zinc reserves were estimated at 460 Mt in 2012. China with 20 percent hosts the largest reserves, followed by the US's 19.6 percent and Australia's 17.4 percent. Global zinc mine production increased by 6.9 percent to 13.5 Mt in 2012 compared with 12.7 Mt in 2011 (Table 61), due to higher zinc output in all the regions. China continued to be the largest producer accounting for 36.4 percent of the global output, followed by Australia's 11.2 percent and Peru's 9.5 percent. Africa accounted for about 2.2 percent (296 kt) of the world zinc mine production. Namibia, at 200 kt, recorded Africa's largest zinc mine production followed by Morocco and South Africa at 38 kt and 37 kt correspondingly.

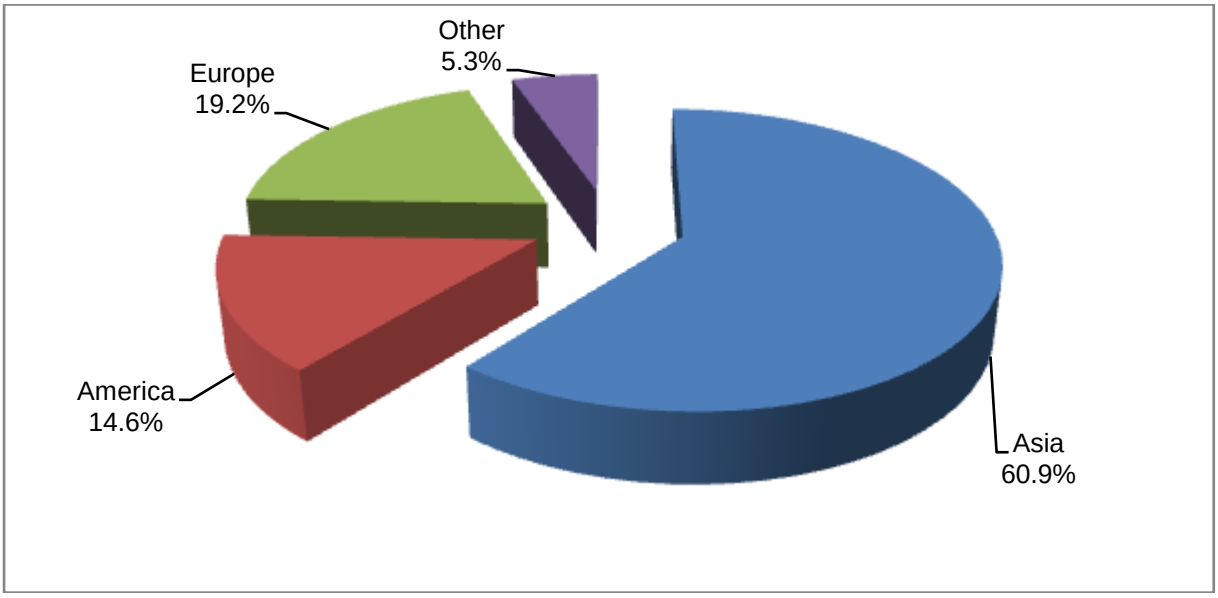
TABLE 61: WORLD RESERVES, MINE PRODUCTION AND EXPORTS OF ZINC, 2012

COUNTRY	RESERVES			PRODUCTION			EXPORTS		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
China	92	20	1	4 930	36.2	1	6	0.1	14
Peru	20	4.3	7	1 281	9.4	3	1042	10.3	2
Australia	80	17.4	3	1 518	11.1	2	1642	16.2	1
USA	90	19.6	2	739	5.4	5	592	5.9	4
Canada	31	6.7	5	648	4.8	7	729	7.2	3
India	x	-		838	6.2	4	207	2.0	5
Kazakhstan	35	7.6	4	425	3.1	8	778	7.7	6
Mexico	25	5.4	6	645	4.7	6	481	4.8	7
Ireland	x	-		338	2.5	9	324	3.2	8
Namibia	x	-		200	1.5	10	195	1.9	21
South Africa*	15	3.3	8	37	0.3	25	42	0.4	24
Other	72	15.7		2 017	14.8		4077	40.3	
Total	**460**	**100**		**13 616**	**100**		**10 115**	**100**	

Sources: *ILZSG, October 2013*
USGS, April 2012
**DMR, Directorate Mineral Economics*
Note: *X Not specified, but estimates have been included in other countries*

In 2012, zinc market experienced the sixth successive year surplus. According to the International Lead and Zinc Study Group (ILZSG), the zinc market had a surplus of 265 kt in 2012 compared with 366 kt in 2011. World refined zinc production decreased by 3.7 percent to 12.6 Mt in 2012 compared with 13.1 Mt in 2011, mainly because of lower refined zinc output in all of regions. Asia contributed 60.9 percent to global output and remained the dominant region, followed by Europe's 19.2 percent and the America's 14.6 percent (Fig. 46).

FIGURE 46: REGIONAL PRODUCTION OF REFINED ZINC, 2012

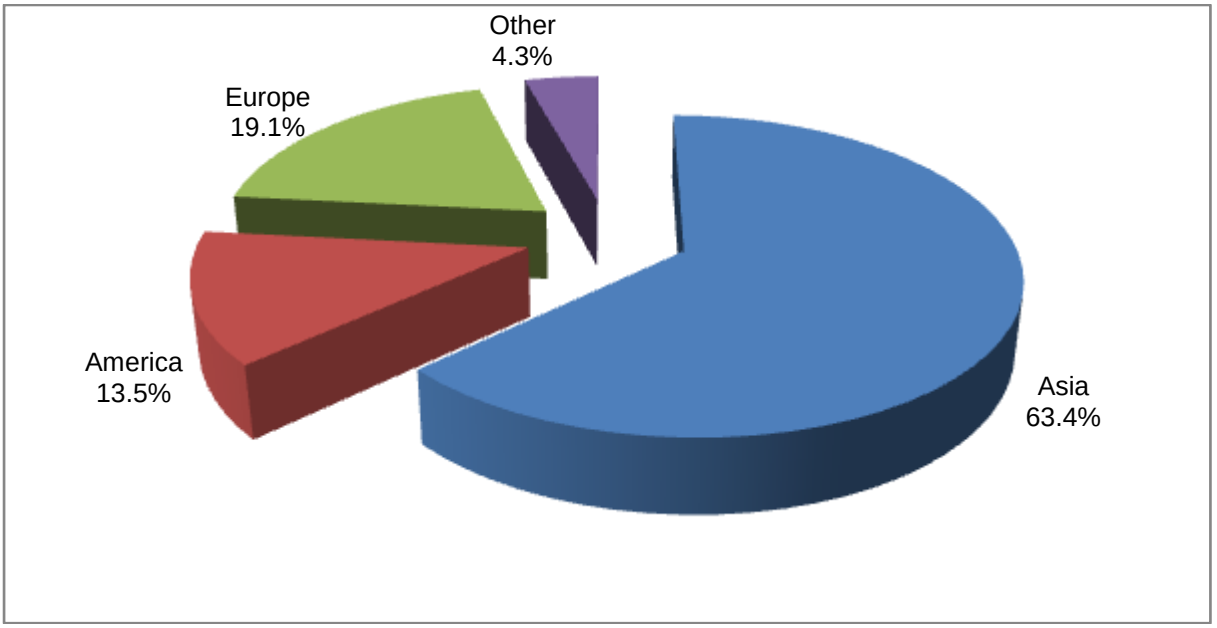


Source: International Lead and Zinc Study Group
Metal Bulletin

CONSUMPTION

Global refined zinc consumption amounted to 12.3 Mt in 2012, a decrease of 2.9 percent compared with 12.7 Mt in 2011. China, the largest consumer of the metal dropped its consumption by 3.2 percent due to slow growth and destocking. Asia, which contributed 63.4 percent to world consumption was the largest consumer followed by Europe's 19.1 percent and America's 13.5 percent (Fig.47). Africa accounted for 1.3 percent of global consumption with South Africa accounting for 42.9 percent of Africa's consumption.

FIGURE 47: REGIONAL CONSUMPTION OF REFINED ZINC, 2012

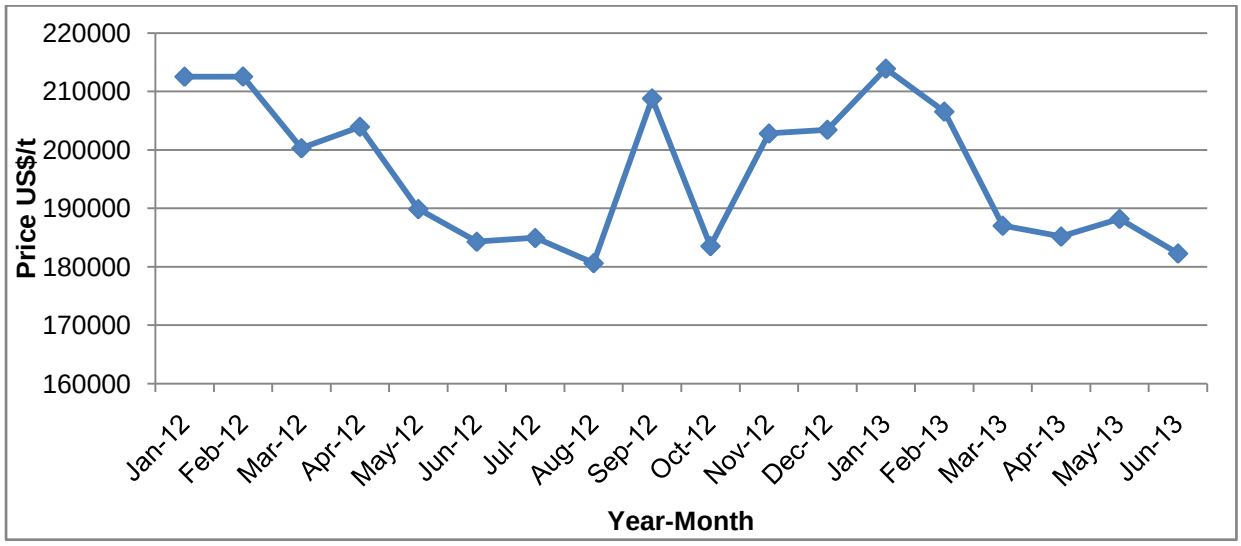


Source: International Lead and Zinc Study Group
Metal Bulletin

PRICES

The London Metal Exchange (LME) zinc price averaged $1 946.38/t in 2012, 11.1 percent lower than $2 190.53/t in 2011, due to weaker global demand and market surplus. The price was fluctuating through the year, recording a minimum of $1 814/t in August 2012 and a maximum of $ 2 058/t in February 2013 (Fig.48).

FIGURE 48: LME ZINC CASH SETTLEMENT PRICES (MONTHLY AVERAGES), 2012



Sources: International Lead and Zinc Study Group Metal Bulletin Jan 2012- August 2013
London Metal Exchange (LME)

SOUTH AFRICA

South Africa's zinc mine production was 37 kt in 2012 the same amount recorded in 2011 (Table 62). South Africa's exports of zinc–in-metal-concentrates amounted to 38 kt in 2012, an increase of 90 percent compared with 2011 as exports replaced local consumption following the closure in December 2011 of Zincor, the only refinery that existed in the country,

TABLE 62: SOUTH AFRICA'S PRODUCTION AND SALES OF ZINC METAL-IN-CONCENTRATE 2002–2011

		LOCAL SALES			EXPORT SALES		
YEAR	PRODUCTION	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	t	R'000	R/t	kt	R'000	R/t
2003	41	40	121 906	3 050	-	-	-
2004	32	31	107 630	3 415	-	-	-
2005	32	31	144 752	4 640	-	-	-
2006	34	33	133 500	4 444	-	-	-
2007	31	30	428 959	14 114	-	-	-
2008	29	27	221 725	8 150	-	-	-
2009	28	22	170 925	7 603	-	-	-
2010	36	31	279 821	9 054	4	43 393	11 892
2011	37	17	169 416	9 917	20	233 150	11 775
2012	37	0	0	0	38	444 536	10715

Sources: DMR, Directorate Mineral Economics

Between 2002 and 2009 there were no exports of zinc concentrates and all the output was consumed locally to produce zinc metal.South Africa started exporting zinc concentrate towards the end of 2010. In December 2011, Zincor, which used to consume all of South Africa's concentrate output, was shut down. Consequently, there were no local sales recorded in 2012. Export revenue amounted to R445 million in 2012, almost twice the amount in 2011 due to a combination of higher exports volumes and unit prices.

TABLE 63: SOUTH AFRICA'S PRODUCTION AND SALES OF REFINED ZINC 2002- 2011

		LOCAL SALES			EXPORT SALES		
YEAR	PRODUCTION	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	t	R'000	R/t	kt	R'000	R/t
2003	113	86	596 361	6 934	27,6	164 948	5 976
2004	105	91	627 081	6 900	16,1	108 550	6 711
2005	104	103	895 122	8 643	1,7	12 506	7 485
2006	90	99	2 134 192	21 558	-	-	-
2007	101	98	2 492 122	25 430	-	-	-
2008	82	97	1 651 370	17 024	-	-	-
2009	86	93	1 317 995	14 152	-	-	-
2010	85	89	1 505 861	17 000	-	-	-
2011	72	85	1 457 613	17 000	-	-	-
2012	-	-	-	-	-	-	-

Sources: DMR, Directorate Mineral Economics

DEVELOPMENTS IN AFRICA

South Africa'sGamsberg Project is currently in the pre-feasibility stage and undergoing associated environmental studies. Black Mountain Mining has appointed Environmental Resource Management (ERM), an independent environmental assessment practitioner, to undertake the necessary environmental regulatory processes in terms of NEMA, NWA and MPRDA (amongst others). According to ERM, this project will consist of an open pit zinc mine, with a defined ore resource of 186 Mt and approximately 250 Mt of potential ore resources; and a hydrometallurgical concentrator.The production capacity of both lead and zinc is expected to be four times of the country's current total annual capacity with a minimum life-of-mine of 16 years. Phase 1 (development of mine and concentrator) of the Gamsberg project is estimated to bring investment of a between R6 billion to R7 Billion and potentially create 800 -1000 fulltime employment and approximately 500 indirect jobs. In addition, approximately between 2000 and 3000 temporary jobs will be created during the construction phase.

The Perkoa Project in Burkina Faso is a joint venture between Glencore Xstrata, Blackthorn Resources and that country. The project is located in the Sanguie Province of Burkina Faso, 120 km west from the capital Ouagadougou. The Perkoa zinc mine will be the largest zinc mine development undertaken in Burkino Faso to date. The deposit has high concentrations of zinc and barium mineralization, and relatively low levels of lead and copper. Perkoa has a JORC code compliant probable ore reserve of 6.3 Mt at a mine head grade of 13.9 percent zinc (at a 9 percent Zn cut off), equating to 873 kt of contained zinc metal. The project has a 10 year life of mine. Construction and development of the project commenced in December 2010 following suspension in July 2008 and the first shipment of zinc concentrate will sail from the Port of Abidjan, Côte d'Ivoire in the second half of 2013.

OUTLOOK

According to the International Lead and Zinc Study Group (ILZSG), world zinc mine production is expected to increase by 1.7 percent to 13.73 Mt in 2013 and a further 2 percent to 14.01 Mt in 2014. This will be driven by positive consumption outlook in China and other emerging economies because of growing infrastructure, construction and automotive industries. Supply growth is expected from India's Hindustan Zinc's RampuraAgucha mine and Burkina Faso's Perkoa mine.

Global refined zinc metal output is also expected to increase by 3.4 percent to 13.01 Mt in 2013 and by 4.9 percent to 13.65 Mt in 2014, primarily due to expected higher production of refined zinc metal in China. In Italy, Peru and the Republic of Korea production is expected to increase due to recent commissioning of new capacity, while in India production is expected to recover after a huge decrease in 2012. World refined zinc metal supply is expected to continue to exceed demand in the medium term. Excess supply of 120 kt is forecast in 2013 and a further 115 kt in 2014, which are lower surpluses than in 2012 and had been the case in the past four years. This situation will most likely exert a negative pressure on already depressed zinc price.

Zinc supply is expected to be price-elastic due to higher treatment charges, high concentrate stocks and further mine production increases in numerous countries, which should offset mine closures, most notably at the Brunswick and Perseverance mines in Canada. It is likely that Chinese smelters will cut down on production in 2013 like they did in 2012 which will have a slightly positive impact on the zinc price.

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ZIRCON

L Maphango

WORLD SUPPLY

In 2012, world production of zircon declined by to 12.5 percent to 1.42 Mt compared with 2011 as producers adjusted supply in response to rising stockpiles emanating from slowing demand that began at the end of 2011 (Table 64). The slowing Chinese economy in 2012 led to the current oversupply of zircon in the world market. Global production of zircon was dominated by Australia and South Africa, which together account for more than two-thirds of the global total.

TABLE 64: WORLD RESERVES AND MINE PRODUCTION OF ZIRCON CONCENTRATES, 2012

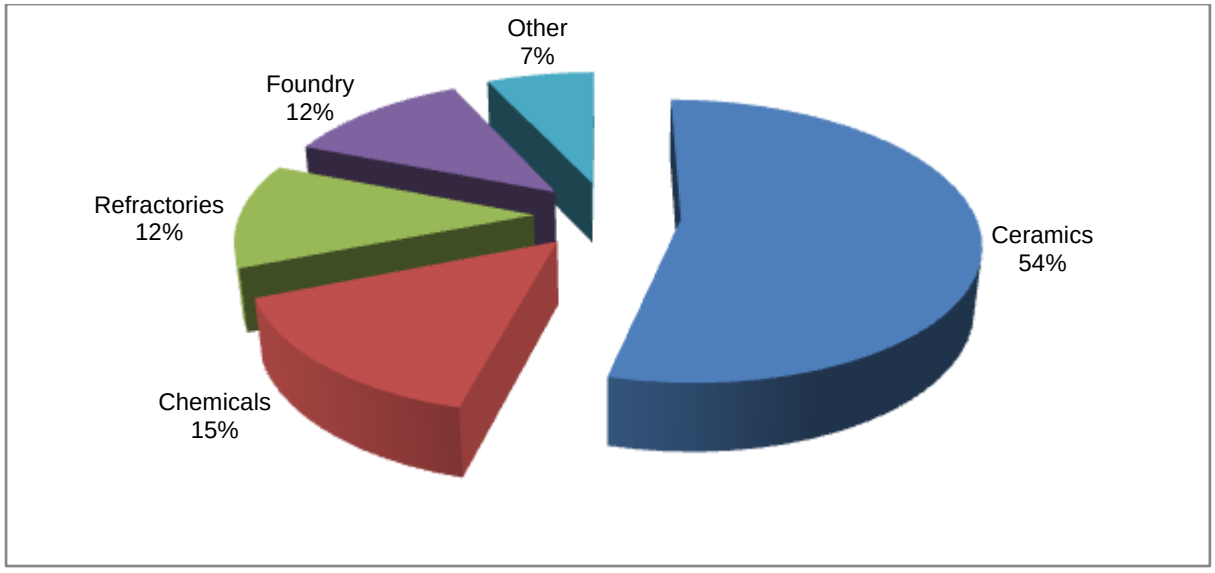
	RESERVES			PRODUCTION		
COUNTRY	Mt	%	Rank	kt	%	Rank
Australia	21.0	43.9	1	610	43.1	1
China	0.5	1.0	5	150	10.6	3
India	3.4	7.1	3	40	2.8	6
Indonesia	na	na	na	60	4.2	4
Mozambique	1.2	2.5	4	47	3.3	5
South Africa	14.0	29.3	2	400	28.2	2
USA	0.5	1.0	7	na	na	na
Other	5.0	9.6		32	2.3	
TOTAL 2012	47.8	100.0		1 416	100.0	
2011	51.8			1 618		

Source: USGS, 2013, p 191

WORLD DEMAND

In 2012, world demand for zircon was weaker compared with 2011, due to the slowing Chinese economy, rising inventory levels, and the weak global economy. The record high prices seen in 2011 through to 2012 led to substitution of zircon in some application.However, demand for zircon improved in 2013 as a result of the robust housing market in China, despite the country's cooling economy. China accounts for more than 40 percent of annual world demand for zircon and, new houses are a catalyst to demand for ceramics, which are primarily used in kitchens and bathrooms. Homeowners in China prefer using tiles on their floors over other floor-covering materials such as carpets, laminates and wooden floorboards.

FIGURE 49: ZIRCON CONSUMPTION BY SECTOR



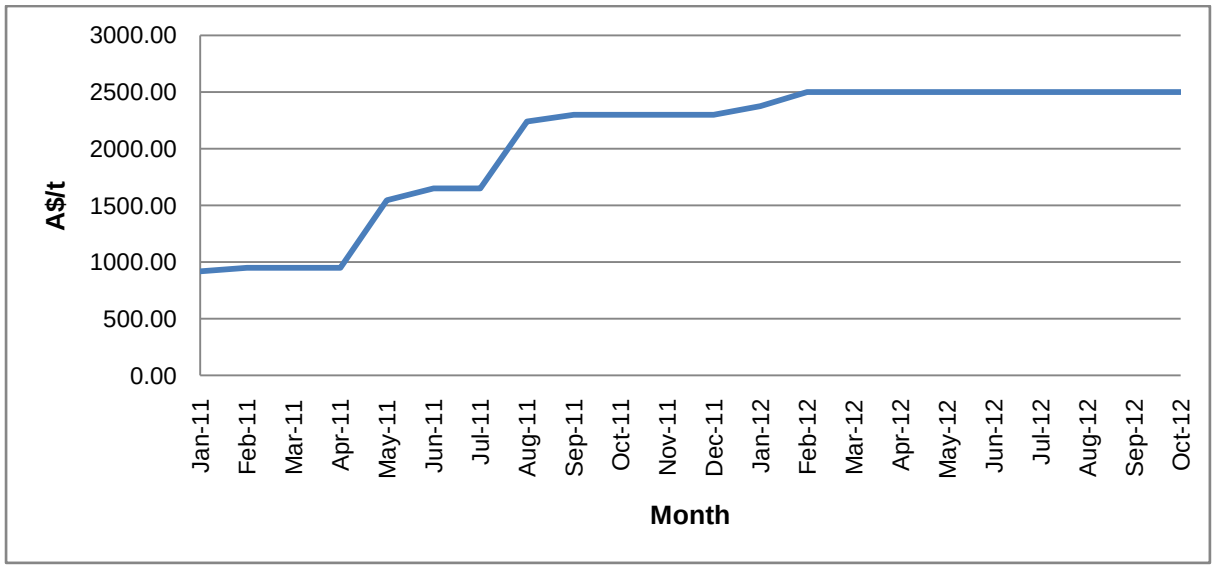
Source: Roskill 2011 and Industrial Minerals May 2012

Zircon is mainly used in ceramics as apacifier in floor tiles, sanitaryware, and tableware. Ceramics remain the biggest end-user of zircon, accounting for 54 percent of consumption, followed by chemicals (22 percent), refractories (12 percent) and foundry (12 percent), Fig. 49.

PRICES

Following the sharp rises in zircon prices in 2011, due to strong demand and market undersupply, an all-time high average of A$2 500/t was reached in February 2012 and stabilised for the remainder of the year as zircon supply began to exceed demand as economies slowed down. February was the only month in 2012 that registered a price increase. The average price of zircon rose by 5.2 percent from A$2 376/t in January to A$2 500/t in February as the bull-run of 2011 came to a halt.

FIGURE 50: PRICE FOR FOUNDRY GRADE ZIRCON, FREE ON BOARD AUSTRALIA, 2011 – 2012



Source: Metal Bulletin, 2011– 2012

DEVELOPMENTS

Construction is underway at Tormin mine, which is located 400 km north of Cape Town, Western Cape Province. Tormin mine is owned by Mineral Commodities (MRC), an Australian-based company, which is also developing the Xolobeni mine sands project in the Pondoland, Eastern Cape Province. Tormin mine is expected to have a capacity of 1.2 Mt per annum producing about 47.8 kt of concentrate per annum grading at 81 percent zircon, 11.6 percent rutile and more than 100 kt per annum ilmenite. The mine, which is scheduled to start production in mid December 2013, is expected to have a life of mine (LOM) of between 3 and 5 years. More information on these South African mine sands project is covered in the titanium chapter, as zircon is a co-product of titanium mining.

Base Resources' Kwale mine sand project in Kenya, 40 km south of Mombasa, which is on track to commence production in the second half of 2013, is expected to produce 40 kt zircon, 330 ktilmenite and 80 kt rutile per annum. The deposit with an estimated resource of 138.8 Mt of heavy minerals is expected to have a LOM of about 13 years. In Senegal, Mineral Deposits is developing Grand Cote heavy mineral sands project, 50 km north of Dakar. The mine is expected to produce approximately 85 kt of zircon and 575 kt of ilmenite per annum, as well as small amounts of rutile and leucoxene.The mine has a measured and indicated resource of 1.03 Bt at 1.7 percent heavy minerals. The mine is projected to have a LOM of at least 20 years with further drilling expected to extend the LOM. The mine is scheduled to start production in the first half of 2014.

Gunson Resources' Conburn mine sands project in Western Australia, which is anticipated to have an annual capacity of 40 kt zircon and 90 ktilmenite, is expected to be commissioned at the end of 2013. Conburn mine is estimated to have a LOM spanning 23 years. MZI resources is developing Keysbrook heavy mineral sands project, also in Western Australia. The mine, which is projected to produce about 20 kt of zircon and 60 kt of leucoxene per annum, is expected to have a LOM of more than 8 years. Keysbrook deposit has an estimated resource of 78.8 Mt grading at 2.4 percent heavy mineral concentrates and commissioning is expected towards the end of 2013.

OUTLOOK

Africa's production of zircon is envisaged to exceed Australia's by the end of this decade due to mine sands projects that are expected to come online from South Africa, Kenya and Senegal. Thus, Africa is likely to become the epicentre of zircon mining.

According to ILUKA, increasing real-estate loans and growing construction activity in China augur well for the future of the heavy minerals sands industry. The residential construction in the Chinese housing sector is likely to boost the global demand for zircon in 2013 and 2014. The positive economic outlook in China as well as in the USA is expected to support the consumption of zircon in 2013 and 2014. The uncertainty in the European economy is still posing downside risk to the global economy and zircon prices. However, if the recovery in demand is sustained, prices of zircon are projected to stabilise in 2013 and pick up in 2014.

The imminent commissioning of the Tormin mine sands project is expected to increase South Africa's contribution to global zircon production. The positive outlook for zircon in the short to medium term bodes well for the country's heavy mineral sands industry and foreign exchange, taking into account that South Africa is the second top producer of zircon in the world.

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FERROUS METALS AND MINERALS OVERVIEW

L Malebo

GLOBAL DEMAND

South Africa is a major producer and supplier of primary ferrous minerals and their alloys. With more than 85 percent of global consumption of iron ore, manganese, chrome and vanadium; steel manufacturing is by far the leading demand driver of ferrous minerals. Steel will continue to be the biggest consumer of ferrous minerals as well as a source for the biggest growth potential for these minerals. According to the World Steel Association (WSA), global stainless steel and crude steel production increased by 5.2 and 1.2 percent 35.4 Mt and 1 548 Mt respectively in 2012, compared with 2011, driven mainly by growth in Asia, particularly in China. China remained the dominant stainless steel producer, accounting for 45.5 percent of the world's total stainless steel output in 2012, followed by Japan and India at 9.0 percent and 6.4 percent, respectively.

SOUTH AFRICA'S PRODUCTION AND SALES

South Africa's aggregated production of ferrous minerals increased by 12.8 percent to 87 353 kt (Table 65). Iron ore contributed 76.8 percent to ferrous minerals total production, followed by chrome ore and manganese at 12.9 percent and 10.2 percent, respectively. Total sales revenue of primary ferrous minerals contributed 19.7 percent (R 60.9 billion) to total South Africa's mineral sales. Despite an increase of 4.8 percent in the ferrous minerals total sales volume, the corresponding revenue declined by 24.9 percent, mainly due a drop in the ferrous minerals prices in 2012. The average spot iron ore price declined by 23 percent in 2012 compared with 2011, while chrome ore and manganese prices dropped by 20.9 percent and 10 percent, respectively in the same period.

TABLE 65: SOUTH AFRICA'S PRODUCTION AND SALES OF FERROUS MINERALS, 2012

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		kt	kt	R million	kt	R million	kt	R million
CHROME ORE	2012	11 310	6 685	4 683	2 470	3 594	9 155	8 277
	2011	10 721	7 434	5 382	2 000	3 237	9 434	8 620
IRON ORE	2012	67 100	8 393	4 448	57 110	48 193	65 503	52 642
	2011	58 057	9 844	4 208	51 891	58 444	61 735	62 652
MANGANESE ORE	2012	8 943	1 445	1 135	7 498	9 686	8 943	10 821
	2011	8 652	1 855	1 325	6 773	8 570	8 628	9 895
VANADIUM	2012	20.6	1.4	211	15.5	2 279	16.9	2 490
	2011	22.1	2.0	270	18.2	2 288	20.2	2 558
TOTAL	**2012**	***87 373***	***16 524***	***9 133***	***67 094***	***51 800***	***83 613***	***60 933***
	2011	**77 430**	**19 133**	**10 915**	**60 663**	**70 251**	**79 797**	**81 167**

Source: DMR, Directorate Mineral Economics

South Africa's aggregated production of ferroalloys fell by 9.6 percent to 3 852kt (Table 66), mainly due to a significant drop in ferrochrome and ferrosilicon production by 10.5 percent and 34.2 percent, respectively. Chromium alloys contributed 79.5 percent to the ferroalloys total production, followed by manganese alloys at 18.3 percent. Total sales revenue of processed ferrous minerals stood at R 26.8 billion, a decline of 6.3 percent over the 2011 revenues. The decline in revenue could be attributed to a drop in the export sales and prices, particularly chromium alloys. The local sales volume increased by 1.5 percent in line with an increase in the local steel production by 13.5 percent in 2012.

TABLE 66: SOUTH AFRICA'S PRODUCTION AND SALES OF FERROALLOYS, 2011 AND 2012

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		kt	kt	R million	kt	R million	kt	R million
CHROMIUM ALLOYS	2012	3 063	443	3 402	2 745	22 290	3 188	25 693
	2011	3 422	448	3 413	3 037	23 738	3 485	27 152
MANGANESE ALLOYS	2012	706	33	263	523	3 961	556	4 224
	2011	714	20	169	556	4 389	576	4 558
FERRO SILICON	2012	83	57	702	32	436	90	1 139
	2011	126	57	693	67	811	124	1 504
TOTAL	2012	3 852	533	4 104	3 301	22 731	3 834	26 836
	2011	4 262	525	4 107	3 660	24 554	4 185	28 661

Source: DMR, Directorate Mineral Economics

EMPLOYMENT

Employment in the ferrous mineral sector increased by 11 percent to 51 864 (Table 67), with manganese, chrome and iron ore sectors increasing employment by 16.9 percent, 16.8 percent and 4.6 percent, in their order. The increase in employment in these sectors could be attributed to the expansion projects and opening of new mines in the sector.

TABLE 67: SOUTH AFRICA'S FERROUS MINE EMPLOYMENT AND GROSS REMUNERATION 2007-2012

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000)
2007	28 044	2 888 492
2008	30 726	3 923 861
2009	31 003	4 745 558
2010	39 459	6 524 615
2011	46 713	10 536 930
2012	51 864	9 692 127

Source: DMR, Directorate Mineral Economics

OUTLOOK

The World Steel Association forecasts that global apparent steel use will increase by 3.1% to 1,475 million tonnes in 2013 following growth of 2.0% in 2012. In 2014, it is forecast that world steel demand will grow further by 3.3% and will reach 1,523 million tonnes. Global steel demand is expected to see continued recovery with developed economies overall returning to positive growth. In the medium term, ferrous minerals demand is expected to be driven by the global stainless steel demand which is expected to increase at a compound annual growth rate (CAGR) of about 4.3 percent over the next five years. This growth rate is expected to be driven by increased demand coming from Asian countries especially the growth in Chinese steel demand. The ferrous minerals and alloys prices are expected to moderate in 2013 following a steady decline in 2011 as the steel market recovers slowly.

The intensification of the drive for local downstream value addition in South Africa coupled with Transnet's expansion programme for rail and port infrastructure is expected to boost quality of exports, over a five year period in the sector. Iron ore is expected to account for the biggest share of South Africa's total ferrous ore revenues between 2012 and 2015.

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CHROMIUM

S. Ntshobane

GLOBAL SUPPLY

Global chromite resources and reserves are estimated at more than 12 billion tons and 9 106 million tons (Mt), respectively. South Africa accounts for 74.1 percent of the world's chrome ore reserves, with Zimbabwe and Kazakhstan holding 10.2 percent and 4.2 percent, respectively. Global chrome ore output increased by 3.3 percent to 25.9 Mt in 2012 compared with 2011. South Africa was the world's largest chrome ore producer accounting for 43.7 percent of total world output, followed by Kazakhstan and India at 14.1 percent and 12.9 percent, respectively.

TABLE *68*: WORLD CHROME ORE RESERVES, PRODUCTION AND EXPORTS, 2012

COUNTRY	RESERVES+			PRODUCTION#			EXPORTS#		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
South Africa	6 751	74.1	1	*11 310	43.7	1	5 546	47.1	1
Kazakhstan	387	4.2	3	3 663	14.1	2	861	7.3	3
India	54	0.6	6	3 353	12.9	3	329	2.8	8
Turkey	220	2.4	4	2 378	9.2	4	2 183	18.5	2
Russia	-	-	-	660	2.5	5	0	0.0	12
Oman	-	-	-	591	2.3	6	538	4.6	4
Brazil	18	0.2	7	588	2.3	7	29	0.2	10
Pakistan	-	-	-	572	2.2	8	480	4.1	6
Finland	120	1.3	5	499	1.9	9	15	0.1	11
Zimbabwe	930	10.2	2	468	1.8	10	0	0.0	12
Australia	-	-	-	461	1.8	11	501	4.3	5
Iran	-	-	-	448	1.7	12	448	3.8	7
Albania	-	-	-	310	1.2	13	309	2.6	9
Other	626	6.9		602	2.3		536	4.6	
TOTAL: 2012	9 106	100		25 903	100		11 775	100	
2011	9 106			25 071			11 473		

Source: +Heinz H. Pariser, 2013
International Chromium Development Association, 2013
*Mineral Economics, 2013

Global ferrochrome production declined by 1.4 percent to 9.8 Mt compared with 2011, mainly due to production cutbacks in South Africa. China and South Africa jointly accounted for approximately 66.3 percent of total global output. China's output increased by 5.3 percent in 2012 compared with 2011. At 35.6 percent, China overtook South Africa to become the world's leading ferrochrome producer in 2012. South Africa's contribution to world ferrochrome output declined to 30.7 percent due to higher chrome ore export sales.

TABLE 69: WORLD FERROCHROME PRODUCTION AND SALES, 2012

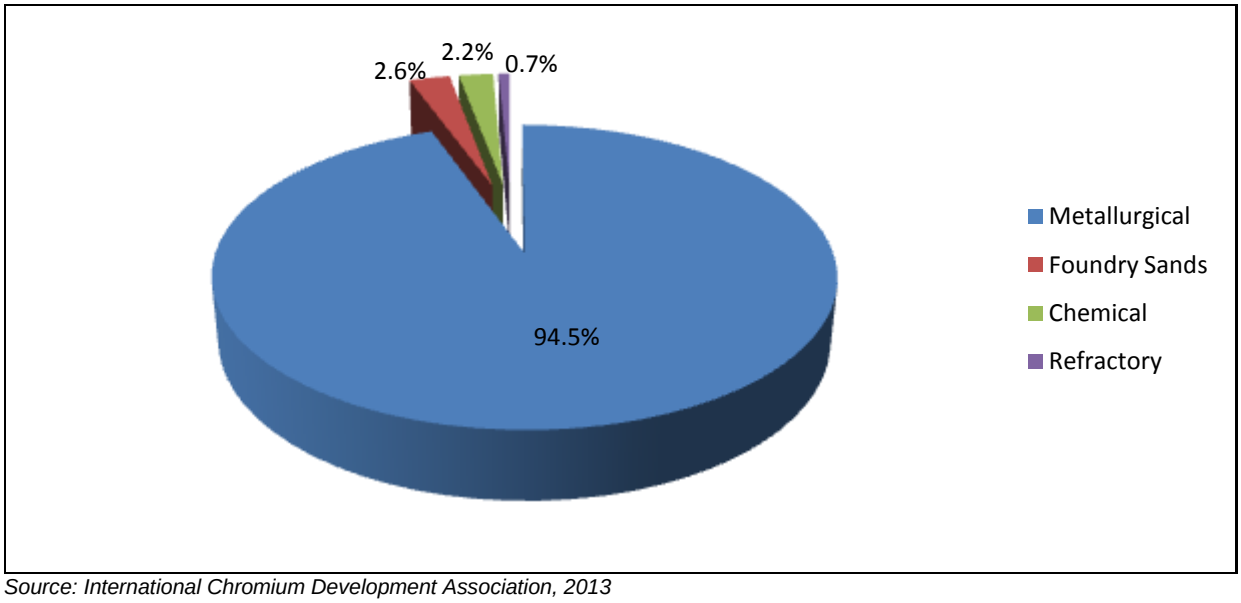
COUNTRY	PRODUCTION#			EXPORTS#		
	kt	%	Rank	kt	%	Rank
China	3 481	35.6	1	18	0.3	10
South Africa	*3 063	30.7	2	2 722	49.6	1
Kazakhstan	1 129	11.6	3	926	16.9	2
India	947	9.7	4	457	8.3	3
Russia	513	5.3	5	316	5.8	4
Finland	229	2.3	6	87	1.6	7
Zimbabwe	127	1.3	8	172	3.1	5
Brazil	162	1.7	7	6	0.1	11
Turkey	86	0.9	9	88	1.6	6
Sweden	40	0.4	10	62	1.1	8
Albania	14	0.1	11	27	0.5	9
Other	36	0.4		603	11.0	
TOTAL: 2012	9 827	100		5 484	100	
2011	9 971			5 924		

Source: #International Chromium Development Association, 2013
*Mineral Economics, 2013

GLOBAL DEMAND

About 94.5 percent of global chrome output is consumed in ferrochrome production. Niche markets use chrome in applications related to foundry sands and chemical applications, which account for 2.6 percent and 2.2 percent of chrome consumption, respectively, while the rest is consumed in the refractory industry.

FIGURE 51: DEMAND DRIVERS FOR CHROME ORE, 2012

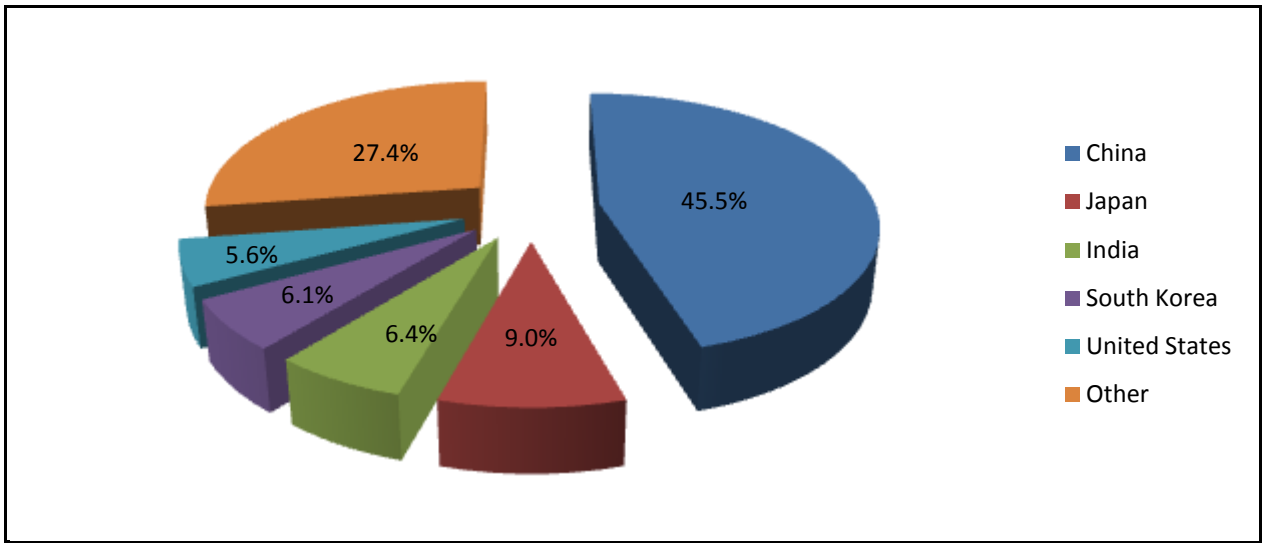


Source: International Chromium Development Association, 2013

Stainless steel and alloy steel are the key demand drivers of ferrochrome; respectively consuming 66 percent and 26 percent of total world ferrochrome supply. Stainless steel demand was influenced by challenging global economic conditions leading to modest growth in 2012. Demand for stainless steel increased slightly by 2.0 percent to 30.6 Mt in 2012; lower than the 9 percent growth rate achieved in 2011. Global stainless steel production increased by 5.2 percent to a record 35.4 Mt in 2012 compared with 2011, mainly due to a 14.2 percent rise in China's stainless steel output. China remained the dominant

stainless steel producer, accounting for 45.5 percent of the world's total stainless steel output in 2012, followed by Japan and India at 9.0 percent and 6.4 percent, respectively.

FIGURE 52: LEADING STAINLESS STEEL PRODUCERS, 2012



Source: International Stainless Steel Forum, 2013

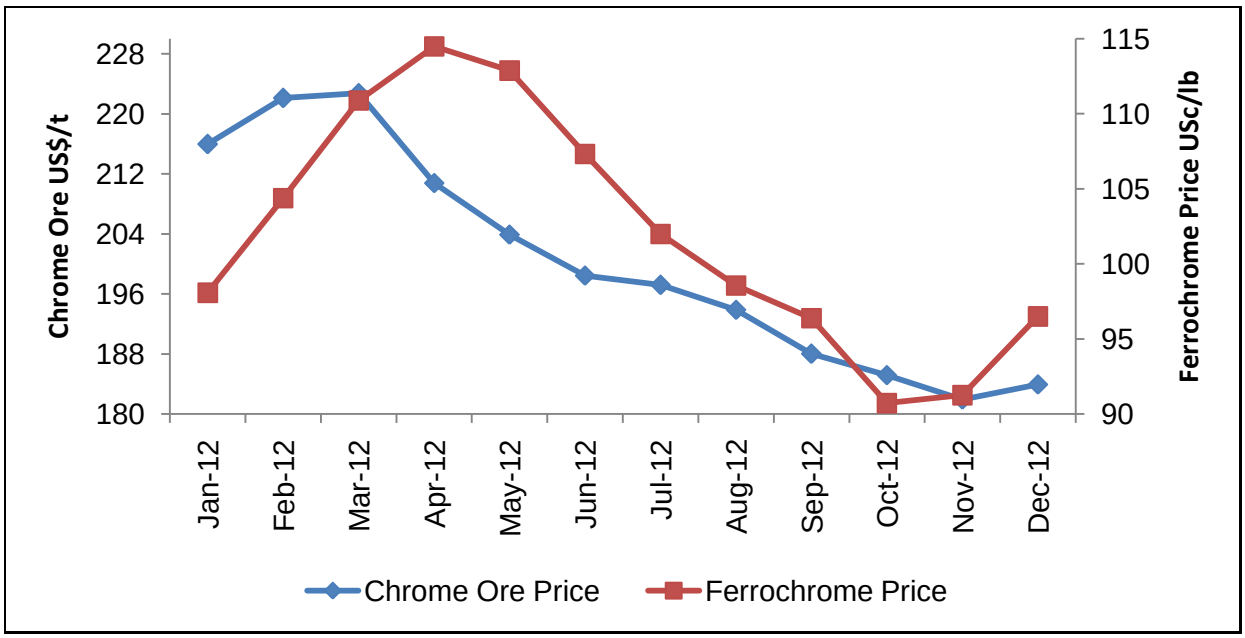
TRADE

Global chrome ore exports grew by 2.6 percent to 11.8 Mt in 2012. South Africa, at 47.1 percent, remained the largest exporter. Global imports declined by 1.3 percent to 9.3 Mt 2012. China, which accounted for 79 percent of the total global imports, remained the main driver of the global chrome ore demand. China was the major export destination for South Africa's chrome ore, importing 48.3 percent of its total ore requirements from South Africa. Global ferrochrome exports declined by 7.4 percent to 5.5 Mt in 2012 compared with 2011. South Africa, at 49.6 percent, remained the largest ferrochrome exporter, followed by Kazakhstan at 16.9 percent, while India's share of the ferrochrome exports market stabilized at 8.4 percent in 2012.

PRICES

The increasing supply of chrome ore imposed downward pressure on global metallurgical chrome ore prices in 2012. Following an initial upward surge recorded in the first quarter of 2012, chrome ore prices declined for the remainder of the year, resulting in a 20.9 percent drop compared with 2011. Chrome ore prices opened the year at US$215/t and gradually improved to US$222/t in the first quarter. Subsequently, prices fell throughout the year due to the modest demand from stainless steel. China's stainless steel mills reduced their ferrochrome tender price by 4.7 percent in 2012 compared with 2011. Ferrochrome prices started the year at US96c/lb and rose to US1.14c/lb in the first quarter, before declining to US91c/lb for the remainder of the year.

FIGURE *53*: CHROME ORE AND FERROCHROME PRICES, 2012



Source: International Chromium Development Association, 2013

SOUTH AFRICA

Production and Sales

South Africa's chrome ore production increased by 4.5 percent to 11.3 Mt in 2012 compared with 2011. However, South Africa's total chrome ore sales volumes decreased by 9.6 percent to 9 155 Mt in 2012, as local sales volumes dropped by 17.1 percent, due to declining capacity utilization by ferrochrome smelters. The drop in domestic chrome ore sales volumes could be attributed to some ferrochrome producers shutting down furnaces to take advantage of the energy buyback programme. This had a negative impact on local sales revenues, which dropped by 19.5 percent in 2012. Export sales volumes increased by 19.7 percent in 2012, with the corresponding revenues increasing by 7.0 percent. The increase in export sales revenue was not sufficient to offset the drop in total sales revenue, which fell by 9.8 percent to R8.3 billion in 2012.

TABLE 70: SOUTH AFRICA'S CHROME ORE PRODUCTION AND SALES, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value	Unit Value	Mass	Value	Unit Value
	kt	kt	R' 000	R/t	kt	R' 000	R/t
2003	7 405	6 334	976 690	154	502	177 808	354
2004	7 677	6 743	1 368 846	203	513	318 893	622
2005	7 552	6 128	1 468 521	240	657	442 045	673
2006	7 418	6 384	1 802 385	282	735	499 519	679
2007	9 665	7 389	2 346 982	315	904	675 901	747
2008	9 683	7 116	4 131 019	581	762	1 267 931	1 664
2009	6 865	4 855	2 066 278	426	1 035	1 196 051	1 155
2010	10 871	7 267	4 159 308	572	1 929	2 459 473	1 275
2011	10 824	8 061	5 813 803	721	2 063	3 357 662	1 628
2012	11 310	6 685	4 683 023	701	2 470	3 594 282	1 455

Source: DMR Directorate Mineral Economics, 2013

South Africa's ferrochrome production slumped by 10.5 percent to 3.1 Mt in 2012 compared with 3.4 Mt in 2011. Local sales volumes declined slightly by 1.1 percent to 443 kt in 2012. However, domestic stainless steel output grew by 13.5 percent during the period. Export sales volumes decreased by 9.6 percent to 2.7 Mt in 2012 compared with 2011. Lower export sales volumes could be attributed to rising ferrochrome production capacity elsewhere and a depressed market. Local and export sales revenues declined due to lower sales volumes and depressed ferrochrome prices during the period under review.

TABLE 71: SOUTH AFRICA'S FERROCHROME PRODUCTION AND SALES, 2002 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value	Unit Value	Mass	Value	Unit Value
	kt	kt	R' 000	R/t	kt	R' 000	R/t
2003	2 813	301	886 219	2 945	2 640	7 658 552	2 901
2004	3 032	484	1 856 496	3 836	2 646	10 109 639	3 821
2005	2 802	358	1 421 676	3 968	2 480	9 923 290	4 001
2006	3 030	353	1 352 224	3 832	2 581	10 370 421	4 017
2007	3 561	395	1 995 161	5 047	2 972	15 534 184	5 227
2008	3 269	334	3 415 822	10 227	2 525	28 355 767	11 230
2009	2 346	432	2 252 973	5 215	2 621	15 881 599	6 059
2010	3 607	397	2 851 837	7 183	3 116	24 216 069	7 772
2011	3 422	448	3 413 684	7 620	3 037	23 738 853	7 817
2012	3 063	443	3 402 210	7 677	2 745	22 290 876	8 120

Source: DMR Directorate Mineral Economics, 2013

Employment

Employment in South Africa's chrome industry rose by 16.8 percent to 19 758 in 2012 compared with 2011 as new projects came on stream. The number of permanent employees increased by 16.4 percent to 11 160 while that of contract employees increased by 17.4 percent to 8 598 in 2012. The average remuneration increased by 24.5 percent to R3.4 billion in 2012.

TABLE 72: EMPLOYMENT IN SOUTH AFRICA'S CHROME INDUSTRY, 2012

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R' 000
2008	12 279	1 297 315
2009	10 966	1 457 367
2010	13 982	2 082 481
2011	16 911	2 754 694
2012	19 758	3 430 889

Source: DMR Directorate Mineral Economics, 2013

Projects and other developments in SA

Developments

The structure of the chrome industry has changed owing to the increasing production and consumption of UG2 chrome ore which affected the competitiveness of primary and integrated producers. Exports from South Africa to China have increased at a faster rate in the past 5 years due to the secondary chrome ore from the UG2 production. This has oversupplied the market, thus depressed prices and threatened the competitiveness of the sector. The government of South Africa has since instituted a task team including stakeholders across the chrome value chain, with the aim of resolving the challenges faced by the sector and recommended a way forward to these challenges in order to sustain and grow the industry.

Energy security in the sector remains a challenge, resulting in the majority of ferrochrome producers participating in the energy buyback programme in 2012. This resulted in smelter capacity utilization dropping from approximately 90 percent to about 60 percent. Government discontinued the buyback

programme as it was deemed to support the deindustrialization of the chrome industry and was contrary to the country's developmental agenda. It is critical for producers to consider investing in efficient energy usage and co-generation.

Projects

Phase II of the Lion project is expected to add 360 kt of ferrochrome to Glencore Merafe's annual capacity when it comes on stream during the first half of 2013. Glencore Merafe also commissioned the Tswelopele pelletising and sintering plant on schedule and on budget in 2012. The plant is anticipated to reach the full capacity of approximately 600 kt of sintered pellets in early 2013.

Tharisa mine quadrupled run-of-mine production from 1.2 Mt per annum to 4.8 Mt after securing R1 billion in debt finance in 2012. Tharisa mine commenced production in 2011 and will produce 1.92 Mt of metallurgical grade chrome concentrate, annually.

Anglo American Platinum successfully commissioned a chrome-recovery plant (CRP) at the Waterval concentrator complex in Rustenburg during the period under review. The plant is expected to reach full production capacity in the 2013. The R150 million CRP was funded by International Ferro Metals (IFM), which is entitled to 15 kt of chromite per month at no cost for ten years as part of the agreement. The allocation represents almost 30 percent of the IFM's current concentrate requirements.

Transactions

Glencore acquired Xstrata during the second half of 2012 to create the fourth largest mining company in the world. Glencore Merafe Chrome Joint Venture operations in South Africa include several chrome mines and ferrochrome furnaces with an annual ferrochrome output capacity of over 2.0 Mt.

Samancor Chrome purchased the other 50 percent stake of NST Ferrochrome, their joint venture (JV) with Japan's Nippon Denko. Ferrochrome produced by the NST Ferrochrome JV is primarily exported to Japan and marketed by Nippon Denko. NST Ferrochrome sources all ore requirements from Samancor Chrome. Authorities approved the acquisition without conditions as it was unlikely to significantly lessen competition in the ferrochrome market.

OUTLOOK

The International Stainless Steel Forum estimated that global stainless steel consumption recorded a compound annual growth rate (CAGR) of 4.5 percent between 2008 and 2012 and is projected to rise at a CAGR of about 5 percent until 2018, due to sustained demand by Asia. The demand for chrome ore and ferrochrome is anticipated to remain strong beyond 2013.

According to the ICDA, China's ferrochrome output is projected to rise following the announcement of several capacity expansion projects during 2012. China's ferrochrome capacity is expected to expand by 1.5 Mt in 2013, while ferrochrome output is anticipated to rise by 13.7 percent compared with the expected increase of 6.4 percent in global ferrochrome production. Metal pages forecast a gloomy future for South Africa with production expected to increase by just 2.8 percent in 2013. China's ferrochrome consumption is expected to increase by 500 kt in 2013; with stainless steel output forecast to rise by 3.1 percent.

However, other countries such as Oman, Kazakhstan and Finland have also committed to ferrochrome capacity expansion projects. The ICDA anticipates these countries to reduce their chrome ore exports and focus on increasing their ferrochrome production, thus allowing other high quality-ore producers to increase their market share. South Africa's ferrochrome producers are expected to improve their production as government implements policies to encourage beneficiation in South Africa. Capacity utilisation of domestic smelters is expected to pick up to at least 80 percent in 2013 and 2014, according to stakeholder consultation.

Average prices for chrome ore and ferrochrome are projected to increase to US$219/t and US120 cents/lb during 2013, respectively. Average prices are expected to increase further in 2014 and then remain steady until 2016.

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IRON ORE

S. Ntshobane

GLOBAL SUPPLY

Global iron ore reserves amounted to 80 billion tons in 2012, with Australia accounting for 21.3 percent of the world's reserves, followed by Brazil and Russia at 20 percent and 17.5 percent, respectively. South Africa hosts 650 Mt of known iron ore reserves; contributing only 0.8 percent to world reserves.

TABLE *73*: WORLD IRON ORE RESERVES, PRODUCTION AND EXPORTS, 2012

COUNTRY	RESERVE#			PRODUCTION+			EXPORTS+		
	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank
Australia	17 000	21.3	1	520	28.0	1	492	43.3	1
Brazil	16 000	20	2	367	19.8	2	327	28.8	2
China	7 200	9	4	281	15.1	3	-	-	-
India	4 500	5.6	5	140	7.5	4	25	2.2	6
Russia	14 000	17.5	3	107	5.8	5	25	2.2	6
Ukraine	2 300	2.9	6	80	4.3	6	35	3.1	4
South Africa	650	0.8	12	*67	3.6	7	*57	5.0	3
United States	2 100	2.6	9	53	2.9	8	12	1.1	10
Canada	2 300	2.9	6	39	2.1	9	35	3.1	4
Iran	1 400	1.8	10	38	2.0	10	18	1.6	9
Sweden	2 200	2.8	8	27	1.5	11	23	2.0	8
Kazakhstan	900	1.1	11	21	1.1	12	-	-	
Other	9 450	11.8		118	6.3		87	7.6	
TOTAL:2011	80 000	100		1 858	100		1 136	100	
2010	80 000			1 897			1 085		

Sources: + UNCTAD Trust Fund on Iron Ore, 2013
** Mineral Economics, 2013*
 # USGS, 2010 (Reserve – Iron content)

Global production of iron ore declined by 2.1 percent to 1 848 Mt in 2012 compared with 2011, mainly due to a sharp drop in production levels from China, Brazil and India. Australia was the largest producer with 28.0 percent of the total world production, followed by Brazil and China at 19.8 percent and 15.1 percent, respectively. Together, these countries accounted for 62.9 percent off total global iron ore output. Global iron ore supply was dominated by three major companies, namely, Vale, Rio Tinto and BHP Billiton, which accounted for 39.6 percent of total world iron ore output in 2012. South Africa's Kumba Iron Ore increased output by 4 percent to 43.1 Mt in 2012 compared with 2011. South Africa's market share of global production increased to 3.6 percent in 2012.

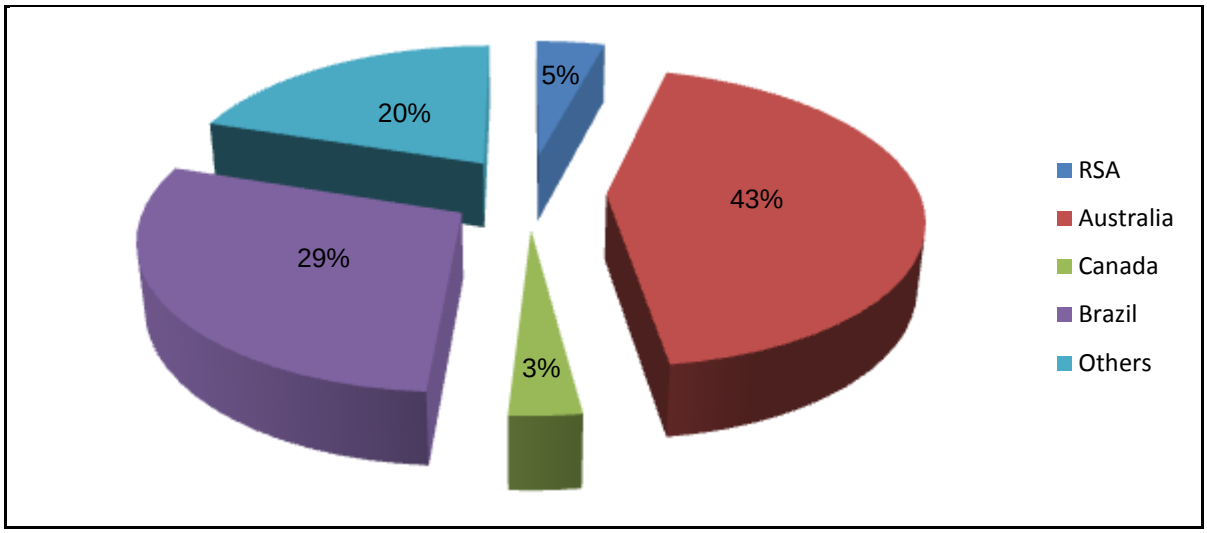
GLOBAL DEMAND

More than 90 percent of iron ore is used in crude steel production and only a marginal proportion is used in the cement, pigments, chemicals and agriculture industry. Emerging markets accounted for 75 percent of the global iron ore demand, 90 percent of which came from China. World crude steel output rose by 1.6 percent to 1 534 Mt in 2012. China's crude steel production increased by 3.8 percent to 709 Mt in 2012; approximately 46 percent of global crude steel output. World crude steel consumption increased by 2.8 percent to 1 526 Mt, with China accounting for 44 percent of global consumption.

TRADE

World iron ore exports increased by 4.7 percent to 1 136 Mt in 2012 compared with 2011 owing to stronger demand for iron ore resulting from the global recovery in crude steel production driven mainly by China. Australia and Brazil accounted for approximately 72.1 percent of global iron ore exports in 2012 (Fig 54). Australia's iron ore exports grew by 12.3 percent to 492 Mt, while Brazil's exports dropped by 1.2 percent to 327 Mt. South Africa increased iron ore exports by 9.6 percent to 57 Mt and overtook India to become the third largest exporter in the world in 2012. The downturn in India's exports is due to government clamp down on illegal mining which resulted in prohibition on production in key mining regions.

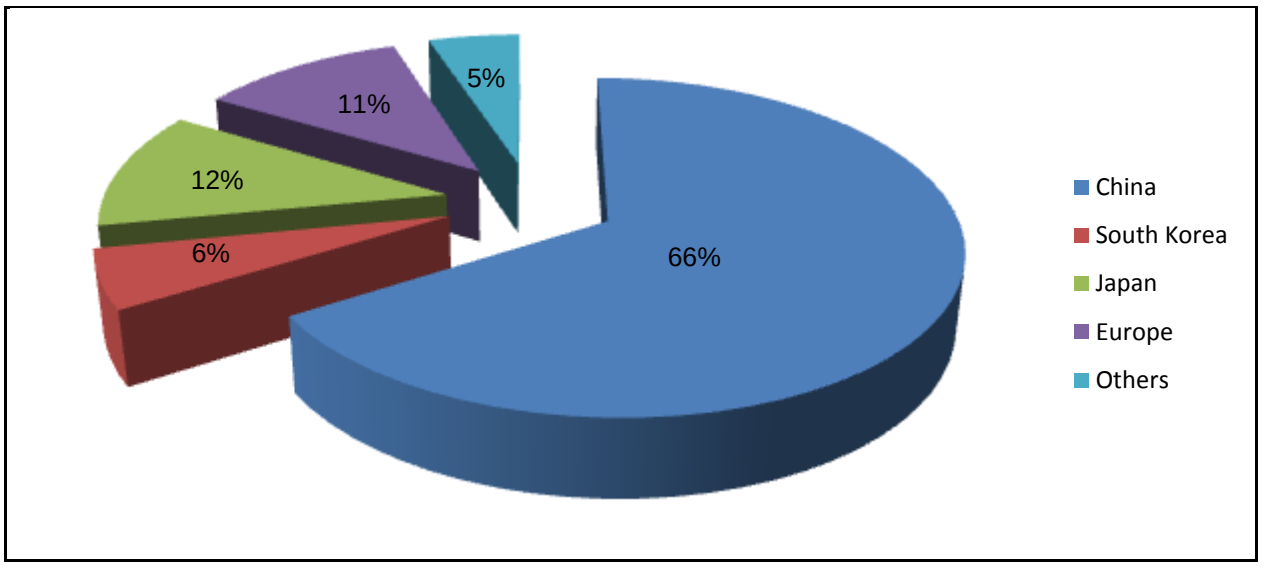
FIGURE 54: GLOBAL IRON ORE EXPORTS, 2012



Source: Bureau of Resources and Energy Economics

China, at 66 percent, remained the world's leading importer of iron ore, followed by Japan and Europe, which jointly accounted for 23 percent of global imports (Fig 55). China imported 745 Mt of iron ore in 2012, an increase of 8.4 percent compared with 2011. About 47.1 percent of China's iron ore imports came from Australia in 2012. China's iron ore imports from South Africa increased by 12 percent to 40.6 Mt in 2012 compared with 2011 following a sharp decline in China's iron ore trade with India.

FIGURE 55: GLOBAL IRON ORE IMPORTS, 2012



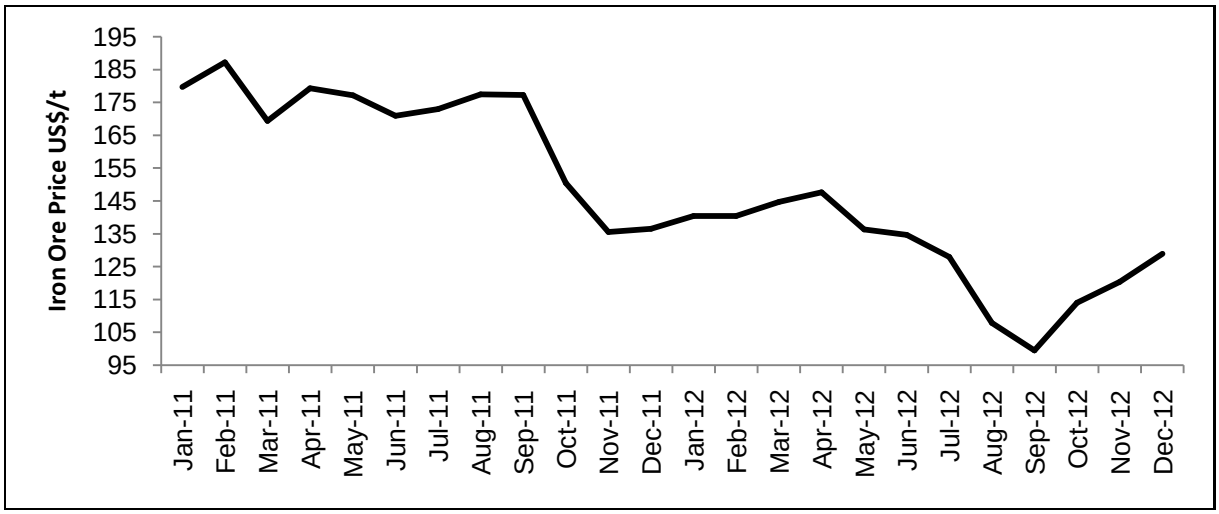
Source: Bureau of Resources and Energy Economics

PRICES

Iron ore trade was based on a benchmark pricing model for over four decades. A shorter-term contract system was adopted by the iron ore industry as steel mills sought to take advantage of declining spot market prices after the 2008 global financial crisis. The new model was based on quarterly and monthly or spot market system. However, due to challenging economic conditions and the recovery of spot prices, steel manufacturers are looking for the stability of contracts because volatile spot prices make input costs difficult to predicting and contain. Iron ore producers attribute the current market volatility to constant bargain hunting by China's steelmakers and are set to resist pressure to changes in the pricing model.

Iron ore price strengthened during the first quarter of 2012, following a decline in the last quarter of 2011, but started to decline again in the middle of the second quarter (Figure 56). The price fell sharply in the third quarter and hit a three-year low of US$99.47/t in September 2012. The drop was attributed to traders withdrawing from the spot market, historically high port inventories in China and the destocking of plant inventories by China's steel mills. The average spot iron ore price reached US$128.53/t in 2012, a decline of 23 percent compared with 2011.

FIGURE 56: IRON ORE SPOT PRICES, 2011 AND 2012



Source: International Monetary Fund, 2013

SOUTH AFRICA

Production and Sales

South Africa's iron ore output increased by 15.6 percent to 67.1 Mt in 2012, compared with 2011. Local sales volumes declined by 14.7 percent to 8.4 Mt in 2012, while export sales volumes increased by 10.1 percent to 57.1 Mt due to growing demand from China's steel mills. Despite an increase in export volumes, the corresponding revenues declined by 17.5 percent due to depressed iron ore prices

TABLE 74: SOUTH AFRICA'S PRODUCTION AND SALES OF IRON ORE

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value	Unit Value	Mass	Value	Unit Value
	kt	kt	R' 000	R/t	kt	R' 000	R/t
2003	38 085	12 079	1 060 635	88	24 076	3 130 436	130
2004	39 322	12 430	1 145 600	92	27 745	3 439 885	124
2005	39 542	12 009	1 272 795	106	26 628	6 246 776	235
2006	41 326	11 989	1 395 219	116	27 370	8 532 277	312
2007	42 083	12 407	1 749 498	141	29 724	11 680 793	393
2008	48 983	11 258	1 974 628	175	32 766	20 267 206	619
2009	55 313	8 369	1 888 801	226	44 550	25 242 934	567
2010	58 709	10 561	3 270 326	310	47 493	40 148 279	845
2011	58 057	9 844	4 207 746	427	51 891	58 444 148	1126
2012	67 100	8 393	4 448 978	530	57 110	48 193 830	844

Source: DMR Directorate Mineral Economics, 2013

Employment

Employment in South Africa's iron ore industry increased by 4.6 percent to reach 23 380 in 2012 as new projects came on stream. Permanent employees increased by 11.8 percent to 9 416 while contract employees increased by 0.2 percent to 13 964 in 2012. Remuneration declined in 2012 compared with 2011. Higher remuneration figures in 2011 were due to Kumba's multi-billion payout to employees under a broad-based employee share ownership scheme.

TABLE 75: SOUTH AFRICA'S IRON ORE INDUSTRY'S EMPLOYMENT AND REMUNERATION

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R' 000
2008	13 256	1 667 836
2009	13 727	2 178 041
2010	18 216	3 037 690
2011	22 342	6 504 656
2012	23 380	4 690 573

Source: DMR Directorate Mineral Economics

Projects and other developments in SA

Beneficiation

The Beneficiation Strategy identified the iron and steel value chain as critical for South Africa's beneficiation drive. Key interventions required to encourage downstream beneficiation of iron and steel include security of supply and addressing import parity pricing for downstream users in order to encourage local fabrication projects. Iron ore, one of the major mineral commodities in South Africa, is a key input material in iron and steel production.

Planned strategic infrastructural projects (SIPs) will require substantial quantities of steel, which is expected to promote domestic production of steel. Higher steel output is likely to raise the level of vital input raw materials demand, driven by stronger local demand in support of developmental policies such as the National Development Plan, New Growth Path and Beneficiation Strategy.

Industry Developments

Transnet commenced with a major infrastructure upgrade that includes the expansion of the iron ore rail line between the Northern Cape iron ore mining region and South Africa's primary iron ore export hub in Saldanha Bay. The infrastructure development drive is expected to boost South Africa's iron ore export capacity to 100 Mt per annum. The increase in the exports of raw materials could negatively impact on the South Africa's beneficiation drive; as such the country will need to look at mechanisms to ensure security of supply in order to effect local beneficiation.

Kumba's Kolomela mine came into production in 2012 and is expected to ramp up production to 9 Mt in 2013. It is anticipated that the mine will create more than 800 permanent employment opportunities when it reaches full production.

Arcelor Mittal South Africa (AMSA) commenced with iron ore exploration on three farms in Northern Cape and expects to provide a resource estimate and submit the mining rights application during 2013. AMSA is optimistic that a 2 Mt per annum operation could be developed on the property as the company wants to diversify its iron ore sources. AMSA spent over R350 million on mining and exploration projects in 2012 and iron ore prospecting in the Northern Cape absorbed a significant portion of the outlay.

Assmang's capacity expansion plans for Khumani and Beeshoek mines continued in 2012. Khumani's capacity will increase to 14 Mt per annum when expansion is complete. Assmang approved capital expenditure of R1.2 billion for the development of a wet high intensity magnetic separation (WHIMS) plant at Khumani mine; which is ahead of schedule and projected to be commissioned during 2013. At Beeshoek, a R885 million capital waste-stripping project at the mine's east pit is progressing well. Expansion projects are anticipated to extend Beeshoek's life of mine by approximately 20 years. Assmang commissioned a second load-out station at Khumani ahead of time so that additional ore could be moved from Beeshoek to Khumani after an agreement with Transnet for the export of 14 Mt of iron ore per annum.

OUTLOOK

It is estimated that approximately 425 Mt of iron ore production capacity per annum will enter the market towards 2014 and thereafter additional capacity exceeding 100 Mt per annum will enter the market until 2020. Global steelmaking capacity is anticipated to exceed demand in 2013 and capacity utilization is expected to remain below 80 percent to curb the amount of market supply excess. Although global crude steel demand is expected to increase, prices could remain subdued as additional production comes on line. South Africa is expected to increase iron ore exports by 4 percent in 2013 due to the demand for high-quality ore as well as regulatory and political uncertainty facing rival producers.

With the current identified iron ore reserves, the country's reserves could be depleted by 2025 at current mining rates. Depletion is likely to occur a lot sooner as demand doubles, driven by the implementation of the current infrastructure development plans and anticipated higher exports. South Africa's current iron ore reserves may only be estimated at 650 Mt but iron ore resources are estimated at 30 billion tons; of which 27 billion tons is in the Bushveld Complex. Eventually, iron ore exploration and mining activity is expected to shift towards the Bushveld Complex. New resources are likely to be identified and developed as iron ore exploration activity intensifies.

Average spot iron ore prices are expected to stabilize around $120/t in 2013 and decline further to an average of $110/t in 2014, as a combination of weaker demand and the anticipated market excess resulting from new capacity puts a downward pressure in prices.

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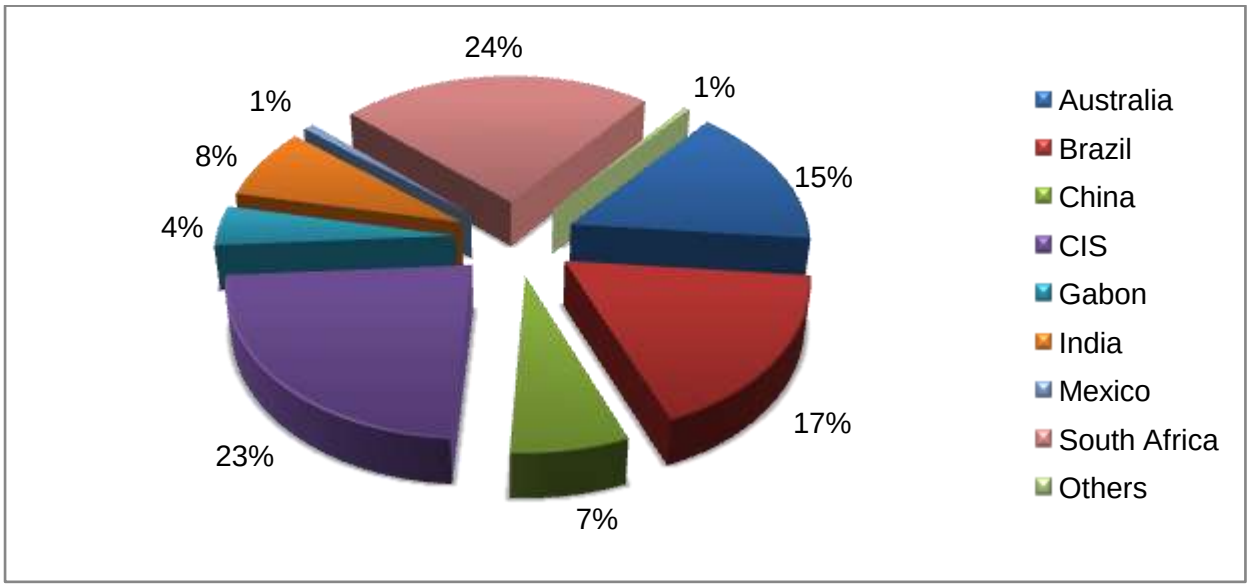
MANGANESE

K Ratshomo

WORLD SUPPLY

South Africa accounts for about 75 percent of the world's identified manganese resources, followed by Ukraine at 10 percent. World manganese reserves amounted to 630 Mt in 2012 with South Africa accounting for 24 percent of total reserves, followed by the CIS's 23 percent and Brazil's 17 percent, respectively (Fig 57). In 2012, the manganese sector suffered from the weak global demand and an oversupply, on the back of fragile major economies. Consequently, gross manganese ore production declined at a rate of 4 percent to 53 Mt in 2012. Production in terms of manganese unit contained declined by 6 percent to just over 16 Mt, from 17.2 Mt in 2011, suggesting a higher share of lower grade ores in 2012 with an average grade just below 31 percent manganese. China, Australia, South Africa, Gabon, Brazil and Ghana retained their positions as the six major producing countries.

FIGURE 57: WORLD MANGANESE ORE RESERVES, 2012



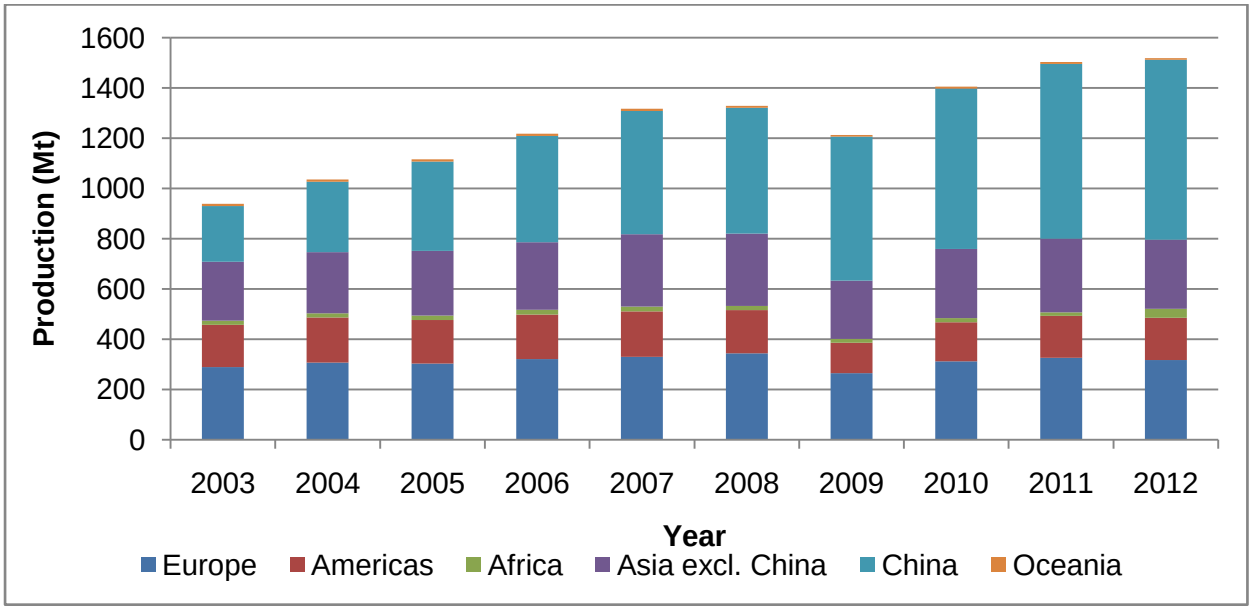
Sources: USGS 2012

World manganese alloys output amounted to 17.5 Mt in 2012, down by 1.4 percent from 2011, on the back of weaker demand. Silico-manganese (SiMn), at 11.5 Mt, accounted for 66 percent of the total alloys production, followed by high carbon ferromanganese (HCFeMn), which accounted for 25 percent at 4.4 Mt and the remaining 9 percent was accounted for by refined ferromanganese (MCFeMn) at 1.6 Mt. The global manganese alloys average unit consumption was reviewed upwards to an estimated 11.5 kg Mn alloys per ton of steel, although most countries still fell between 8-10 kg per ton.

WORLD DEMAND

World demand for manganese is mainly driven by steel production in the form of ore and alloys. World crude steel production increased by 1.2 percent to 1 548 Mt in 2012, driven by growth in Asia, particularly in China. China's steel output increased by 3.5 percent, raising that country's share of world steel production from 45.9 percent in 2011 to 47.2 percent in 2012, while India's share rose from 4.8 percent in 2011 to 5.1 percent. The higher steel output in Asia resulted in higher manganese consumption (Fig. 58).

FIGURE 58: WORLD STEEL PRODUCTION, 2003 - 2012



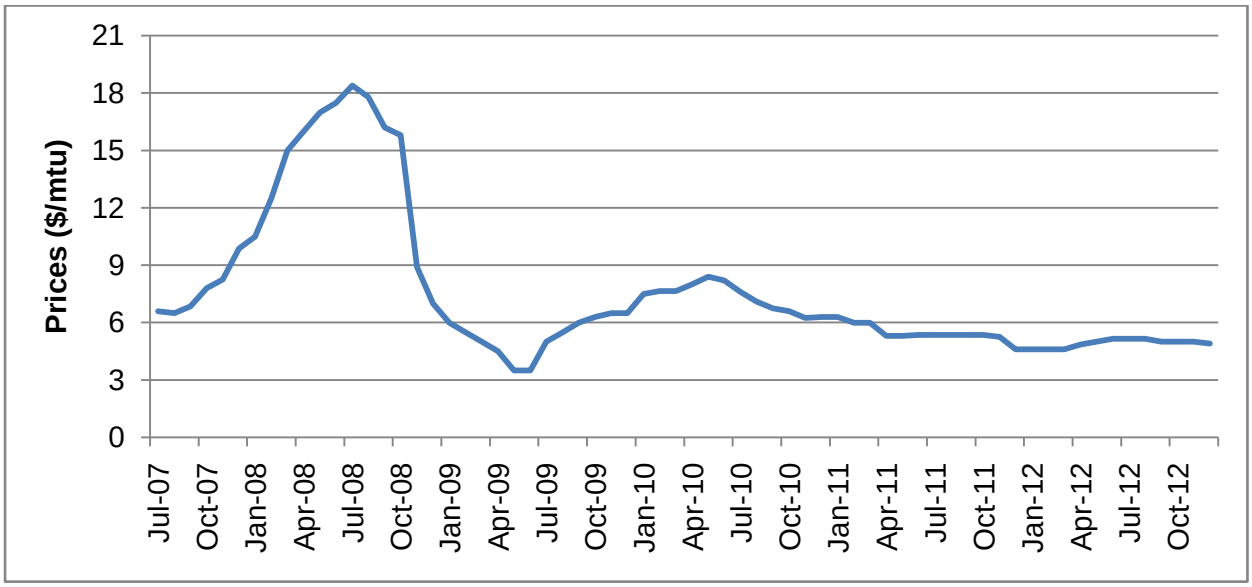
Source: WSA, 2002 – 2011

Despite a sluggish growth in Chinese steel industry in 2012, the country remained a dominant importer of manganese ore. However, China's imports of manganese ore declined by 4.7 percent to 12.4 Mt in 2012, with Australia supplying 33.9 percent of the ore followed by South Africa at 26.8 percent. Stocks at Chinese ports declined towards the end of 2012, indicating rising demand. India's imports of manganese ore increased by 31.4 percent to 2.4 Mt of which, 45.7 percent was supplied by South Africa.

PRICES

Manganese ore price steadily increased during the first half of the year from $4.60/mtu in January to $5.15/mtu in June (Fig. 59). However, the price stabilised for the first two months of the second half, and declined to $5.00/mtu in September where they remained for the rest of the year, following a similar trend as global steel output. The annual price averaged $4.92/mtu in 2012, down by 10 percent compared with $5.46/mtu in 2011.

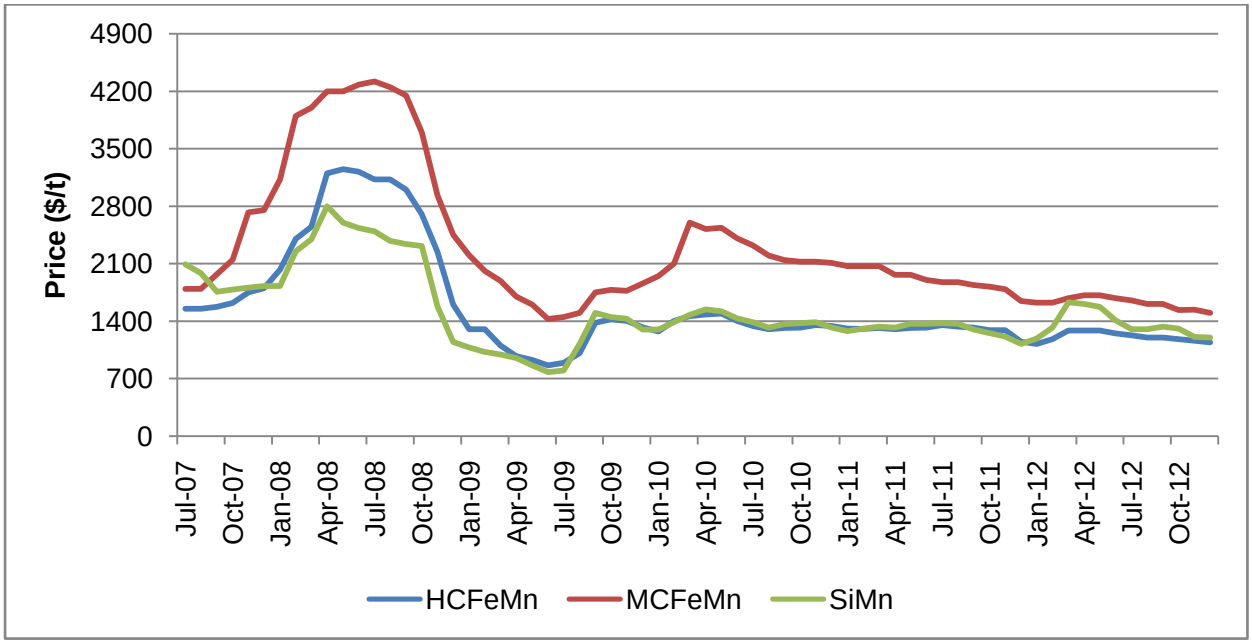
FIGURE 59: MONTHLY MANGANESE ORE PRICES, 2007 - 2012



Source: CRU, 2008-2012

After reaching a peak of $1 631/t in March, SiMn price declined for the rest of the year to about $1 200/t in December (Fig. 59). The annual average price of SiMn was $1 367/t in 2012, up by 5 percent compared with 2011 prices. HCFeMn and MCFeMn prices followed a similar trend, falling from their peaks in May and continued to decline for the rest of the year. HCFeMn averaged $1 209/t while MCFeMn averaged $1 623/t for the year, down by 7 percent and 15 percent, respectively, compared with 2011.

FIGURE 60 MONTHLY AVERAGE PRICES OF MANGANESE ALLOYS, 2007 - 2012



Source: CRU, 2008-2012

SOUTH AFRICA

Production and Sales

South Africa's manganese ore production increased by 3 percent to 8 943 kt in 2012 compared with 2011 (Table 76). Local sales volumes and revenue declined by 23 percent and 14 percent, respectively partly due to lower local consumption as evidenced by a drop in the manganese alloys production in the same period, following poor global demand. Exports sales volumes increased by 11 percent to 7 498 kt, mainly due to an increase in exports to India, which offset a decline from traditional trading partners. India increased its share of South Africa's exports from 4.5 percent in 2011 to 10.6 percent in 2012 overtaking Europe, while China declined to 42.5 percent from 49 percent in 2011 and Japan declined from 17.4 percent to 14.3 percent. Despite a decline in the average annual ore price, export sales values increased by 13 percent to R9.69 billion, due to higher sales volume and the weaker rand.

TABLE 76: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORTS SALES OF MANGANESE ORE, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'mil	R/t	kt	R'mil	R/t
2003	3 501	W	614	W	1 956	853	436
2004	4 282	W	656	W	2 403	1 082	450
2005	4 612	W	682	W	2 119	1 519	717
2006	5 213	W	727	W	2 846	1 519	534
2007	5 996	W	935	W	3 691	2 637	697
2008	6 807	W	1 762	W	4 689	15 582	3 323
2009	4 575	W	584	W	3 975	5 003	1 258
2010	7 172	W	1 321	W	5 986	9 340	1 560
2011	8 652	W	1 325	W	6 773	8 570	1 265
2012	8 943	W	1 135	W	7 498	9 686	1 292

Source: DMR, Directorate Mineral Economics
Note: W = Withheld

South Africa's production of HCFeMn and MCFeMn, which accounted for 80 percent of the total manganese alloys production in 2012, declined by 1 percent to 706 kt in 2012 (Table 77). Local sales volumes and revenue increased by 60 percent and 55 percent, respectively. Exports sales volumes and revenues declined by 6 percent and 10 percent, respectively, responding to the frail international steel market. Consequently, total sales volumes and revenues declined by 4 percent and 7 percent, respectively. Ferromanganese alloys export sales were dominated by the UK at 47 percent, followed by the US and Europe at 33 percent and 10 percent, respectively.

TABLE 77: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORT SALES OF HIGH AND MEDIUM-CARBON FERROMANGANESE, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'mil	R/t	kt	R'mil	R/t
2003	607	151	494	3 272	437	1 352	3 093
2004	612	153	784	5 127	446	2 496	5 600
2005	571	140	601	4 289	375	1 711	4 565
2006	656	128	451	3 543	556	2 303	4 143
2007	699	151	835	5 546	565	3 703	6 551
2008	503	79	1 115	14 085	500	8 883	17 774
2009	275	23	213	9 310	262	1 820	6 940
2010	473	21	186	9 036	488	4 094	8 397
2011	714	20	169	8 347	556	4 389	7 892
2012	706	33	263	8 084	523	3 961	7 567

Source: DMR, Directorate Mineral Economics

Production of other manganese alloys declined by 50 percent to 177 kt in 2012 compared with 2011, mainly due to permanent production cuts of silico-manganese in the country (Table 78). Local sales volumes declined by 18 percent to 28 kt while revenues generated from local sales declined by 16 percent to R264 million. Export sales volumes amounted to 158 kt, down by 47 percent from 2011 and exports sales revenues declined by 27 percent to R2.20 billion. As a result, total sales volumes and revenues declined by 44 percent and 26 percent, respectively, in 2012. Export sales volumes of other manganese alloys were dominated by the US at 76 percent.

TABLE 78: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORT SALES OF OTHER MANGANESE ALLOYS, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'mil	R/t	kt	R'mil	R/t
2003	313	42	140	3 346	270	1 182	4 373
2004	374	39	148	3 798	308	1 833	5 956
2005	275	25	121	4 811	184	1 080	5 865
2006	278	31	130	4 266	149	813	5 468
2007	328	35	216	6 115	223	1 700	7 614
2008	259	47	653	13 958	182	3 021	16 568
2009	118	45	385	8 600	151	1 805	11 955
2010	317	44	413	9 372	271	2 979	10 974
2011	350	34	314	9 276	298	3 020	10 131
2012	177	28	264	9 533	158	2 197	13 910

Source: DMR, Directorate Mineral Economics

Other manganese alloys include silico-manganese, manganese metal (processed), manganese dioxide (electrolytic), manganese oxide and manganese sulphate

Employment

Employment in the manganese industry increased by 17 percent to 8 726 (Table 79), increasing its share to total mining employment from 1.5 percent in 2011 to 1.7 percent in 2012. Productivity declined by 11.6 percent to 1 025 t per employee per year due to an increase in employment from operations that are still under construction and outside contractors. Each employee generated R1.24 million in 2012, down by 6.5 percent from 2011.

TABLE 79: SOUTH AFRICA'S MANGANESE MINES EMPLOYMENT AND REMUNERATION, 2008 – 2012

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2008	3 934	666 356
2009	4 988	731 618
2010	5 879	946 139
2011	7 460	1 277 580
2012	8 726	1 570 665

Source: DMR, Directorate Mineral Economics

Projects and other developments in South Africa

South Africa's manganese ore production grew at an average rate of 8.7 percent annually, since the promulgation of the Mineral and Petroleum Resources Development Act (MPRDA) in 2004, which led to the opening up of the Kalahari Manganese Field (KMF) for exploration. Various projects have since been established and developed. The latest developed Kudumane Manganese Mine is expected to go into full production by the end of 2013 and aims to produce 2.5 Mt of manganese ore annually.

The Lehating mine project is a new high grade manganese project, which will be under development in the KMF. When in operation, ore will be accessed through an underground mine at a depth of 260m with a design capacity of about 600 kt/a of manganese products over a 15 year life-of-mine. During steady state operations, approximately 350 people, of which more than half will be contractors, are expected to be employed at Lehating Mine. A portion of the unskilled and semi-skilled labour is expected to be sourced from the mine's neighbouring communities and within the Joe Morolong Local Municipality. The company has been pre-qualified on the Transnet allocation to rail its product to the port of Ngqura. Construction, which is expected to commence toward the middle of 2014, is anticipated to be completed within 28 months.
Greenfield and brownfield exploration activity has been reported, with Emang manganese project carried out at the Postmasburg Manganese Field (PMF). Also, Aquila Resources' Avontuur manganese project located adjacent to the KMF in the Gravenhage manganese deposit as well as the Ferrex's Leinster manganese project in the Leinster Basin, an erosional outlier of the KMF, are still at exploration stages.

OUTLOOK

Global apparent steel use is forecast to increase by 3.1 percent to 1.48 Bt in 2013, as a result of some stability in the global economy, following a slower growth of 1.2 percent in 2012. In 2014, it is forecast that world steel demand will grow by a further 3.3 percent and reach 1.52 BT. Manganese ore consumption is projected to rise at a rate of 4.5 percent per annum between 2013 and 2017. Growth in consumption is expected to surge to a peak of 6.9 percent in 2013 and moderate thereafter. Manganese ore price is expected to rise during the first half of 2013 on the back of strong Chinese demand, tighter supply and low inventories. However, the anticipated growth in supply during the second half of the year could drive the global ore market to balance, and subsequently stabilise prices. A buoyant steel market in 2013 is expected to prompt a rise in SiMn prices, supported by a tight market. The ferromanganese markets are expected to be in a state of oversupply in 2013. However, the high production costs are expected to encourage producers to cut production with the aim to bring the market to equilibrium. If achieved, this could stabilise prices or even lead to higher prices if the correction is overdone.

South Africa's manganese ore production is expected to grow at a rate of 11.7 percent between 2013 and 2020, driven by the expected increase in production capacity. This provides investment opportunities to increase manganese alloys production capacity in the country, supported by the anticipated increase in the country's steel capacity use which will be driven by the implementation of the planned strategic infrastructure projects (SIPs). This could increase South Africa's share of the global manganese ore and alloys markets as well as improve the country's competitiveness.

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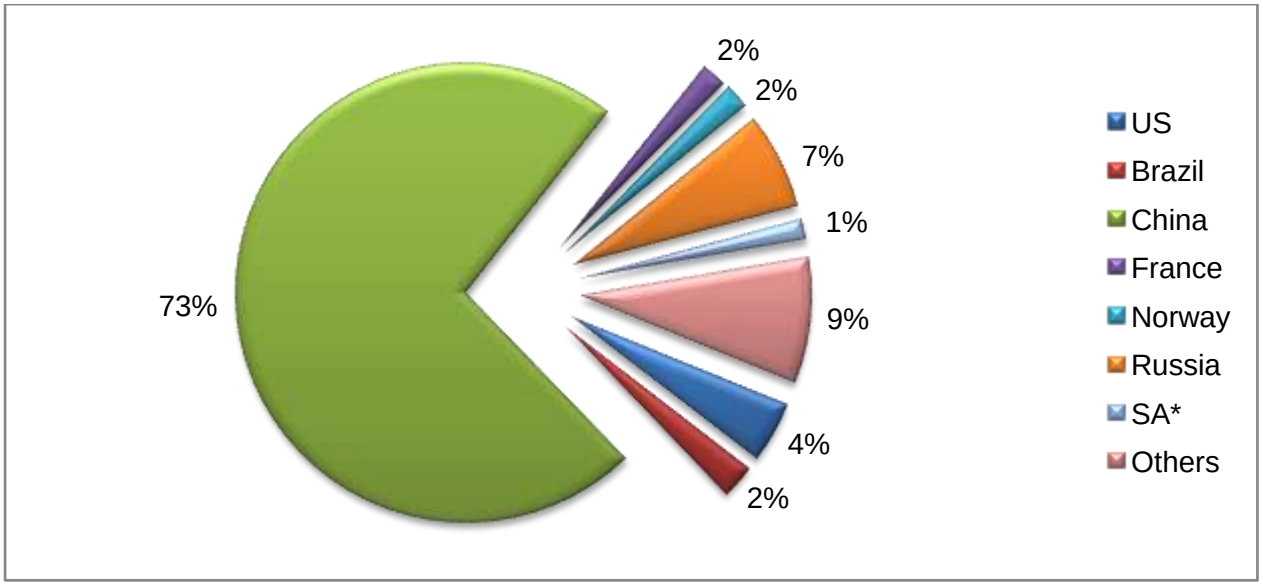
SILICON

K Ratshomo

WORLD SUPPLY

Sources of silicon are not quantitatively estimated due to their abundance and are reported to be adequate to supply world demand for decades. World silicon output was estimated at 9.6 Mt in 2012, a 4 percent decline compared with 2011 due to lower demand (Fig. 61). Ferrosilicon production represented the largest segment of silicon products accounting for 81 percent (7.8 Mt) in 2012, while silicon metal production accounted for 19 percent (1.8 Mt). China continued to dominate the market, contributing 72 percent and over 60 percent to global ferrosilicon and silicon metal production, respectively, while South Africa contributed approximately 1 percent and 2.9 percent to global ferrosilicon and silicon metal production in 2012. Ferrosilicon exports from China reached 411 kt during 2012, a drop of 29 percent, as a result of high export tariffs and anti-dumping duties in Europe. However, Russia, Brazil and Europe took up market share previously dominated by Chinese exports. The silicon metal export market was also weak during 2012 on the back of a sluggish global economy and weak downstream markets.

FIGURE 61: CONTRIBUTION TO SILICON PRODUCTION BY COUNTRY, 2012



Source: USGS Mineral Commodity Summaries, 2011
**DMR, Mineral Economics*

WORLD DEMAND

Approximately 72 percent of global ferrosilicon output is used in the production of crude steel. World average consumption of ferrosilicon is about 5 kg per ton of steel while China consumes about 7 kg. Consequently, Asia consumes about 75 percent of ferrosilicon produced, of which 59 percent is consumed by China. Global steel production amounted to 1 548 Mt, up by 1.2 percent compared with 2011. However, ferrosilicon consumption dropped during 2012 due to a switch to silico-manganese and silicon carbide by steel mills, particularly in China and Japan.

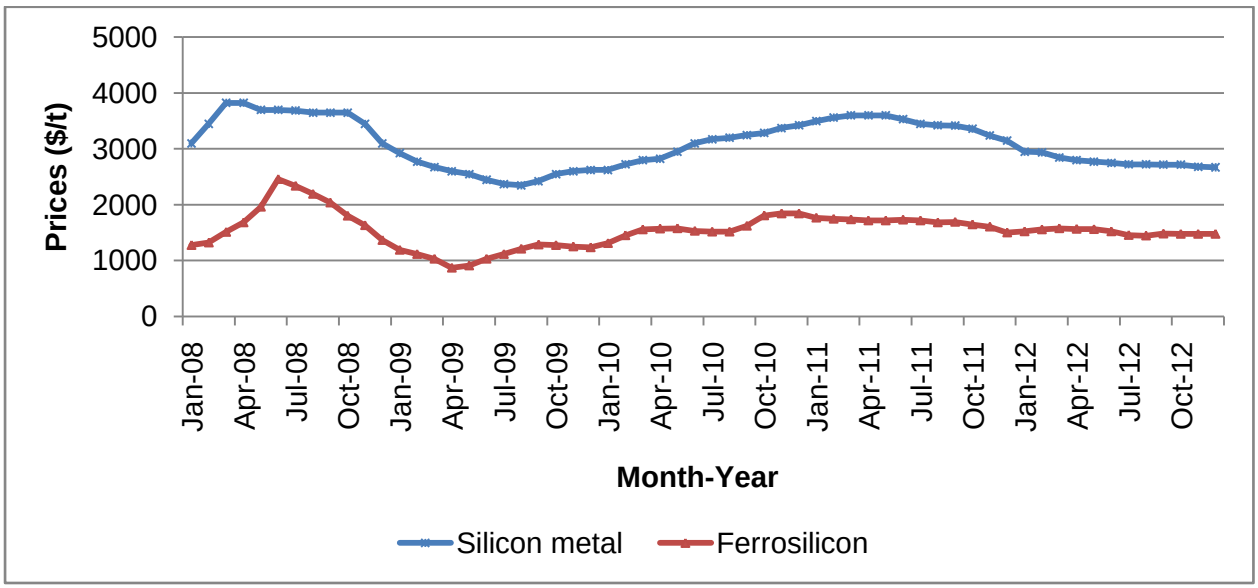
The silicon metal market was oversupplied during 2012 as a result of a reduction in output in the downstream markets. Consumption by the end-use markets was led by the aluminium alloys sector at 48 percent, followed by the organic silicon and polycrystalline silicon sectors at 40 percent and 12 percent, respectively. World primary aluminium production increased by 4 percent to 47.6 Mt in 2012 compared with 45.8 Mt in 2011, while global aluminium consumption rose by 6 percent to 47.4 Mt.

PRICES

Ferrosilicon and silicon metal prices continued to fall in 2012, following a downward trend in 2011. Ferrosilicon annual price averaged $1 513/t for ferrosilicon, an 11 percent decline from 2011, due to an

oversupplied market, which oppressed the upstream markets. Silicon metal price declined by 20 percent to $2 776/t in 2012 due to a combination of weak demand and ample supply.

FIGURE 62: SILICON METAL AND FERROSILICON SPOT PRICES IN THE US, 2008-2012



Source: CRU, Bulk Ferroalloys Monitor

SOUTH AFRICA

South Africa's production of ferrosilicon declined by 34 percent to 83 kt in 2012, responding to poor market conditions (Table 80). Total sales volumes declined by 28 percent while revenues dropped by 24 percent, in 2012 compared with 2011. Local sales mass remained stagnant at 57.2 kt 2012, while export sales mass declined by 51 percent to 32.7 kt in 2012. Revenues from local sales increased by 1 percent to R702 million owing to higher prices despite lower volumes. However, export sales revenues decreased by 46 percent to R437 million, due to a drop in export mass and price.

TABLE 80: SOUTH AFRICA'S PRODUCTION AND SALES OF FERROSILICON, 2003-2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	135.3	79.0	364 716	4 618	65.7	280 285	4 267
2004	140.6	84.3	436 095	5 174	57.8	268 786	4 648
2005	127.0	73.4	388 446	5 293	41.3	223 216	5 401
2006	148.9	79.5	444 261	5 585	49.0	301 534	6 153
2007	139.6	91.7	616 444	6 724	54.7	395 352	7 222
2008	134.5	71.2	842 183	11 835	44.2	512 037	11 573
2009	110.4	60.9	659 855	10 835	43.6	460 901	10 571
2010	127.7	63.6	710 333	11 169	59.2	631 765	10 672
2011	126.2	57.3	693 448	12 111	67.0	811 277	12 115
2012	83.0	57.2	702 315	12 269	32.7	436 858	13 360

Source: DMR, Directorate Mineral Economics

South Africa's production of silicon metal declined by 10 percent to 53 kt in 2012 compared with 58.8 kt in 2011 (Table 81). Total sales volumes increased by 1 percent while the corresponding revenues declined by 13 percent in 2012. Local sales mass increased by 43 percent to 15.1 kt. However, revenues from local sales declined by 7 percent to R62 million due to a 35 percent decline in unit values. Export sales mass

dropped by 6 percent to 59.4 kt following poor global demand. Revenues from export sales declined by 14 percent to R928 million in 2012 due to a lower price.

TABLE 81: SOUTH AFRICA'S PRODUCTION AND SALES OF SILICON METAL, 2003-2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	48.5	5.7	49 713	8 739	40.8	392 582	9 630
2004	50.5	8.8	65 414	7 403	45.9	389 430	8 473
2005	53.5	5.5	47 881	8 716	41.6	450 200	9 556
2006	53.3	7.8	72 270	9 213	47.4	503 583	10 622
2007	50.3	8.9	101 794	11 498	46.3	570 763	12 319
2008	51.8	3.9	87 443	22 438	53.5	1 213 107	22 669
2009	38.6	6.4	91 586	14 310	38.4	640 413	16 677
2010	46.4	10.8	106 016	9 816	62.4	822 406	13 187
2011	58.8	10.6	66 576	6 283	63.1	1 073 668	17 008
2012	53.0	15.1	62 044	4 099	59.4	928 424	15 641

Source: DMR, Directorate Mineral Economics

OUTLOOK

The forecast for silicon is highly dependent on the performance of the downstream markets, mainly steel and aluminium alloys sectors, as well as the recovery of the global economy. The steel industry experienced the slowest growth rate in steel use since 2009, mainly due to the Euro zone crisis which persisted throughout 2012 and whose impact was felt further afield. Corrective macroeconomic measures in major emerging economies also contributed to a slowdown globally. However, global steel use is expected to increase by 2.9 percent to 1 454 Mt in 2013 and by a further 3.2 percent to reach 1 501 Mt in 2014. Global aluminium output is expected to amount to 50.6 Mt in 2013, a 6.3 percent increase from 2012 and to increase by a further 11 percent to 56.2 Mt in 2014. Demand for aluminium is forecast to grow by 6.1 percent to 50.5 Mt in 2013 and by 10.2 percent to 55.7 Mt in 2014.

The stabilisation of the three major risk factors to the global economy (the Euro zone crisis, the hard landing of the Chinese economy and the US fiscal cliff issue) during the first half of 2013 is expected to strengthen global steel demand during the second half of the year. Also, the removal of export tax on silicon in China at the beginning of 2013 is expected to increase world supply. Consequently, the expected bullish market could lead to an increase in prices towards the end of 2013.

In South Africa, the implementation of the Strategic Integrated Projects (SIPs), which are aimed at fast tracking infrastructure developments, have the potential to increase local demand for steel as well as increase the demand for solar cells for energy generation. This could, in turn, encourage an increase in the utilization of the country's silicon production capacity and further present investment in additional capacity.

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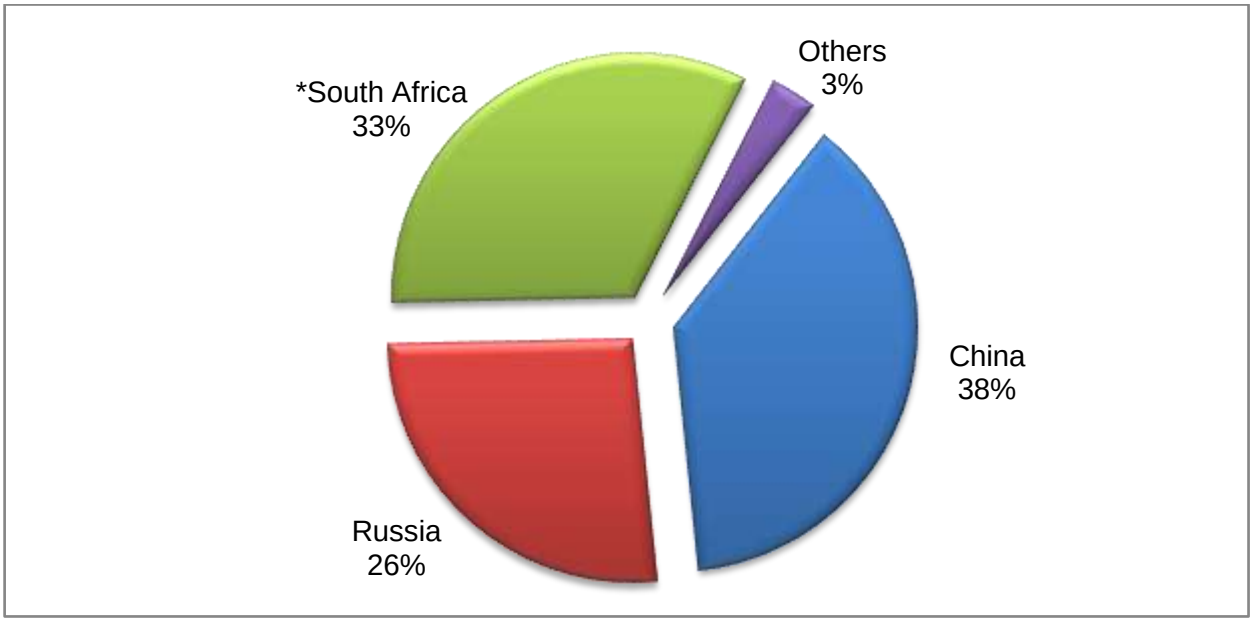
VANADIUM

K Ratshomo

WORLD SUPPLY

Vanadium raw materials are extracted mainly from three sources in the world, namely, slag from steel making, mine production and as a by-product from the processing of vanadium bearing oil and coal. Vanadium slag from steel making accounts for 67 percent of the global vanadium production, while mine production and secondary material accounts for 22 percent and 11 percent, respectively.
World vanadium output fell by 0.5 percent to 60.8 kt in 2012 from 61.2 kt in 2011, due to closure of the majority of coal based production in China and slower growth of co-product vanadium slag from steel production. However, China remained the biggest supplier of vanadium, accounting for 38 percent of the global production (Fig. 63). South Africa, at 33 percent, was the second producer, followed by Russia at 26 percent.

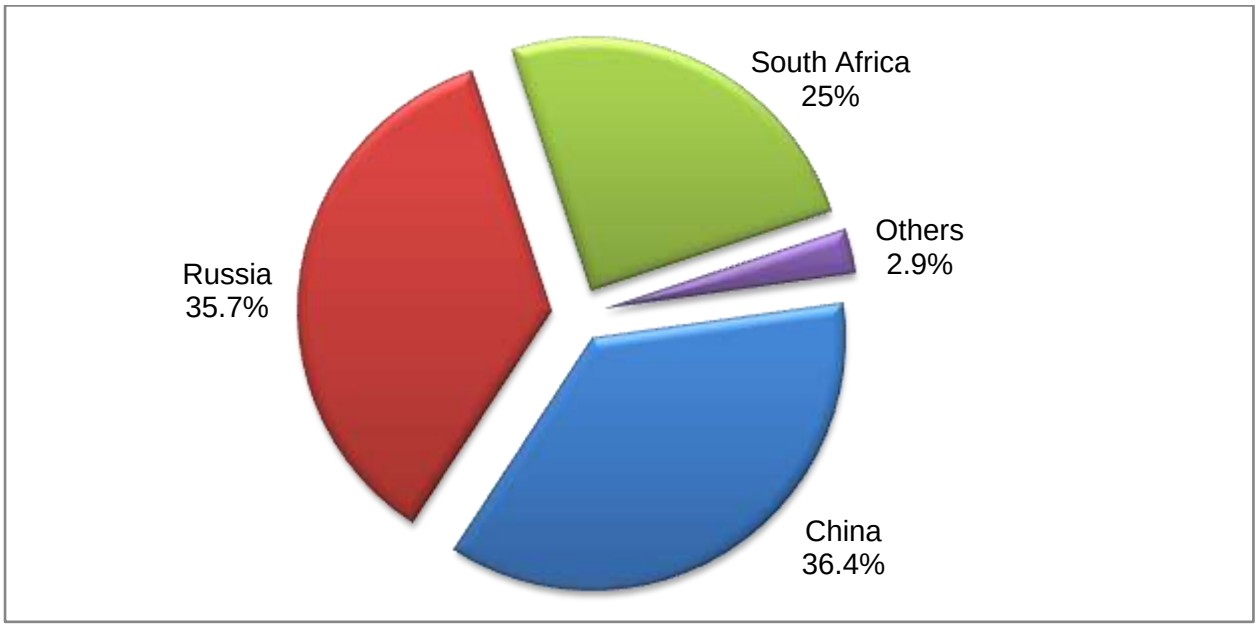
FIGURE 63: WORLD VANADIUM PRODUCTION, 2012



Source: USGS, Mineral Commodity Summaries
**DMR, Mineral Economics*

World reserves were estimated at 14 Mt in 2012, with China accounting for 36.4 percent, followed by Russia and South Africa at 35.7 percent and 25 percent, respectively (Fig. 64). The three countries account for 97.1 percent of world's known vanadium reserves.

FIGURE 64: WORLD VANADIUM RESERVES, 2012



Source: USGS, Mineral Commodity Summaries

WORLD DEMAND

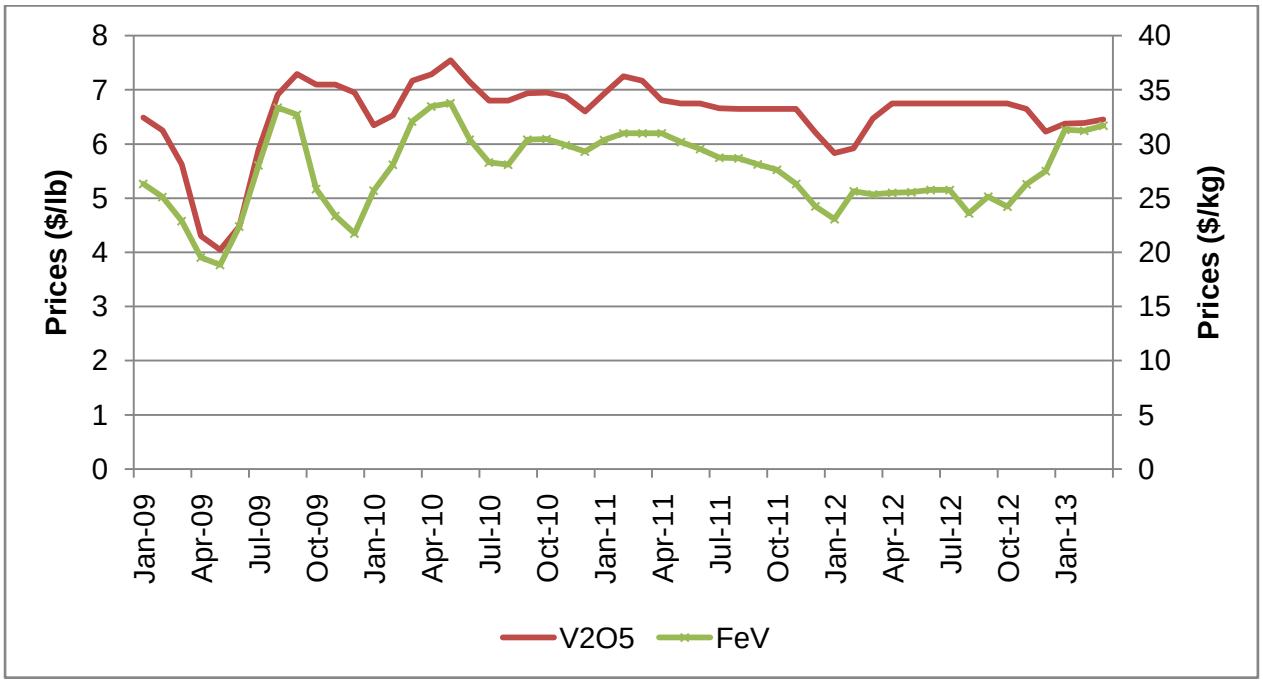
Over 90 percent of vanadium is consumed as ferrovanadium (FeV) in the production of high strength low alloy (HSLA) steels. Vanadium is also used in the production of titanium alloys for aerospace and industrial purposes. In 2012, titanium alloys accounted for about 4 percent of vanadium consumption and, about 1 percent of vanadium consumed was used in energy storage applications. The most important industrial vanadium compound, vanadium pentoxide (V_2O_5), is used as a catalyst for the production of sulphuric acid.

World steel production reached 1 548 Mt in 2012, an increase of 1.2 percent compared with 2011. The growth emanated mainly from Asia and North America while steel production in the Euro-zone and South America decreased in 2012. Asia's share of world steel production increased from 64.5 percent in 2011 to 65.4 percent in 2012 while the Euro-zone recorded a decline, from 11.6 percent share in 2011 to 10.9 percent in 2012.

PRICES

FeV price was stagnant at just over $25/kg during the first half of 2012, following a downward trend in 2011 (Fig. 65). This resulted in an average of $25.28/kg for the year, 13 percent lower than 2011 average price. Although the price fluctuated at the beginning of the second half of 2012, the growing demand for high strength steel and the tight vanadium supply resulted in an increase in price towards the end of the year. FeV price reached $27.50/kg in December 2012 and continued to grow to over $30/kg during the first quarter of 2013. V_2O_5 price, which fell to $6.22/lb in December 2011, recovered and stabilised at $6.75/lb for the majority of 2012 but declined towards the end of the year. V_2O_5 price averaged $6.53/lb for 2012, 3.4 percent below 2011 average price. However, it showed signs of recovery during the first quarter of 2013.

FIGURE 65: MONTHLY FERROVANADIUM AND VANADIUM PENTOXIDE PRICES, 2009-2013



Source: USGS Monthly Mineral Commodity Reports, 2011

SOUTH AFRICA

Production and Sales

South Africa's vanadium production declined by 7.8 percent to 20 kt in 2012 compared with 2011 (Table 82). Total sales volumes and revenues declined by 13.9 percent and 2.7 percent, respectively, when compared with 2011. Local sales volumes declined by 18.3 percent to 1.4 kt due to lower domestic demand, while revenues from local sales declined by 22 percent, exacerbated by a 4.5 percent fall in average prices. Export sales volumes declined by 13.5 percent to 15.5 kt while revenues from export sales declined slightly by 0.4 percent to R2.28 billion, offset by a 14.8 percent increase in export prices. Over 90 percent of total vanadium products sold was exported in 2012. Europe's share of South African exports declined to 68.1 percent in 2012 from 73 percent in 2011 while America and Asia rose to 18.8 percent and 11.4 percent, respectively.

TABLE 82: SOUTH AFRICA'S PRODUCTION AND SALES OF VANADIUM, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOB)		Mass	Value (FOB)	
	kt	kt	R'mil	R/kg	kt	R'mil	R/kg
2003	27.2	1.1	109	97	18.8	1 072	57
2004	23.3	2.6	416	158	16.3	1 675	103
2005	22.6	2.8	1 154	406	15.3	3 758	246
2006	23.8	2.0	452	222	15.6	2 653	170
2007	23.5	2.3	446	191	14.3	2 319	163
2008	20.3	2.3	893	391	12.1	3 090	256
2009	14.4	1.8	267	149	11.9	1 360	116
2010	22.6	1.9	286	152	16.9	2 182	129
2011	21.7	1.7	270	155	17.9	2 288	128
2012	20.0	1.4	211	148	15.5	2 279	147

Source: DMR, Mineral Economics

Employment

Average annual employment in South Africa's vanadium industry increased by and contributed 0.3 percent to total mining employment (Table 83), while remuneration grew by 2.4 percent to R533 million. Productivity dropped by 11 percent to 13.4 t per employee per year in 2012 compared with 15 t in 2011 due to labour related issues.

TABLE 83: EMPLOYMENT IN SOUTH AFRICA'S VANADIUM INDUSTRY, 2008 – 2012

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R' mil
2008	1 253	292
2009	1 313	377
2010	1 382	459
2011	1 436	520
2012	1 489	533

Source: DMR, Mineral Economics

Projects in South Africa

The Ironveld pig iron vanadium project is located in the northern limb of the Bushveld Complex in Limpopo. The company has released its feasibility study assessing the economic viability of its pig iron and ferro-vanadium project. Ironveld expects to mine its own magnetite resource at approximately 2.4 Mt per annum. The study demonstrates the viability of developing the project delivering 1 Mt/a of pig iron and 9.67 kt of FeV production from 2019. The life of mine is estimated at 25 years with operating cost of R2 393/t pig iron and R47/kg FeV. Infrastructure surrounding the project with delivery routes for water, rail and power are identified. Also, the study confirms viability to install an early stage 12 MW smelter to produce an initial 46 kt/a of pig iron and 445 t/a of FeV from 2015, two years ahead of the commissioning of four 75 MW smelters required to achieve the longer term 1 Mt production target. This is expected to create over a thousand jobs.

OUTLOOK

Growth in vanadium demand is forecast to continue during 2013, driven mainly by growth in steel consumption in developing countries for construction purposes. However, the precise rate of growth in consumption will depend primarily on new regulations for China's high-strength construction steel. China's new design codes aim to restrict the use of lower strength reinforcing bars and government directives require the production of high vanadium content alternatives. This has the potential to increase the intensity of China's vanadium usage in steel, which currently falls below those of most developed countries. As a result, world demand is expected to exceed supply during 2013 and 2014. However, the increase in demand is expected to be met through planned developments in world production capacity, which is forecast to increase by 52.7 kt by 2017. The increased production from the potential new capacity is expected to keep the market in balance towards 2017. Prices are expected to recover during 2013 and 2014 due to the market supply deficit and stabilize thereafter as new capacity comes on stream.

South Africa's production capacity is expected to increase by 3.6 kt per annum by 2016 from co-product vanadium production as a result of growth in steelmaking from vanadium bearing titaniferous magnetite ores, driven mainly by the government's industrialisation policy objectives. The country's capacity is also expected to increase by approximately 700 t per annum from primary vanadium mining in 2013. This could preserve the domestic market's competitiveness and attract investment in the industry, with a subsequent increase of employment in the sector.

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INDUSTRIAL MINERALS OVERVIEW

R Motsie

INTRODUCTION

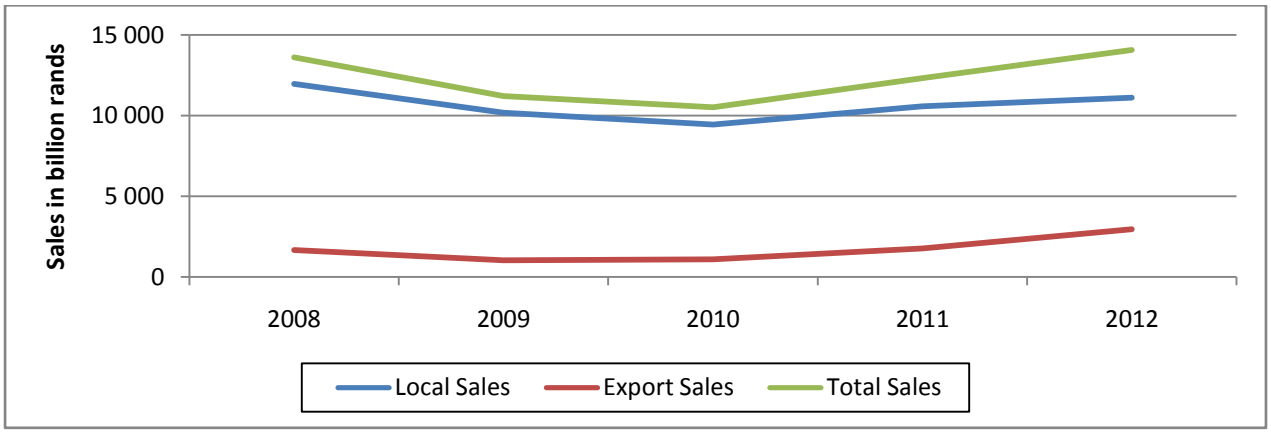
Industrial minerals are generally high volume, low value commodities compared with other economic minerals. Most deposits appear near surface and are usually exploited through opencast mining methods rather than underground mining, presenting an opportunity for small-scale mining development. Because of industrial minerals' low value, some companies mining these minerals have a high degree of vertical integration, in that they mine raw materials and beneficiate them to the stage of final product.

Industrial minerals play a vital role in many end-user markets with the main ones being the agriculture, construction, chemical, metallurgical and pigment sectors, which account for the bulk of the local purchases. Markets for industrial minerals are often diverse, highly technical and require unique marketing and sales expertise.

SALES TRENDS

Subdued international and domestic economic activity culminated in lower-than-projected demand for most industrial minerals in 2012. From 2008 to 2012, total sales of primary industrial minerals have grown at a compound annual rate of 1.6 percent (Fig 66). In 2012, industrial minerals contributed 3.9 percent to total revenue generated from South Africa's primary mineral sales, of which R11.1 billion was from local sales and R3 billion came from exports (Table 84). Total sales increased by 14.8 percent in 2012 to R14.1 billion compared with R12.3 billion in 2011, owing to a 40.8 percent increase in sales value of phosphate rock as a result of a surge in exports supported by the weakening of exchange rate. Furthermore, aggregates and sands sales increased by 10.2 percent contributing R4.5 billion to total sales in 2012, as the civil construction sector maintained its underlying upward momentum amid government's focus on infrastructure development.

FIGURE 66: INDUSTRIAL MINERAL SALES, 2008 – 2012



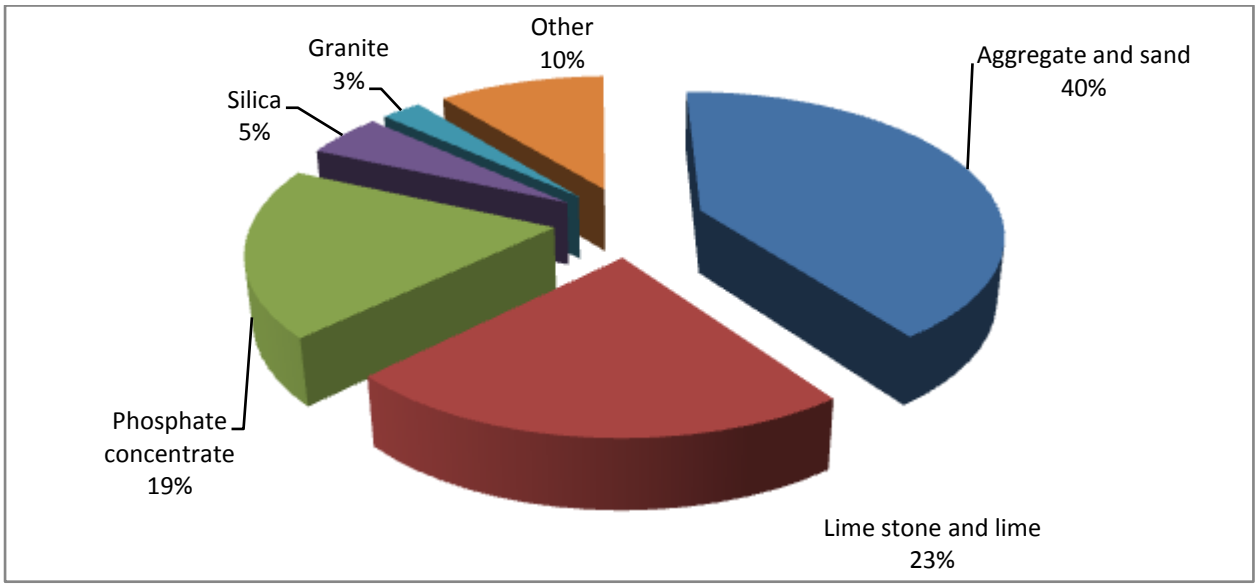
Source: DMR, Directorate Mineral Economics

DOMESTIC SALES

Consumption of industrial minerals is mostly driven by domestic demand from the construction and agricultural sectors. As most industrial minerals are low priced commodities and sold in large volumes, their economic exploitation is highly affected by transport costs and distance to markets. Aggregate & sand and limestone & dolomite accounted for 63 percent of industrial minerals local sales value with consumption driven mainly by the construction sector (Fig 67). Local sales value of industrial minerals increased by 6 percent from R10.5 billion in 2011 to R11.1 billion in 2012 (Table 84 & 85), as a result of a rise in demand from the agricultural sector. However, local sales value was offset by a 2.9 percent decrease in limestone sales to R2.5 billion as construction activity slowed in the fourth quarter of 2012.

According to the *South African Reserve Bank*, growth in real capital expenditure by general government slowed marginally from 8.6 percent in 2011 to 8.5 percent in 2012. Capital expenditure on the construction projects such as Eskom's power plants, Transnet's freight rail acquisition project and Trans-Caledon Tunnel Authority (TCTA) were not sufficient to maintain the upward momentum in capital expenditure by public corporations over this period.

FIGURE 67: LOCAL SALES VALUE OF INDUSTRIAL MINERALS, 2012

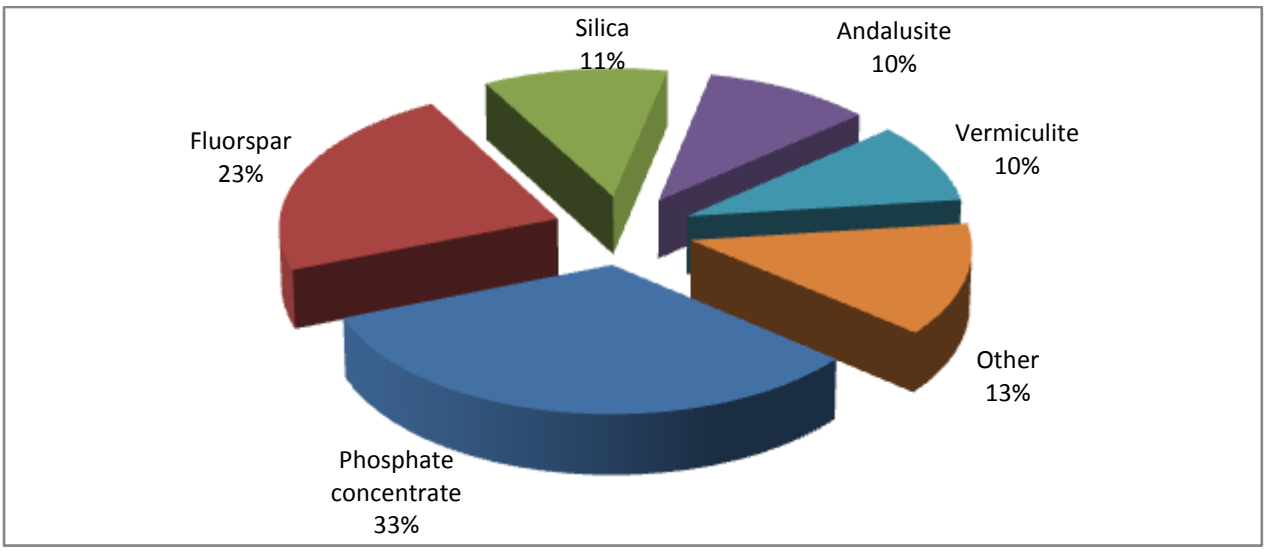


Source: DMR, Directorate Mineral Economics

EXPORT SALES

Export sales values of industrial minerals increased by more than 75 percent from R1.7 billion in 2011 to R3 billion in 2012, with the bulk contribution coming from Japan (R1 billion), Belgium (R37.1 million), Germany (R34.6 million) and USA (R32.5 million) together accounting for 68 percent of industrial minerals export sales value. The biggest contributors to export sales of industrial minerals were phosphate (33 percent), fluorspar (23 percent), silica (11 percent), andalusite and vermiculite at 10 percent each (Fig 68).

FIGURE 68: EXPORT SALES OF INDUSTRIAL MINERALS, 2012

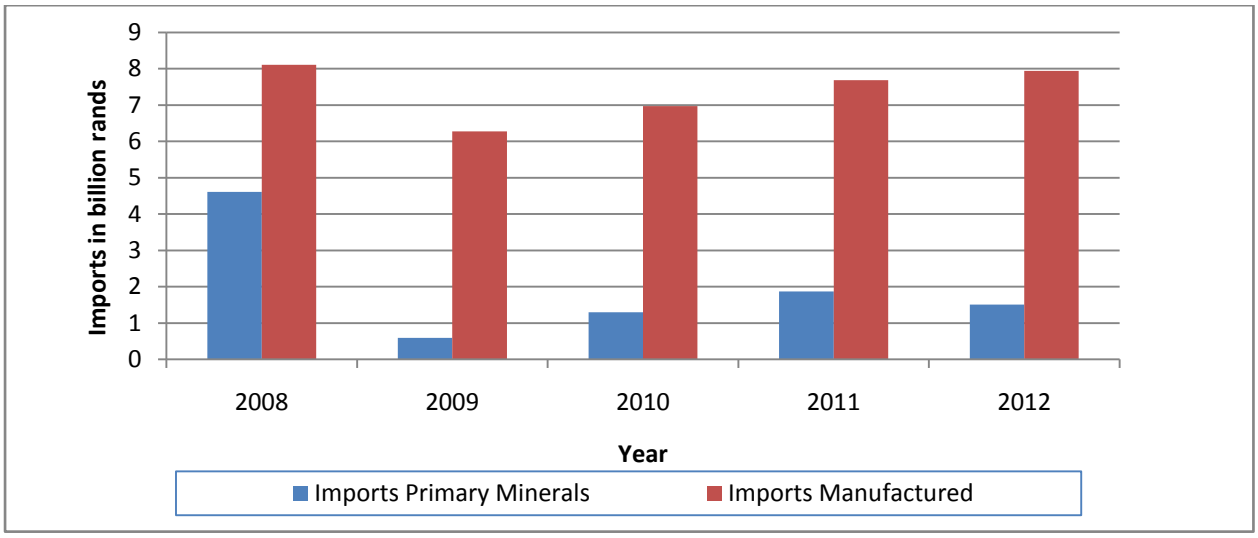


Source: DMR, Directorate Mineral Economics

IMPORTS

In 2012, expenditure on imports of primary industrial minerals declined by 19.1 percent to R1.51 billion compared with 2011, as a result of lower than expected growth in the economy (Table 86 and Fig 69). However, imports of manufactured industrial commodities increased by 3.4 percent to R7.95 billion in the same period owing to an increased demand for glazed ceramic products (Table 87).

FIGURE 69: IMPORTS OF PRIMARY AND MANUFACTURED INDUSTRIAL MINERALS, 2008 – 2012

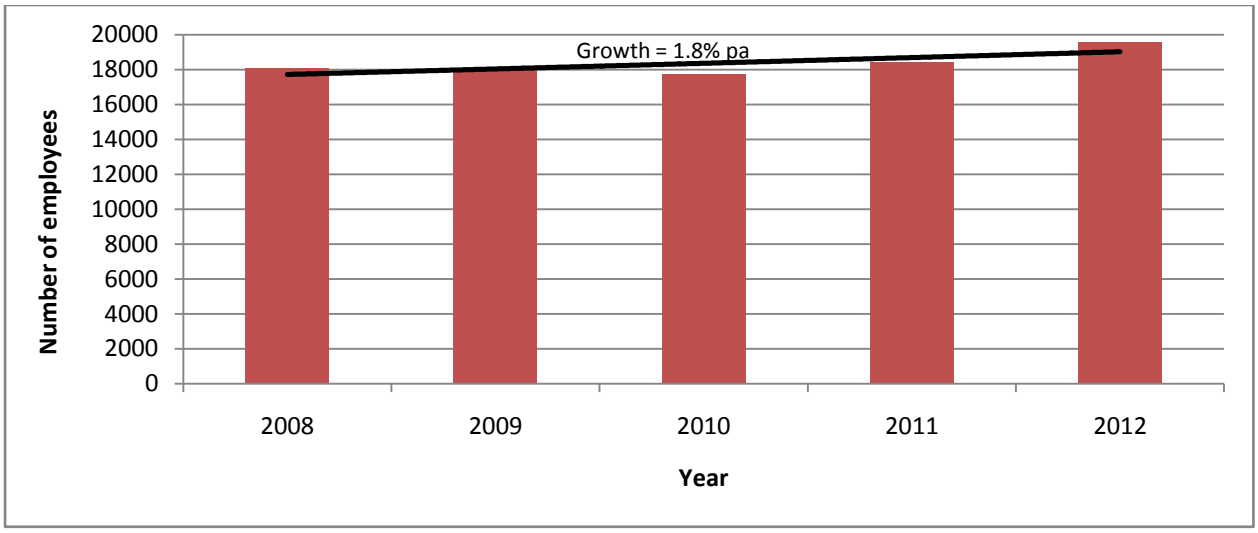


Source: RSA, Commissioner for South African Revenue Service, 2006 – 2010

EMPLOYMENT

Employment in the industrial minerals sector maintained a compound annual rate of 1.8 percent between 2008 and 2012 (Fig 70). The sector's employment increased by 6.5 percent to 19 595 employees, which accounts for 3.7 percent of the total mining workforce. Total remuneration growth rate from 2008 to 2012 was 15.6 percent per annum with remuneration increasing by 3.6 percent in 2012 compared with 2011. However, average earnings per employee in 2012, decreased by 2.7 percent to R137 984/employee compared to R141 799/employee in 2011.

FIGURE 70: EMPLOYMENT IN THE INDUSTRIAL MINERALS SECTOR, 2008 – 2012



Source: DMR, Directorate Mineral Economics

OUTLOOK

Global economic activity remains subdued against a backdrop of economic uncertainty in the Euro-zone, the region expects a GDP growth of 1 percent in 2014, according to the *International Monetary Fund (IMF)*. This might have a direct impact on demand for South Africa's mineral commodities due to South Africa's close financial and trading ties with Europe. However, the muted economic growth might be offset by government's plans to align budget priorities firmly with the National Development Plan, which will propel infrastructure development.

Infrastructure development lies at the center of the South African government stimulatory fiscal package to drive growth over the next three years as it is a critical enabler for attracting investment and future economic competitiveness. Due to their wide range of applications, industrial minerals will support this growth as they contribute to almost every sector of the economy. Government plans to spend R827 billion over the next three years to build infrastructure, which will command demand for most industrial minerals.

Since growth in industrial minerals is mainly driven by the construction and agricultural sectors, the outlook is optimistic on the back of rising demand for fertilisers from the agricultural sector and improvement in activity in the construction sector. After bottoming out for some years, the real value of total building plans approved increased somewhat from the middle of 2012, suggesting a moderate pickup in building activity in the years ahead. Use of industrial minerals in the agricultural sector for fertiliser applications is expected to rise in the short to medium term on the back of a continuous increase in crop production to accommodate the growing population.

The slowdown in economic conditions has led to a decline in commodity prices, thus bringing down revenue projections of a lot of producers. However, there are signs of improving economic activity in some advanced and emerging economies that will spur demand for mineral commodities and result in a recovery in prices. According to *National Treasury*, the rand's exchange value declined from R8.79 to the US dollar in January 2013 to R9.98 in September 2013. The weaker real value is expected to support mineral commodities exports, provided that the depreciation is sustained. This will require low and stable levels of inflation.

Planned large infrastructure investments programmes by government is expected to boost economic activity and see a surge in demand for industrial minerals applications in the medium to long term, particularly in areas of construction and agriculture. The economy is expected to show future growth not only in its performance, but also in the amount of jobs created as the government has put long term measures in place to eliminate poverty and reduce inequality.

TABLE 84 : SOUTH AFRICA'S PRIMARY INDUSTRIAL MINERAL PRODUCTION AND SALES, 2011

	Production	Local Sales (FOR)		Export Sales (FOB)		Total Sales	
Commodity	Mass (t)	Mass (t)	Value (R)	Mass (t)	Value (R)	Mass (t)	Value (R)
General							
Andalusite	186 242	126 413	233 311 788	123 433	322 940 593	249 846	556 252 381
Asbestos	*	*	*	*	*	*	*
Barytes	0	189	79 380	*	*	189	79 380
Calcite	*	*	*	*	*	*	*
Feldspar	101 559	98 875	61 030 997	*	*	98 875	61 030 997
Fluorspar	195 502	18 846	**	175 365	**	194 211	**
Gypsum	476 118	322 553	36 831 361	*	*	322 553	36 831 361
Kieselguhr	*	*	*	*	*	*	*
Limestone & lime	21 629 906	18 506 747	2 591 727 487	11 153	14 337 429	18 517 900	2 606 064 916
Magnesite	**	**	**	**	**	**	**
Mica	633	431	1 161 112	174	1 001 191	605	2 162 303
Perlite	**	**	**	**	**	**	**
Pigment minerals	226	19	7 600	*	*	19	7 600
Phosphate	2 564 820	2 154 755	**	194 787	**	2 349 542	**
Pyrophyllite	**	**	31 276 960	**	201 423	**	31 478 383
Salt	379 685	439 741	139 829 203	*	*	439 741	139 829 203
Silica	2 687 932	3 008 171	487 779 278	3 843	5 127 415	3 012 013	492 906 693
Sulphur	337 972	216 716	116 645 132	120 866	199 580 932	337 582	316 226 064
Talc	4 453	5 489	6 050 201	*	*	5 489	6 050 201
Vermiculite	170 571	9 623	16 578 549	162 424	328 921 154	172 047	345 499 703
Clays							
Attapulgite	14 448	14 449	6 572 386	*	*	14 449	6 572 386
Bentonite	120 417	177 012	118 344 790	165	255 924	177 177	118 600 714
Fire clay	785 641	779 999	24 066 652	*	*	779 999	24 066 652
Flint clay	29 968	25 188	31 410 938	693	1 301 529	25 881	32 712 467
Kaolin	15 220	22 397	10 374 640	*	*	22 397	10 374 640
Dimension and building stone							
Granite		220 937	229 113 948	111 231	150 212 064	332 168	379 326 012
Sandstone		1 218	2 135 357	*	*	1 218	2 135 357
Slate		49 259	12 474 903	*	*	49 259	12 474 903
Aggregate and sand		51 595 462	4 062 483 358	*	*	51 595 462	4 062 483 358
Miscellaneous			2 284 048 013		715 311 287		2 999 359 300
TOTALS			10 503 334 033		1 739 190 941		12 242 524 974

Source: *DMR, Directorate Mineral Economics*

Notes: *All quantities are in metric tons, unless otherwise specified*

**Nil*

***Classified, included under Miscellaneous*

TABLE *85*: SOUTH AFRICA'S PRIMARY INDUSTRIAL MINERAL PRODUCTION AND SALES, 2012

	Production	Local Sales (FOR)		Export Sales (FOB)		Total Sales	
Commodity	Mass (t)	Mass (t)	Value (R)	Mass (t)	Value (R)	Mass (t)	Value (R)
General							
Andalusite	163 801	117 186	225 254 147	112 013	305 355 484	229 199	530 609 631
Asbestos	*	*	*	*	*	*	*
Barytes	*	*	*	*	*	*	*
Calcite	*	*	*	*	*	*	*
Feldspar	94 458	92 918	45 898 555	*	*	92 918	45 898 555
Fluorspar	170 338	14 484	**	188 813	**	203 297	**
Gypsum	558 242	357 574	56 876 011	*	*	357 574	56 876 011
Kieselguhr	282	282	639 280	*	*	282	639 280
Limestone & lime	21 637 069	18 478 702	2 517 772 313	13 126	13 190 183	18 491 828	2 530 962 496
Magnesite	**	**	**	**	**	**	**
Mica	400	185	964 290	195	1 357 237	381	2 321 527
Perlite	**	**	**	**	**	**	**
Pigment minerals	*	*	*	*	*	*	*
Phosphate	2 242 213	2 015 353	**	689 915	**	2 705 268	**
Pyrophyllite	**	**	7 511 261	**	4 584 742	**	12 096 003
Salt	399 135	479 827	155 293 599	*	*	479 827	155 293 599
Silica	2 151 377	2 656 427	543 599 024	18 821	334 899 206	2 675 248	878 498 230
Sulphur	257 019	150 322	123 405 090	125 423	241 351 253	275 745	364 756 343
Talc	4 765	5 568	7 084 046	*	*	5 568	7 084 046
Vermiculite	132 886	7 467	15 692 069	96 516	279 696 465	103 983	295 388 534
Clays							
Attapulgite	15 850	15 866	7 171 053	*	*	15 866	7 171 053
Bentonite	120 566	159 935	119 629 487	21	29 661	159 956	119 659 148
Fire clay	643 285	629 976	14 607 766	*	*	629 976	14 607 766
Flint clay	21 065	19 314	28 929 042	527	1 330 174	19 841	30 259 216
Kaolin	20 499	22 273	12 480 240	*	*	22 273	12 480 240
Dimension and building stone							
Granite		187 475	285 865 145	84 014	124 246 393	271 489	410 111 538
Sandstone		2 018	5 859 143	*	*	2 018	5 859 143
Siltstone		739	354 546	*	*	739	354 546
Slate		23 938	7 992 490	*	*	23 938	7 992 490
Aggregate and sand		53 373 626	4 476 359 468	*	*	53 373 626	4 476 359 468
Miscellaneous			2 440 610 250		1 652 071 282		4 092 681 532
TOTALS			11 099 848 315		2 958 112 080		14 057 960 395

Source: *DMR, Directorate Mineral Economics*

Notes: *All quantities are in metric tons, unless otherwise specified*

**Nil*

***Classified, included under Miscellaneous*

TABLE 86: SOUTH AFRICA'S IMPORTS OF SELECTED PRIMARY INDUSTRIAL MINERAL COMMODITIES, 2010 – 2012

COMMODITY	2010		2011		2012	
	Mass (t)	Value (R)	Mass (t)	Value (R)	Mass (t)	Value (R)
Salt (25.01)	3 882	21 557 566	5 363	12 830 375	4 383 290	16 241 265
Iron pyrites (25.02)	415	700 293	341	940 227	409 260	1 169 195
Sulphur crude (25.03)	592 828	377 801 360	714 629	1 073 705 268	506 071 560	843 455 975
Graphite Natural (25.04)	1 108	12 891 254	1 053	18 178 053	768 156	10 371 894
Sands (25.05)	6 894	12 016 399	5 171	9 607 781	6 614 821	14 594 027
Quartz (25.06)	227	2 388 420	408	1 877 186	161 486	500 291
Kaolin (25.07)	18 077	36 232 857	13 013	30 533 235	17 831 991	46 389 642
Bentonite (25.08.10)	22 822	50 358 356	28 255	45 196 964	42 833 745	59 402 857
Fire clay (25.08.30)	31	1 100 398	178	961 624	287 932	1 017 866
Other clays (25.08.40)	4 189	15 810 325	4 348	13 476 855	6 203 549	25 266 115
Alumino silicates (25.08.50)	166	323 825	164	323 974	240 142	627 976
Mulite (25.08.60)	151	1 023 375	50	412 825	112 622	823 500
Chamotte (25.08.70)	138	1 014 102	77	504 361	80 352	562 947
Chalk (25.09)	652	1 549 958	353	870 211	3 793 686	4 997 543
Phosphates (25.10)	124 474	120 735 436	93 191	116 297 833	265 190	1 321 463
Barrytes & Witherite (25.11)	4 142	17 462 123	3 170	11 921 315	2 961 567	11 468 513
Kieselguhr (25.12)	4 580	17 495 811	5 261	19 572 143	5 216 802	19 969 935
Natural Abresives (25.13)	1 920	6 837 448	2 095	6 392 899	2 250 975	7 152 239
Slate (25.14)	2 945	6 117 287	2 401	6 206 264	1 969 603	8 062 338
Marble (25.15)	355	1 588 829	80	469 448	226 225	2 465 778
Granite (25.16)	8 663	12 867 732	4 930	9 405 849	5 976 523	13 549 218
Pebbels (25.17)	2 207	3 045 744	2 138	2 693 491	1 860 203	3 729 155
Dolomite (25.18)	1 532	2 833 395	1 106	2 625 248	1 255 288	3 949 369
Magnesite & Magnesia (25.19)	77 999	215 982 203	106 670	339 631 034	61 922 324	207 573 638
Gypsum & Plasters (25.20)	30 893	18 787 472	9 150	15 742 308	18 363 515	22 789 972
Limestone (25.21)	409	702 434	1 015 808	609 645	37 838 260	1 527 948
Slaked,quick, hydraulic lime (25.22)	34 143	47 768 748	30 787 004	42 883 920	34 801 330	64 415 926
Asbestos (25.24)	0	0	0	0	0	0
Mica (25.25)	483	1 151 947	507	1 353 541	424 579	1 353 366
Steatite (25.26)	9 818	26 908 026	7 126	28 015 008	7 695 739	27 556 285
Borates Natural (25.28)	759	2 524 403	1 517	4 889 887	1 156 890	4 360 705
Feldspathoids (25.29)	5 706	13 254 819	4 332	9 389 122	10 414 783	20 998 959
Other Minerals (25.30)	56 879	38 341 840	47 848	38 633 395	55 704 173	61 649 676
TOTAL		**1 089 174 185**		**1 866 151 289**		**1 509 315 576**

Source: *RSA, Commissioner for South African Revenue Service, 2010 – 2012*

Note: *Codes in brackets refer to subchapters of the Harmonised System*

TABLE 87: SOUTH AFRICA'S IMPORTS OF MANUFACTURED INDUSTRIAL MINERALS COMMODITIES, 2010 – 2012

Commodity	2010 Value (FOB) R	2011 Value (FOB) R	2012 Value (FOB) R
Articles of stone, plaster, cement, asbestos, mica or similar materials	**1 130 254 588**	**1160052109**	**1 396 402 431**
Building stone (68.02)	284 596 178	272 751 878	338 271 668
Worked slate & articles of slate (68.03)	24 914 545	17 081 007	18 924 065
Millstones and grindstones (68.04)	99 466 862	123 129 954	164 570 865
Natural abrasive powders (68.05)	195 997 424	190 832 414	228 800 898
Slag wool, rock wool & similar mineral wools (68.06)	332 151 056	390 513 421	462 855 480
Articles of asbestos-cement (68.11)	33 461 484	35 215 937	49 830 085
Fabricated asbestos fibres (68.12)	41 248 079	6 856 316	3 260 126
Friction material (68.13)	100 965 464	108 652 598	111 374 572
Worked mica & articles thereof (68.14)	17 453 496	15 018 584	18 514 672
Refractories	**1003933033**	**1 092 062 112**	**1095334542**
Of siliceous fossil meals (69.01)	5575510	2 787 686	4 427 437
Other bricks (69.02)	851513107	943 968 648	948 032 067
Other refractory ceramic goods (69.03)	146844416	145 305 778	142 875 038
Ceramic products	**3039879634**	**3 429 467 451**	**3235329552**
Ceramic building bricks (69.04)	417378	338 705	4 383 427
Roofing tiles (69.05)	6389272	8 612 039	11 341 669
Ceramic pipes (69.06)	2097397	3 264 033	3 315 428
Unglazed ceramic (69.07)	107759876	130 960 409	174 159 631
Glazed ceramic (69.08)	692581300	774 677 170	971 850 060
Ceramic wares for laboratory (69.09)	1699927499	1 956 428 462	1 410 269 648
Ceramic sinks (69.10)	111549981	112 522 005	131 150 472
Tableware (69.11)	187421119	193 404 476	233 092 270
Ceramic tableware (69.12)	168267899	187 068 177	219 973 468
Ceramic articles (69.13)	46444531	49 903 695	59 448 361
Other ceramic articles (69.14)	17023382	12 288 280	16 345 118
Glass and glassware (70.00)	**1 797 039 345**	**2 002 294 168**	**2 218 794 980**
TOTAL	**6 971 106 600**	**7 683 875 840**	**7 945 861 505**

Source: *RSA, Commissioner for South African Revenue Service, 2010 – 2012*

Note: *Codes in brackets refer to subchapters of the Harmonised System*

AGGREGATE AND SAND

R Motsie and E Malematja

SUPPLY

South Africa's quarry industry gained momentum in 2012, with local sales volumes of sand and aggregate increasing by 3.5 percent to 53.4 Mt compared with the previous year, owing to improved workloads in the civil construction sector (Table 88). Correspondingly, local sales values increased by 10.2 percent to R4.5 billion, as a result of increased volumes.

TABLE 88: SOUTH AFRICA'S SALES OF SAND AND AGGREGATE BY MASS, 2003 – 2012

YEAR	COARSE[+]			FINE[x]			TOTAL		
	Mass	Value (FOR)		Mass	Value (FOR)		Mass	Value (FOR)	
	kt	R'000	R/t	kt	R'000	R/t	kt	R'000	R/t
2003	26 852	1 281 263	47.7	5 735	74 808	13.0	32 587	1 356 071	41.6
2004	39 035	1 948 642	49.9	8 347	136 721	16.4	47 381	2 085 364	44.0
2005	37 923	2 000 985	52.8	12 046	221 034	18.3	49 970	2 222 019	44.5
2006	47 144	2 549 709	54.1	11 419	239 846	21.0	58 563	2 789 555	48.0
2007	50 678	3 077 423	60.7	13 143	298 941	22.7	63 821	3 376 364	52.9
2008	45 218	3 358 639	74.3	13 391	416 364	31.1	58 609	3 775 003	64.4
2009	41 182	3 491 901	84.8	12 422	403 784	32.5	53 604	3 895 685	72.7
2010	38 714	3 385 661	87.5	13 910	478 952	34.0	52 625	3 864 613	73.0
2011	38 203	3 570 160	89.0	13 392	492 323	37.0	51 595	4 062 483	79.0
2012	40 009	3 948 031	98.7	13 365	528 329	40.0	53 374	4 476 359	84.0

Source: *DMR, Directorate Mineral Economics*
Notes: *[+]Includes Crusher Sand*
[x]Natural Sand

DEMAND

South Africa's sand and aggregate sector is driven by demand from the construction industry. The construction industry is comprised of civil construction, residential building and non residential building. South Africa's construction industry has been subdued in the past years due to limited construction activity after the 2010 FIFA world cup constructions. However, demand for aggregate and sand improved slightly in 2012 due to improved activity in civil construction and social housing, which was driven by the continued implementation of the national infrastructure programme. According to South African Federation of Civil Engineering Contractors (*Safcec)*, investment in residential buildings went up by 3 percent in the second quarter of 2013 compared to 4.7 percent in the preceding quarter while social housing improved by 15 percent. Over 41 percent of the low income housing projects were postponed due to lack of financial mortgage options and the higher cost of construction.

CONSTRUCTION

Overall construction activity in South Africa has been weak in the past few years; however, it is gradually improving. The decrease in public and private spending as well as a significant decrease in foreign direct investment brought on by a myriad of incidents such as continued unrest in the labour sector has resulted in a slowdown in activities or projects in the construction sector. The uncertainty in local and global economic conditions was also a key factor impending construction activity in the private sector as companies review investment decisions and re-assesses priorities. Many companies operating in South Africa's construction sector are faced with high competition for tenders whilst at the same time experiencing tighter margins. The report by *Statistics South Africa*, a follow up on results released at the end of 2012, shows that profit margins in the construction industry were the lowest among nine industries contributing to the country's gross domestic product (GDP). Collusive tendering is also one of the anti-competitive practices that affected the construction industry. It was discovered by the Competition

Commission that a total of 15 big South African construction companies were involved in bid-rigging to a combined value of R26 billion between 2006 and 2011 in contravention of section 4(1) (b) of the Competition Act. The companies were implicated in collusion on projects mainly world cup 2010 stadiums, roads, mines and shopping centre's. They were fined R1.46 billion collectively by the Competition Commission. The penalties were a percentage of the annual turnover of each company and also took into account the number of projects each company was involved in.

Even though the levels of activities or projects in the industry in recent years were not what they had been during peak periods, the industry had not seen large-scale closure or liquidation of businesses. According to *Industry Insight*, private sector activities improved by 13 percent since the first quarter of 2012 and by 57 percent since the fourth quarter of 2012, with bulk of the private sector projects being awarded in Gauteng province, where activities improved by 175 percent since the fourth quarter of 2012. The number of contracts that have been awarded in the first quarter of 2013 showed some improvement, up 12 percent compared to the fourth quarter of 2012 and an increase of 3 percent since the first quarter of 2012. Nearly 40 percent of civil tenders issued in the first quarter of 2013 are related to road projects, which boost demand for aggregate and sands.

EMPLOYMENT

The sand and aggregate sector employed 7 544 employees in 2012, an increase of 6 percent compared with 2011 (Table 89). Labour productivity decreased by 2.3 percent to 7.1 kt/employee, while revenue generated per employee increased by 4 percent to R593 367/employee.

TABLE 89: SOUTH AFRICA'S AGGREGATE AND SAND QUARRIES EMPLOYMENT AND REMUNERATION, 2006 – 2012

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2006	5 133	371 897
2007	5 970	463 528
2008	6 438	538 700
2009	6 773	604 730
2010	7 009	693 767
2011	7 123	746 991
2012	7 544	870 694

Source: DMR, Directorate Mineral Economics

OUTLOOK

South Africa's construction industry is still subdued. However, some positive indicators are emerging. In 2012 there was a marginal improvement in the construction sector, but sustained growth will depend on a recovery in the housing market and continued implementation of infrastructure projects. The South African government reaffirmed its commitment to a large-scale infrastructure investment programme over the next 3 years which bodes well for the construction sector. The government's R827 billion in infrastructure spend could increase construction demand and thus stimulate growth within the aggregate and sand industry from 2016 onwards. The money will be spent on improving the energy sector to double electricity generation, water infrastructure and roads, hospitals and clinics and on education as an investment in human capital.

A key factor that will affect the pace of recovery is the rate at which the South African government rolls out its planned infrastructure expenditure, as turnover in the construction industry is highly sensitive to government spending. The government's university build programme will also encourage construction in the education sector in 2014. The most significant source of activity will include the construction of two new Universities namely, the University of Mpumalanga in Nelspruit and the Sol Plaatje University in Kimberly. According to FNB/BER building confidence index the building sector is gaining momentum and the recovery is likely to be more sustained, which will also create possible higher demand for aggregates and sands. It is predicted that both residential and non-residential investment will increase at a constant rate of

5 percent over the next four years. The implementation of the planned infrastructure projects is likely to help the construction industry to grow and in the process create the much needed jobs.

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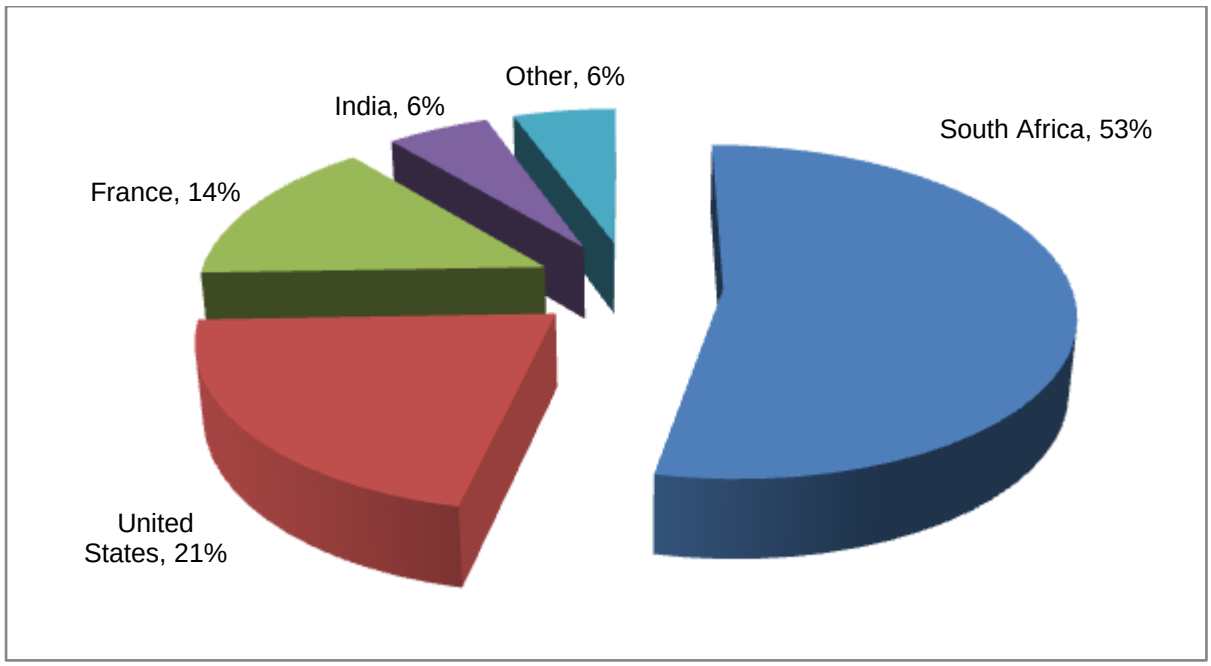
ALUMINO-SILICATES

M Modiselle

WORLD SUPPLY

Global production of the three alumino-silicate minerals, namely: andalusite, kyanite and sillimanite, increased by 3.7 percent from 434 kt in 2011 to 450 kt in 2012, owing to increased demand driven by the manufacturing of refractories. Global andalusite supply is mainly dominated by South Africa at 53 percent, followed by the United States (US) at 21 percent and France's 14 percent (Fig. 71).

FIGURE 71– WORLD PRODUCTION OF ALUMINO-SILICATES BY COUNTRY, 2012

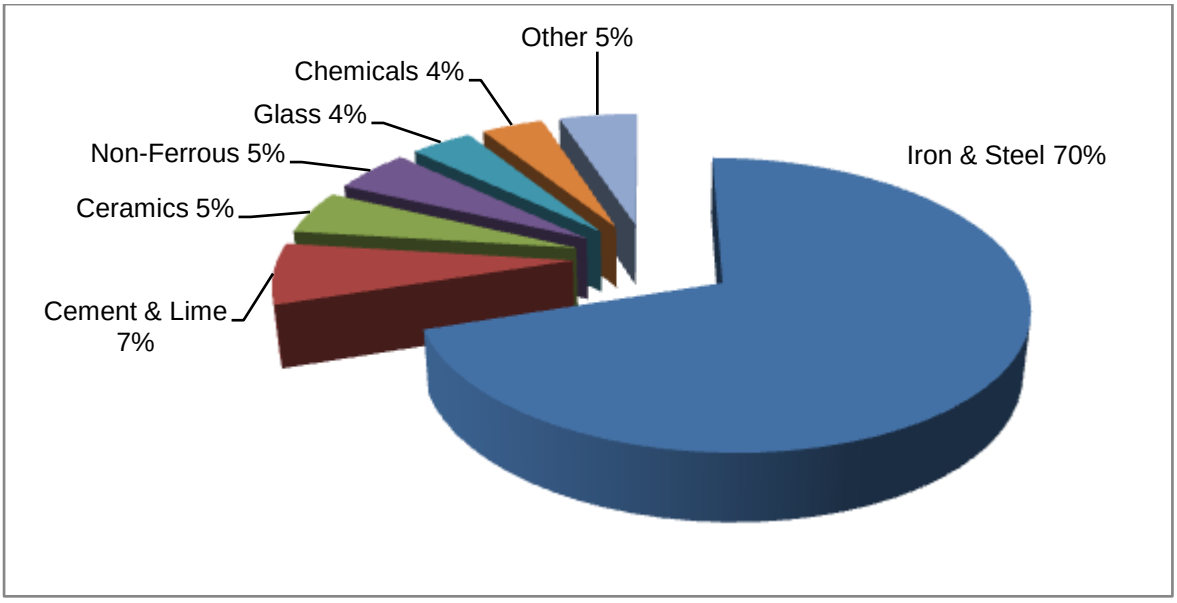


Sources: USGS, 2013

WORLD DEMAND

The total world refractories demand market was estimated at 24 Mt with crude steel manufacturing accounting for 70 percent (Fig. 72). According to the World Steel Association, steel production grew by 1.2 percent year-on-year (y-o-y) in 2012 to 1.55 billion tons. Increases in global demand for refractory products continued in 2012 although at a slower pace. Lower than expected growth in world steel production during 2012 was partly due to the sluggish economic activity in Western Europe and slowing economic growth in China. With steel production expanding, mullite received increasing consideration as an alternative aluminosilicate refractory mineral to the less available bauxite-based refractories. Historically, the latter refractories were chosen over andalusite-based refractories owing to the availability of low cost Chinese bauxite. However, the availability of this low cost bauxite is now under threat due to the high export duties and tariffs as well as the export volumes restrictions on the Chinese bauxite.

FIGURE 72– WORLD REFRACTORIES MARKET BY END-USERS, 2012



Source: Andalusite Resources

RECENT DEVELOPMENTS

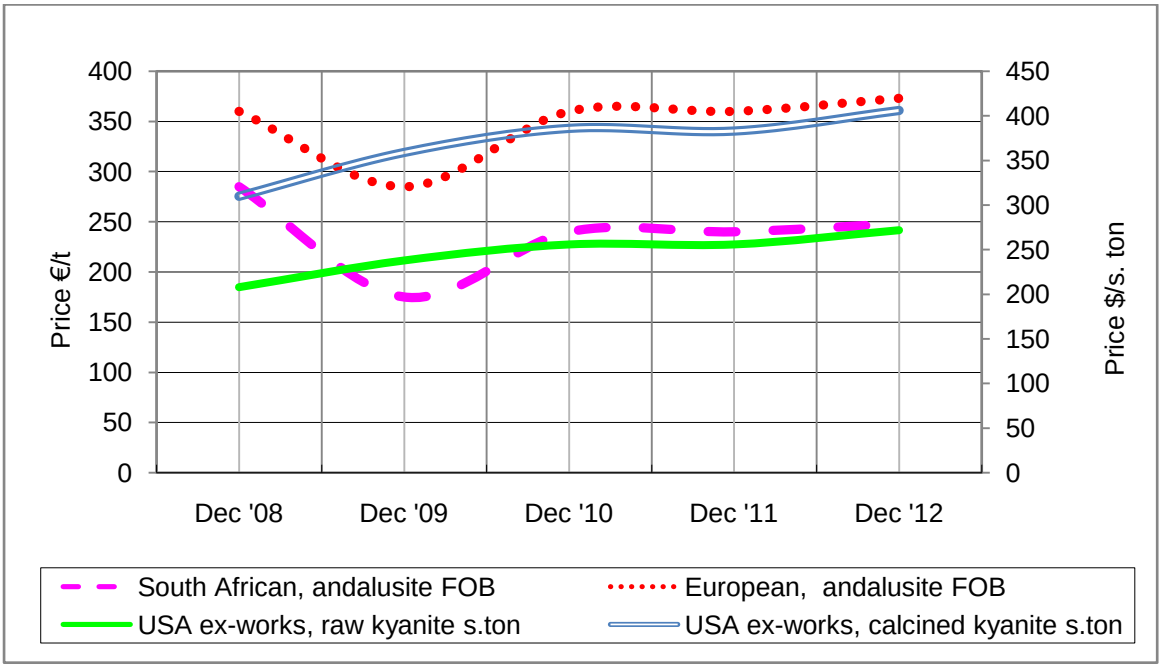
SAMREC Pty Ltd, a member of Imerys, closed its Havercroft mine in February 2013 as the mine became inactive and, moved to the Segorong mine with the more economically viable deposit. At the end of March 2013 the commissioning of Segorong mine and plant was completed. The anticipated annual capacity for Segorong is 55 kt of andalusite and 54 permanent jobs have been created through this project. The project was critical for SAMREC in order to keep the production of the coarse crystal of andalusite in South Africa (these crystals are only present in South Africa and China). The target for the company is to grow the sales for Segorong to match the production capacity in order to get the return on investment, as the Capex for the project has unfortunately far exceeded the initial project budget.

Peruvian andalusite producer, Andalucita SA is capitalising on the growing demand for alumino-silicates, with plans to almost double production of the mineral and launch a major new product in future.

PRICES

According to the Industrial Minerals publication, in 2012, prices increased due to higher demand from the refractory industry compared with the previous year. The South African market prices (2 000 tonne bulk, FOB) for 57-58 percent aluminium trioxide (Al_2O_3) andalusite concentrate were in the range €235-€280/t in 2012 up from €230-€265/t in 2011 (Fig. 73). The European FOB prices for 55-59 percent Al_2O_3 were in the range €350-425/t up from €345-400/t in 2011. Prices increased as a result of a rise in andalusite demand in the refractories industry as a better substitute for bauxite. The US prices for raw and calcined 54-60 percent Al_2O_3 kyanite remained in the range of $224-$320/t and $373-$439/t, respectively.

FIGURE 73– WORLD ALUMINO-SILICATES PRICES, 2008–2012



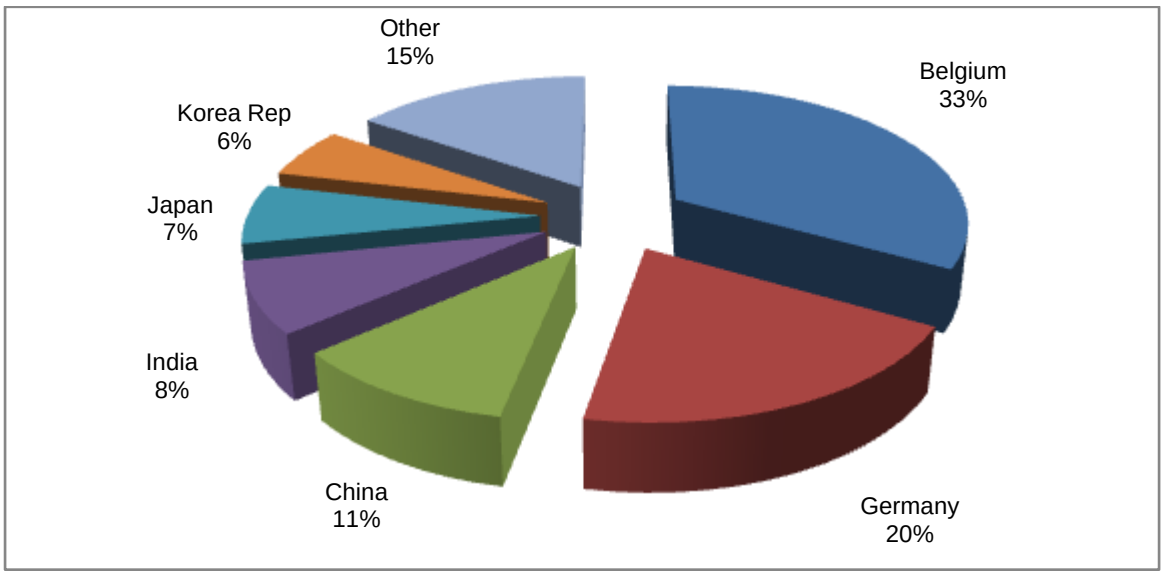
Source: Industrial Minerals

TRADE

South Africa's exports of andalusite decreased in 2012 owing to a weaker demand from its major trading partner Europe, resulting from the debt crisis. The major consumers of South African andalusite in 2012 were Belgium, which accounted for 33 percent of the total export sales followed by Germany at 20 percent and China at 11 percent (Fig. 74).

The refractory industry has been under pressure in the recent years, owing to increased raw material costs. This phenomenon was driven by the recent developments in the Chinese and Indian markets, where they no longer have these raw materials readily available for export.

FIGURE 74– SOUTH AFRICA'S EXPORTS OF ANDALUSITE BY DESTINATION, 2012



Sources: DMR, Directorate Mineral Economics

SOUTH AFRICA

The supply of commercial andalusite is fairly tight, with South Africa being the major source. Andalusite Resources and Samrec group are the only producers of andalusite in South Africa. Samrec produces almost 70 percent of the andalusite in the country. A Black Economic Empowerment (BEE) consortium, Simang Resources Pty (Ltd), holds a 26 percent interest in Andalusite Resources.

Samrec (Pty) Ltd, a subsidiary of Imerys South Africa, has three mines in South Africa, namely the Annesley - Segorong mines on the outskirts of Burgersfort in Sekhukhuneland in the Limpopo Province, and Krugerpost, which is located near Lydenburg in the Mpumalanga Province. Rhino (Pty) Ltd, also a subsidiary of Imerys SA holds the Rhino Andalusite mine near Thabazimbi in the Limpopo Province.

South Africa's production of andalusite decreased in 2012 partially due to some plant commissioning problems (Table 90), which caused significant delays and hampered mining operations. Local sales decreased in 2012 due to a lower product demand from the ferro-alloy, iron and steel producers. Export sales also went down as demand from trading partners is currently poor due to the EU debt crisis. Similarly, South African demand decreased owing to operational problems.

TABLE 90: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF ANDALUSITE, 2003–2012

		LOCAL SALES			EXPORTS		
YEAR	PRODUCTION	Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	kt	R'000	R/t	Kt	R'000	R/t
2003	165	44	53 515	1 212	130	166 736	1 282
2004	235	50	64 430	1 284	168	211 719	1 263
2005	228	47	57 568	1 236	135	186 229	1 380
2006	221	47	59 022	1 249	129	183 581	1 421
2007	265	51	70 554	1 382	175	282 164	1 612
2008	217	75	115 292	1 534	148	289 175	1 954
2009	165	53	97 918	1 855	109	253 554	2 326
2010	189	92	167 667	1 829	134	321 933	2 406
2011	*	*	*	*	*	*	*
2012	*	*	*	*	*	*	*

Source: DMR, Mineral Economics
*Note: *Data withheld for reasons of confidentiality*

Employment in the alumino-silicate industry decreased by 8.6 percent in 2012 compared with 2011 (Table 91). The industry is experiencing extremely poor market conditions with very low demand for the product and this resulted in reduction of casual and contractual labour to reduce operating costs.

TABLE 91: SOUTH AFRICA'S ALUMINO-SILICATE MINES: EMPLOYMENT, 2006–2012

YEAR	EMPLOYEES	TOTAL REMUNERATION R'000
2006	501	38 776
2007	567	48 581
2008	742	62 956
2009	765	68 471
2010	472	65 953
2011	429	*
2012	392	*

Source: DMR, Mineral Economics
**Total Remuneration figures withheld for reasons of confidentiality*

OUTLOOK

China is expected to continue to be the largest market for refractories, comprising the majority of global demand. The Asia Pacific region will likely continue to be the largest regional market. Above-average growth is expected in India. Eastern Europe, North America, and Western Europe had significant refractory demand because of their large industrial bases, but Eastern Europe is expected to have the highest growth of these regions, reflecting the area's continued industrialization. North America and Western Europe are expected to have solid growth prospects in the near term, showing continued recovery in manufacturing and steel production but, in the longer term, growth may lag behind the worldwide average, with steel production shifting to less-developed areas (USGS, 2013).

According to United States Geological Survey (USGS), demand for refractories in iron and steel production is expected to have the strongest gain in the next several years, depending on the rate of increase in steel production. Growth is also anticipated for refractories needed to produce other metals and in the industrial minerals market because of increasing production of cement, ceramics, glass, and other mineral products.

The South African andalusite market is currently subdued. However, when conditions for andalusite consumers like the refractory industry improve, the market will also recover. Recent studies have proven that andalusite-based refractories have better refractory properties than bauxite-based refractories, and often confer much better thermo chemical properties like creep resistance, thermal shock resistance and hot strength. They can also be used in their raw form unlike bauxite based refractories that need further calcination at high temperatures before they can be used. This should put South Africa in a better position, as the single largest producer of high-quality refractory grade andalusite and has an added economic advantage as it somehow guarantees stability in terms of price and availability.

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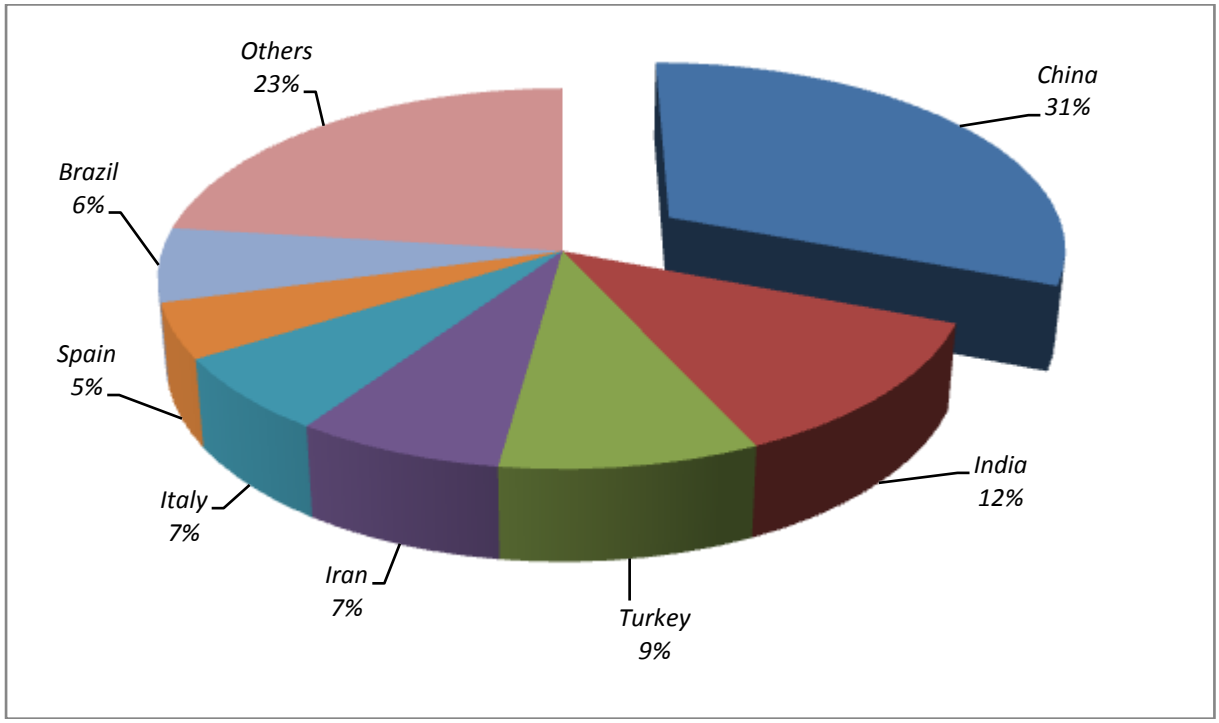
DIMENSION STONE

E Malematja

WORLD SUPPLY

Over the past 10 years there has been a significant growth in the mining of dimension stone and production of related dimension products, with the Asian countries taking the lead. Worldwide dimension stone production volumes grew from 1.8 Mt per year in 1990s to the level of 116 Mt per year in 2012. This strong growth highlights the stone industry as one of the most important established industrial minerals business areas. Dimension stone is produced in more than 50 countries around the world, with dominant producers found in 6 countries in Europe, 3 in Africa and 3 in Asia. China is the top producer accounting for 31 percent of world production, followed by India's 12 percent and Turkey's 9 percent (Fig 75).

FIGURE 75: DIMENSION STONE PRODUCTION BY COUNTRY, 2012

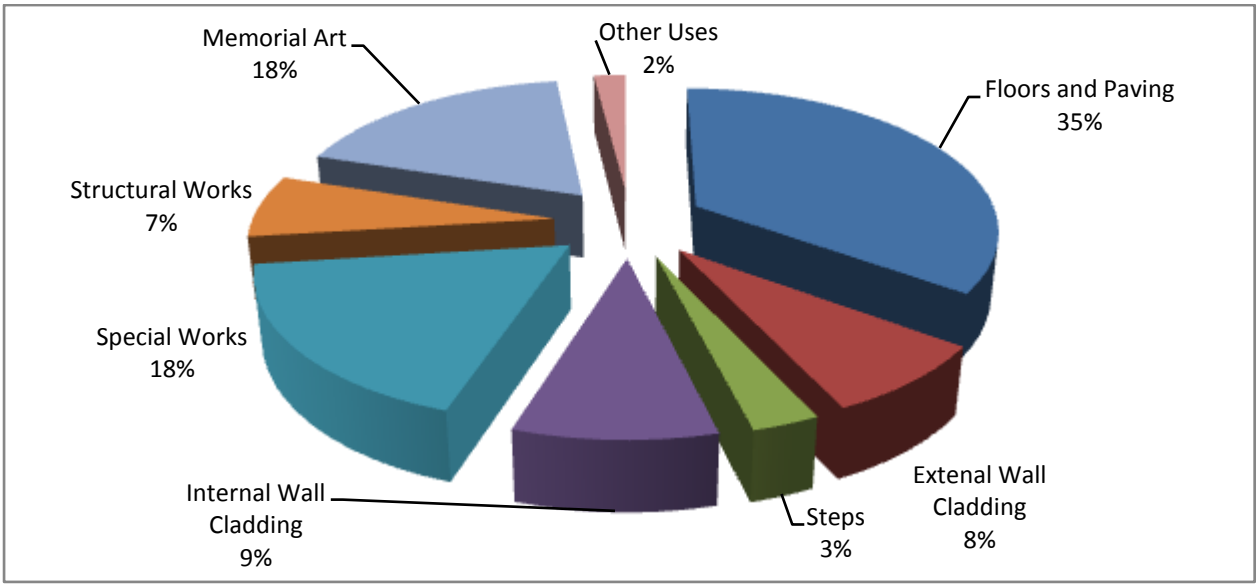


Source: Stone- Ideas (2012)

WORLD DEMAND

Demand for dimension stone is mainly driven by activities in the construction industry and real estate markets, which account for over 80 percent, followed by the funerary monumental industry contributing approximately 15 percent while other various special applications account for 5 percent. Dimension stones are extensively used as flooring tiles both in commercial and public buildings as well as in monuments since they are more durable (Fig 76). USA is the largest consumer of dimension stone with 80 percent of its domestic demand met through imports.

FIGURE 76: WORLD CONSUMPTION OF DIMENSION STONE BY SECTOR



Source: Minus273, 2010

SOUTH AFRICA

South Africa's economy has been based on the production and export of minerals since the late 19th century, which, in turn contributed significantly to the country's industrial development. The South African dimension stone industry has established itself as major player globally due to unique characteristics of some of the stones found in the North West province such as Red granite, Black granite & Rustenburg Grey. Granite dimension stones are prestige materials used in both exterior and interior applications to produce impressions of elegance and quality. Moreover, with the changing life style and rising living standards in South Africa, more and more of granite stone is used in house decoration.

The industry is however currently highly concentrated and dominated by a small number of foreign-owned companies, such as Kelgran Investments (Spain) and Marlin Corporation (subsidiary of Finstone Srl, Luxembourg), which together account for more than half of South Africa's total granite production. However, despite the high degree of concentration, the industry exhibited strong growth, evidenced by an increase in the number of registered dimension stone quarries which increased by 7 percent to 78 quarries in 2012 compared to 2010 mainly consisting of granite producers with slate and sandstone producers making up the balance.

Local sales volumes decreased by 21.4 percent to 213.4 kt as demand was subdued within the construction sector in 2012. Export sales volumes decreased by 25 percent to 84 kt in 2012 due to effects of economic downturn experienced around the world creating instability in major South African dimension stone consumers (Table 89). The value of local sales increased by 24 percent to R299 million due to a surge in demand in special works applications, however, this increase was offset by the subdued conditions in the construction industry. Despite high export prices, revenue for export sales declined by 17.2 percent to R124 million owing to lower export volumes.

TABLE 92: SOUTH AFRICA'S DIMENSION STONE SALES, 2003–2012

	LOCAL SALES			EXPORTS		
YEAR	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	R'000	R/t	kt	R'000	R/t
2003	78.5	47 824	609	384.7	718 746	1 868
2004	177.9	147 273	828	370.7	342 284	888
2005	302.5	165 783	548	305.0	260 493	854
2006	284.4	185 234	651	211.9	209 754	990
2007	394.8	319 455	809	159.3	156 810	984
2008	458.0	489 346	1 069	85.6	211 674	2 474
2009	334.6	340 493	1 018	61.7	126 508	2 050
2010	336.3	236 999	545	65.4	120 407	1 840
2011	271.4	241 802	1 014	111.2	150 212	1 350
2012	213.4	299 717	1 587	84.0	124 246	1 479

Source: DMR, Directorate Mineral Economics

OUTLOOK

Global output of dimension stone is expected to rise in the short term attributed to more frequent discoveries of new stone deposits around the world and advances in the extraction and beneficiation techniques that have reduced mining processing costs. The growth in usage of dimension stone bodes well with the increase in the production, as interior and exterior designers and architects in the construction industry now prefer the use of dimension stone for its high quality structure. Dimension stones are preferred in the markets due to their superior characteristics over other substitute products.
The local dimension stone industry has a positive outlook in the medium to long term, as the South African government has identified infrastructure development as a vital component for the country's economic growth and competitiveness. This is likely to strengthen demand for industrial minerals including dimension stone. Transnet, the state-owned freight logistics group, has also adopted a market demand strategy (MDS) which is aimed at expanding and modernizing the country's ports, rail and pipelines infrastructure over a period of seven years promoting economic growth in RSA. The expansion of rail way lines will increase the demand for dimension stones used as rail ballast. This strategy will not only enhance growth in South Africa but also create jobs within the country to an estimated total of 288 000.

Major South African contractors are expressing genuine optimism over prospects for roads/bridges and rail construction as about R262 billion of the total infrastructure budget will fund transport and logistics projects, increasing the demand for sandstones and quartzite used in road construction. These investments will improve mobility of people and services; boost the economic potential of certain regions, with associated increase in employment, and an increase in the domestic and international trade capacity.

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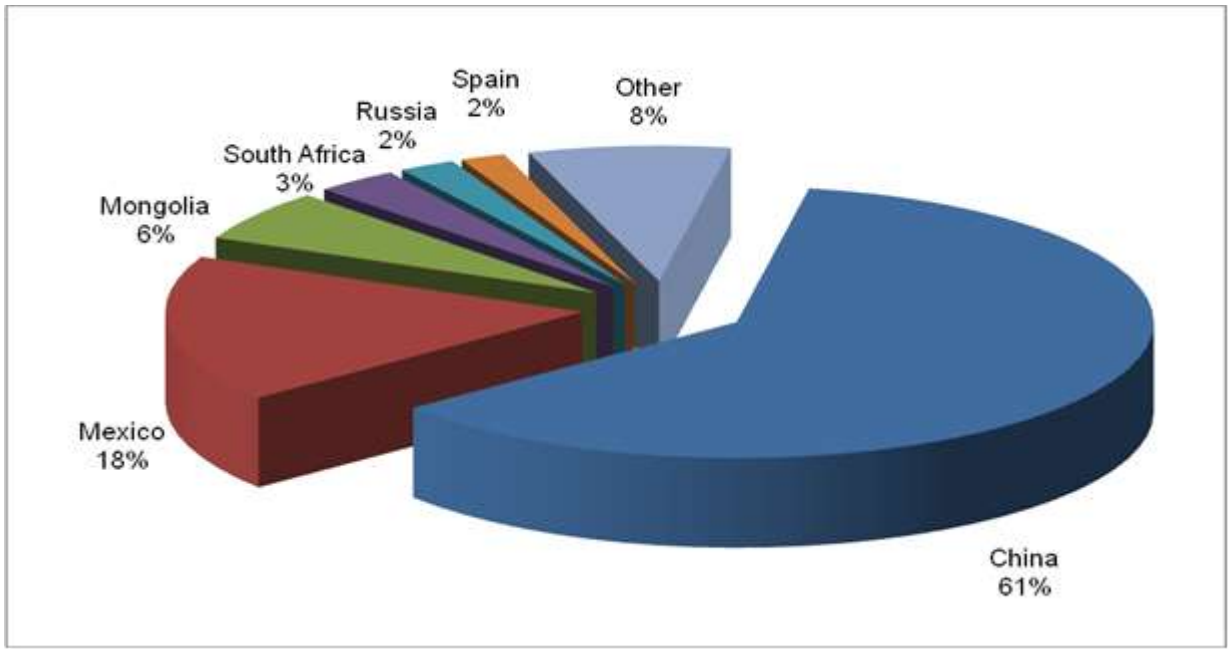
FLUORSPAR

M Modiselle

WORLD SUPPLY

Total world production of fluorspar decreased by 8.9 percent from 7.52 Mt in 2011 to 6.85 Mt in 2012, due to production disruptions resulting from operational shutdowns and mine closures around the world. China remained the world's leading fluorspar producer accounting for 61 percent of world production followed by Mexico's 18 percent, Mongolia's 6 percent, South Africa's 3 percent, while Russia and Spain accounted for 2 percent each (Fig.77).

FIGURE 77: WORLD FLUORSPAR PRODUCTION, 2012



Source: USGS, 2013

DEMAND

Fluorspar demand is driven by uses in fluorocarbon applications, which include consumer goods such as fridges, freezers and air conditioners as well as steel and aluminium fluoride production. In 2012, the cooling down of the world's economies negatively affected fluorspar demand. One of the major markets for acid grade fluorspar (acid spar) is the manufacture of hydrogen fluoride, which is the starting point of nearly all fluoro chemicals. This sector has been challenged by stricter regulation and the phasing out of fluorine compounds due to their high global warming potential. Acid spar is also used to produce aluminium fluoride, consumed almost exclusively in primary aluminium production.

TRADE

In September 2011, China appealed to the World Trade Organization (WTO) ruling that its export restrictions on several industrial raw materials (including fluorspar) were inconsistent with WTO rules. In January 2012, the WTO Appellate Body affirmed a WTO dispute settlement panel's decision reached in July 2011 that found China's export restraints on fluorspar and other materials to be inconsistent with China's WTO obligations. Subsequently, the WTO rejected China's appeal to portray its export restraints as a measure taken to manage critical shortages of supply and conservation of the environment. The domestic market in China is the trigger for global supply-demand-balance. The Chinese exports restrictions severely distorted global markets and increased volatility for industrial consumers which threatened growth and jobs. The WTO ruling prevents China from imposing export quotas, fees or charges aimed at preventing exportation and in turn pave the way for open trade and fair access to raw materials globally. This could limit the imposition of restrictive policies and encourage more cooperation among countries to deal with potential supply and demand challenges in the future.

PRICES

The fluorspar market was bearish in 2012 and due to a weakening fluorochemical market and higher inventories. Pricing has been driven by supply as China curtailed exports and stockpiled the commodity. China lifted its export quotas and this significantly dropped the prices, leaving a number of prices rooted at the lowest point since mid-2010. To preserve resources, China has also been closing down smaller mines.

SOUTH AFRICA

South Africa's fluorspar production decreased by 13.3 percent to 170 kt in 2012 compared with 196 kt in 2011 (Table 90). Witkop Mine was placed under care-and-maintenance since 12 October 2012 due to higher production costs owing to low fluorspar ore grade. Local sales volumes decreased by 26.3 percent to 14 kt in 2012 compared with 19 kt in 2011, owing to reduced demand in the iron and steel industry. Fluorspar is used as a flux in the slag during the smelting process in iron and steel production. Export sales volumes increased by 8 percent from 175 kt in 2011 to 189 kt in 2012. In 2012, South Africa exported 65 percent of fluorspar to Germany, 24 percent to United States of America, 5 percent to Tunisia, Japan and India accounted for 3 percent each.

TABLE 93: SOUTH AFRICA'S PRODUCTION AND SALES OF FLUORSPAR, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	Kt	R'000	R/t	kt	R'000	R/t
2003	235	21	16 225	767	211	153 309	727
2004	265	23	18 247	793	233	183 329	787
2005	266	25	21 576	863	250	215 652	863
2006	256	27	25 798	973	218	244 933	1 125
2007	285	30	31 446	1 048	252	307 511	1 220
2008	299	25	*	*	276	*	*
2009	198	18	*	*	135	*	*
2010	157	18	*	*	179	*	*
2011	196	19	*	*	175	*	*
2012	170	14	*	*	189	*	*

Source: DMR, Directorate Mineral Economics

*Note: * Sales figures withheld for reasons of confidentiality*

Labour productivity decreased by 32.6 percent to 0.29 kt per employee in 2012 as compared to 0.43 kt per employee in 2011. Average earnings increased by 14.7 percent from R150 821 per employee in 2011 to R173 418 per employee in 2012 (Table 91). The remuneration figures appear to be inflated in 2012, due to closure of Witkop mine as most employees received severance, termination and retrenchment (STR) packages. Revenue generated per employee is withheld due to confidentiality.

TABLE 94: SOUTH AFRICA'S FLUORSPAR QUARRIES: EMPLOYMENT AND REMUNERATION, 2007-2012

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2007	490	51 608
2008	605	62 027
2009	432	59 128
2010	297	49 836
2011	453	68 467
2012	579	100 409

Source: DMR, Directorate Mineral Economics

RECENT DEVELOPMENTS

SOUTH AFRICA

Minerales y Productos Derivados S.A, a Spanish company which is majority owner of the Vergenoeg fluorspar mine in South Africa, announced in March 2013 that expansions at Vergenoeg were completed and the acid spar plant can now produce 200 - 250 kt/pa with a potential of 300 kt/pa with minimal additions to design. In addition, a new processing plant was constructed that increased Vergenoeg's production capacity of metspar powder and briquettes to 30 kt/pa.

Fluormin plc (London, United Kingdom), placed its South African Witkop Mine under care-and-maintenance effective from October 2012. Witkop mine faced operational and cost pressures, which were further exacerbated by the declining fluorspar prices. Despite efforts to keep operations running, the company reported that the prevailing fluorspar price fell below current operating costs. In December 2012, Fluormin announced the sale of its Buffalo Fluorspar project in South Africa for about R14 million ($1.38 million). Buffalo had been under care-and-maintenance since 2008 with no plans to reopen. In February 2013, Fluormin sold the Buffalo fluorspar project for R10 million to Rooiberg Stone, which is currently processing the stockpiles for aggregates. In February 2013, Fluormin successfully concluded its 20 percent share interest in Kenya Fluorspar Co for R141 million.

REST OF AFRICA

Kenya Fluorspar Co Ltd. (Nairobi, Kenya) completed the debottlenecking project at its fluorspar mill, which included commissioning of an additional ball mill. The new ball mill will allow a 20 percent increase in feed input to the flotation mill and the use of vacant systems and cells within the plant. The completion of the project will improve plant efficiencies and allow for an increase in acid-grade fluorspar output.

INTERNATIONAL

Canada Fluorspar Inc. announced the results of a new preliminary feasibility study (PFS) for it's jointly owned St. Lawrence fluorspar project in Newfoundland, Canada. The PFS was based on updated capital and operating costs but used the existing resource estimate. The PFS examined a fluorspar production operation with a 14-year mine life. An additional review was still underway to establish a more precise understanding of the project's anticipated cost and scope, and no decision had been made on when or if the project will proceed.

Vanoil Energy Ltd., a Canadian-based oil and gas company with a portfolio of assets in East Africa, announced its intention to acquire Fluormin plc. Fluormin, currently has nonproducing fluorspar assets in

South Africa and Tunisia and owns 49 percent of Fluorone Trading Ltd. Under the terms of the acquisition, Vanoil estimated that R273 million ($27 million) could be realized from Fluormin's existing accounts and receivables as well as the subsequent disposal of Fluormin's assets. This would provide near-term financing to allow Vanoil to proceed with its drilling and seismic programs in East Africa.

OUTLOOK

According to Roskill Information Services, fluorspar demand is expected to grow in the next ten years due to increasing consumption in the chemicals industry, despite environmental legislation and more limited economic growth predominant in some of the major developing countries.

A combination of rising production costs and China's domestic consumption has reduced the volumes of acid spar available for export. However, this has opened the door for producers in other countries. New fluorspar production capacity and expansions should boost global supply over the next five years, to meet the growing consumption levels on the back of expected additional capacity totaling 1.6 Mt per annum by projects from Canada, South Africa and Vietnam. Furthermore, the outlook for the aluminium industry is positive with consumption expected to grow through to 2020, mostly due to increased industrialization and urbanisation in emerging economies and this will fuel the demand for fluorspar further.

Acidspar price is expected to recover in the long-term, but will remain under downward pressure in the short-term on weak demand. At the end of 2012, producers that mothballed mines or reduced their capacity as a result of depressed prices, put plans to re-open old mines on care and maintenance. However, the emergence of developing countries will further stimulate fluorspar production with low-cost producers that have good grades, sufficient scale, infrastructure and good logistics expected to benefit from the steady demand of fluorspar.

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LIMESTONE AND DOLOMITE

R Motsie and E Malematja

SUPPLY

In 2012, South Africa's production of limestone and dolomite increased slightly by 0.03 percent to 21.6 Mt compared with 2011. Consumption in various sectors remained stagnant as there was no immediate requirement for additional supplies (Table 92). Local sales volume decreased by 0.2 percent to 18.48 Mt, while revenue decreased by 3 percent to R2.5 billion in line with weaker demand and prices.

TABLE 95: SOUTH AFRICA'S PRODUCTION AND LOCAL SALES OF LIMESTONE AND DOLOMITE FOR NON-AGGREGATE USE, 2003– 2012

YEAR	PRODUCTION	LOCAL SALES		
		Mass	Value (FOR)	
	Kt	kt	R'000	R/t
2003	21 267	17 502	1 198 800	68.5
2004	22 031	17 466	1 227 322	70.3
2005	24 813	18 877	1 306 527	69.2
2006	27 366	20 359	1 517 661	75.0
2007	23 941	20 493	1 698 586	83.0
2008	23 495	19 781	1 899 279	96.0
2009	22 698	20 008	2 105 297	105.0
2010	22 480	19 226	2 271 133	118.0
2011	21 630	18 507	2 591 727	140.0
2012	21 637	18 479	2 517 772	136.0

Source: DMR, Directorate Mineral Economics

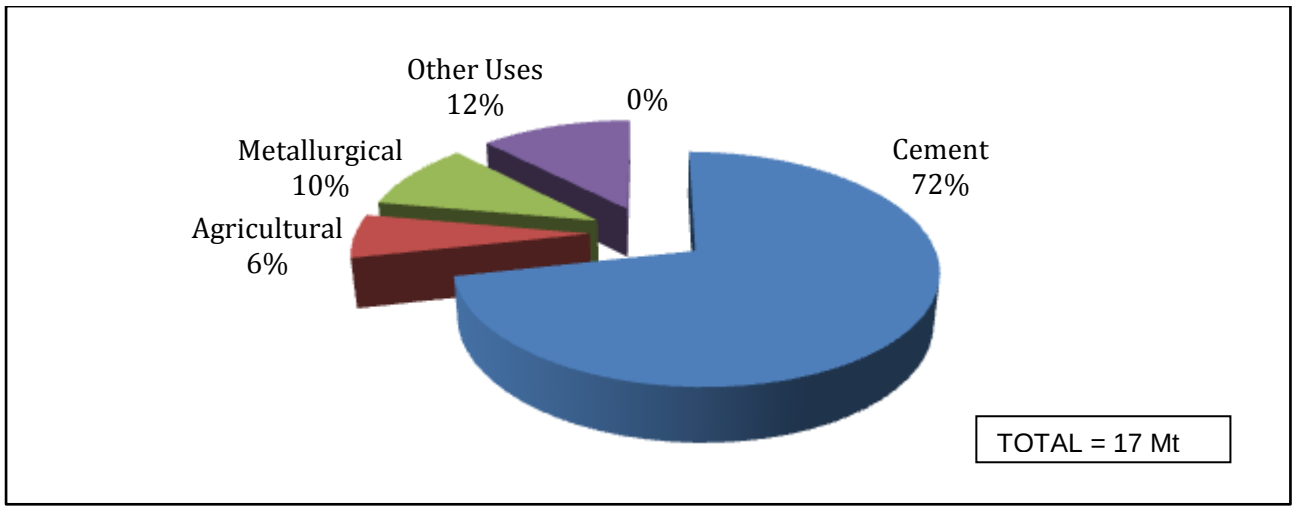
DEMAND

Limestone and dolomite products are used in five principal industries in South Africa:

- Cement manufacturing,
- Metallurgy (steel refining),
- Agriculture (fertilizers, fungicides, animal feed),
- Aggregate and Lime manufacture.

The cement manufacturers are by far the largest users of limestone in the country at 12 358 kt, followed by metallurgical applications (as a fluxing agent in steel making) at 1 703 kt and agriculture at 1 083 kt (Table 93).

FIGURE 78: DEMAND FOR LIMESTONE BY SECTOR, 2012



Source: DMR, Directorate Mineral Economics

Cement manufacture accounted for 72 percent of limestone and dolomite demand in 2012. Local sales volume of limestone for the manufacture of cement decreased by 0.1 percent to 12 358 Mt in 2012, as widespread strike action and slower economic growth slapped demand (Table 93). Local sales volume of metallurgical grade carbonates decreased by 2.4 percent to 1.7 Mt compared with the previous year, as steel production fell by 8 percent from 7.5 Mt in 2011 to 6.9 Mt in 2012. However, local sales volumes of agricultural limestone and dolomite (aglime) increased by 20.2 percent to 1 083 kt as a result of increased demand from various fertiliser applications.

TABLE 96 SOUTH AFRICA'S LOCAL SALES OF LIMESTONE AND DOLOMITE BY APPLICATION, 2003 – 2012

YEAR	CEMENT			METALLURGICAL			AGRICULTURAL			OTHER		
	Mass	Value (FOR)		Mass	Value (FOR)		Mass	Value (FOR)		Mass	Value (FOR)	
	Kt	R'000	R/t	Kt	R'000	R/t	Kt	R'000	R/t	kt	R'000	R/t
2003	11 893	216 148	18	1 972	104 861	53	935	53 732	57	1 110	260 981	235
2004	11 565	225 433	19	2 041	107 887	53	948	48 404	51	1 139	275 612	242
2005	13 519	279 474	21	1 964	114 205	58	604	35 948	60	1 328	297 219	224
2006	14 225	313 038	22	2 183	131 284	60	707	51 779	73	1 533	335 919	219
2007	14 647	350 922	24	1 569	117 847	75	860	59 304	69	1 774	366 980	207
2008	14 252	403 215	28	1 372	120 083	87	879	72 263	82	1 646	381 021	231
2009	14 860	462 122	31	1 237	117 632	95	855	81 762	96	1 616	404 149	250
2010	13 458	443 978	33	1 910	190 589	100	783	86 553	109	1 780	447 341	251
2011	12 373	456 522	37	1 745	194 042	111	901	101 081	112	1 948	472 135	242
2012	12 358	463 196	37	1 703	208 933	123	1 083	140 557	130	2 125	525 422	247

Source: DMR, Directorate Mineral Economics

RECENT CEMENT DEVELOPMENTS IN AFRICA

Construction of an integrated clinker and cement production plant at Sephaku's Aganang projects in the North West province is on track with the majority of the civil structures being completed. The plant is expected to produce 1.9 Mt of clinker and 1.2 Mt of cement per annum by the second quarter of 2014. The construction of the cement milling plant in Delmas is also on track, with production expected to start in January 2014. The Delmas plant will have an annual cement production capacity of 1.4 Mt. These developments will drive South Africa's cement production to 14 Mt per year.

Pretoria Portland Cement (PPC) increased its capacity at its De Hoek operation near Piketberg in the Western Cape, which resulted in a 5 percent improvement in clinker production rate. The upgraded plant will increase capacity in the Western Cape by approximately 50 percent by 2016. PPC has also entered into an agreement to purchase a controlling stake in Safika Cement Holdings (South African blended cement producer). The deal is in line with PPC's vision of increasing production in the country by as much as 4 percent in 2013.

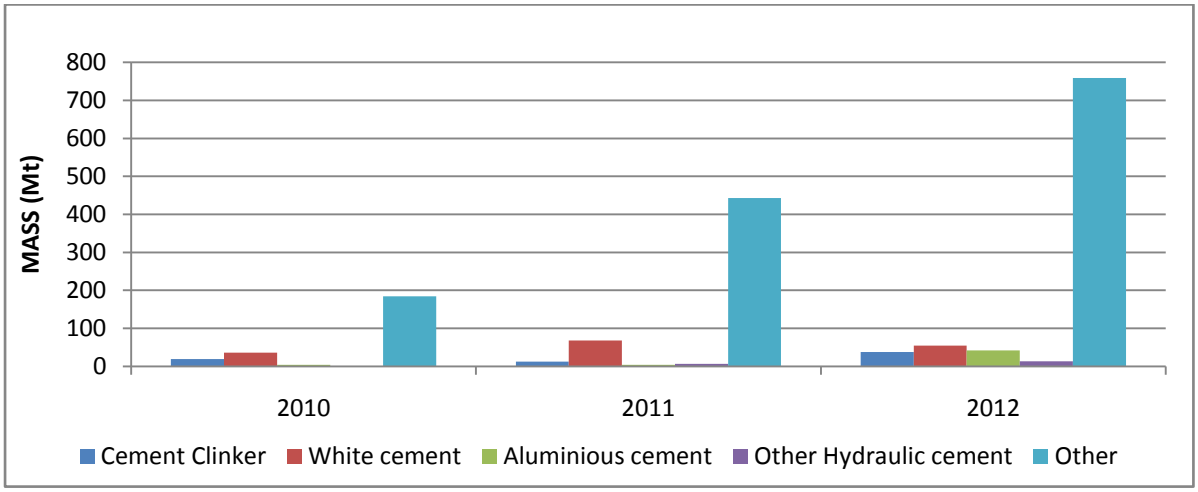
PPC has made a commitment for expansion outside South Africa to 40 percent of total production by the start of 2016. Its Zimbabwean subsidiary Portland Holdings Limited (PHL) plans to build a new cement plant in the Mashonaland to meet growing demand. The new plant will produce about 1 Mt of cement annually. Investment has already been made in exploration drilling at various locations and the construction of this additional cement capacity will ensure that PPC continues to play a key role in the development of infrastructure in Zimbabwe.

The Tanzanian listed Tanga Cement Company Limited (TCCL) has started with the construction of a second kiln at its Tanga plant, which is estimated at $165 million. AfriSam, one of the major South African cement producers holds 62.5 percent stake in Tanga Cement. The construction is in response to the consistently high demand for cement from the Tanzanian and surrounding markets. The new kiln is expected to be commissioned in the third quarter of 2015 and will increase Tanga Cement's clinker capacity to 1.1 Mt per annum.

CEMENT IMPORTS

South Africa’s imports of cement increased by 62 percent to 868 Mt in 2012 compared with the previous year (Fig 79). The increase in imports resulted from higher demand for other types of Portland cements not produced locally, which increased by 71 percent from 443 Mt to 758.8 Mt in 2012. Clinker imports increased by 196 percent to 37.6 Mt in 2012 compared with 12.7 Mt in 2011, due to the influx of cheaper products from other countries, particularly from Asia. This resulted in a decline in white cement imports by 20 percent to 54.5 Mt, while aluminous cement imports increased by 1.2 percent to 4.2 Mt.

FIGURE 79: SOUTH AFRICA'S IMPORTS OF CEMENT PRODUCTS, 2010 – 2012



Source: South African Revenue Service, 2012

LIME

Lime is an important raw material used in steel and Ferro-alloys manufacturing, chemical industries and in environmental applications such as water purification. The local sales volume of lime decreased by 21 percent in 2012 to 1.2 Mt compared with the previous year, due to a decrease in demand for quicklime from the steel and alloys industries (Table 94). According to media reports, South African steelmakers collectively produced 6.9 Mt in 2012 compared with 7.5 Mt the previous year, dropping in the world steel production rankings from 21 to 22. Total sales volume of quicklime for Pyrometallurgical and chemical applications decreased by 22 percent to 1.11 Mt owing to the subdued demand from the steel industry, while sales value decreased by 14 percent to R1.1 billion. Hydrated lime sales volumes for water purification decreased by 7 percent to 51 kt whilst the sales volume for chemical use decreased by 62 percent to 14 kt as a result of a surge in demand for alternative water purification products.

TABLE 87: SOUTH AFRICA'S LOCAL SALES OF LIME, 2011 – 2012

LIME PRODUCT,	2011			2012		
BY SECTOR USE	Mass	Value (FOR)		Mass	Value (FOR)	
	Kt	R'000	R/t	Kt	R'000	R/t
Quicklime						
Pyrometallurgical	700	597 061	853	564	520 823	923
Chemical	722	633 259	878	549	539 307	982
SUB-TOTAL	1 422	1 230 320	866	1 113	1 060 130	953
Hydrated lime						
Water purification	55	60 998	1 109	51	61 701	1 213
Chemical	37	44 106	1 181	14	14 540	1 062
Other	26	32 525	1 274	32	43 294	1 373
SUB-TOTAL	118	137 619	1 188	97	119 535	1 216
TOTAL	1 540	1 367 939	1 027	1 210	1 179 665	1 085

Source: DMR, Directorate Mineral Economics

EMPLOYMENT

The limestone and dolomite industry employed 2 811 people in 2012, an increase of 3.2 percent compared with 2011 (Table 95). Labour productivity decreased by 3.1 percent to 7.7 kt/employee, while revenue generated per employee decreased by 5.9 percent to R895 686/employee owing to subdued market conditions. Average annual earnings decreased by 0.2 percent to R155 890/employee.

TABLE 98: SOUTH AFRICA'S LIMESTONE AND DOLOMITE QUARRIES: EMPLOYMENT AND REMUNERATION, 2008 – 2012

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2003	2 570	80 367
2004	4 085	242 043
2005	5 210	312 073
2006	2 385	251 895
2007	2 452	286 461
2008	2 517	321 698
2009	2 490	359 959
2010	2 635	410 250
2011	2 723	425 537
2012	2 811	438 208

Source: DMR, Directorate Mineral Economics

OUTLOOK

Levels of residential building activity that bottomed out in 2010 continued on a steady recovery and, this is expected to carry over in the medium term on the back of improved number of building projects driven by the public sector. The construction of new housing saw a growth of 8.6 percent y-o-y to a total of 17 878 units in the first five months of 2013. However, demand for commercial property on the other hand remains fairly weak amid challenging economic conditions, which are expected to improve on a moderate rate.

The South African government has already stepped up its spending on building projects, following a decline of 0.7 percent in the fourth quarter of 2012 to an annualised rate of 3 percent in the first quarter of 2013. Despite the slow pace in economic activity, the construction industry which is the main driver for cement demand is expected to grow modestly in the medium term as government intends to spend R827 billion in the next three years on the building of new as well as the upgrading of the existing infrastructure as part of the National Development Plan. About R400 billion is earmarked for capital projects and would be funded by state owned entities, while the rest would be allocated for the building of schools, hospitals and commuter rail. Consequently, the growth in the construction industry will lead to increased demand for limestone, which is the input raw material for cement production.

The demand for limestone in the agricultural sector is expected to continue growing on the back of increased crop production to accommodate the needs of the growing population. Furthermore, limestone demand will be supported by the commissioning of Eskom's Kusile and Medupi power stations which will require about 1.2 Mt per annum of limestone for their operations. However, demand for limestone in metallurgical applications is set to decrease in the short term owing to the decrease in demand for quicklime in the steel industry. The cement industry, which is the main producer and consumer of limestone, is currently oversupplied and this could be exacerbated by the entrance of Sephaku cement in the market, expected to supply an additional 1.2 Mt of cement per annum to the market. As such, with supply expected to outstrip demand in the short term and market forces taking effect, cement prices within South Africa are expected to decline. However, the oversupplied market could soon swing into tightness, encouraged by the rollout of infrastructure projects. As public spending rises, the increase in construction activity is expected to stimulate economic growth and employment creation.

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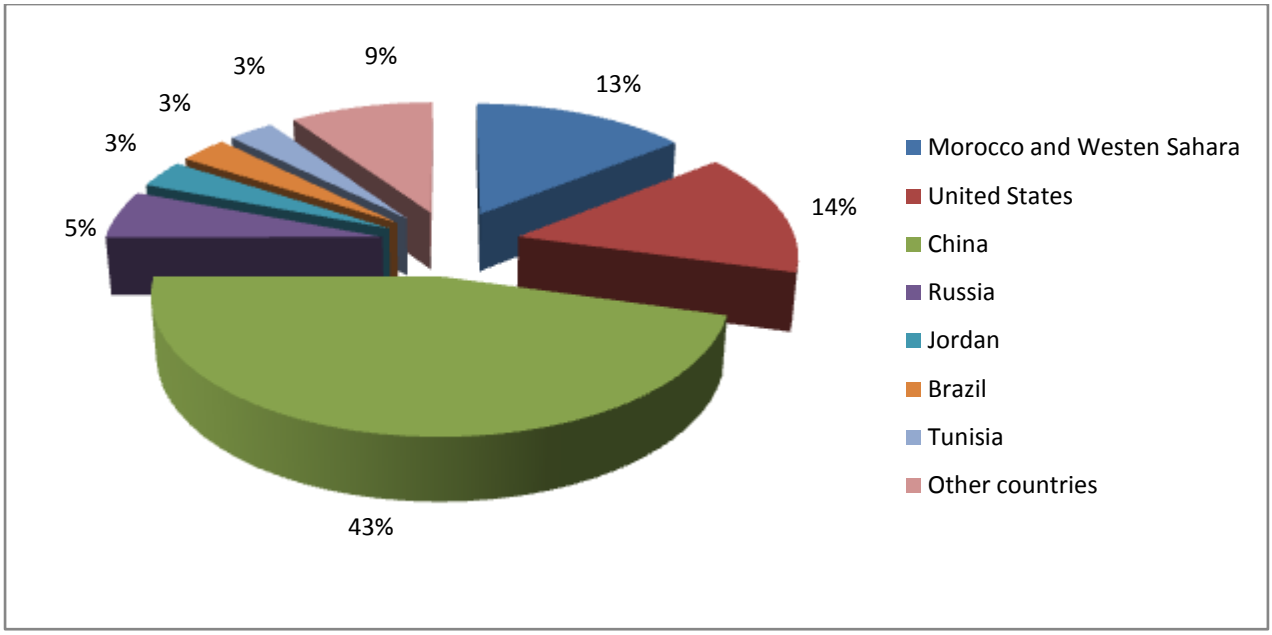
PHOSPHATE ROCK

M Muravha

WORLD SUPPLY

World production of phosphate rock increased by 6.1 percent to 210 Mt in 2012 compared with 198 Mt in 2011 due to higher production in China and a new mine in Saudi Arabia which opened late in 2010. China remained the world's largest phosphate producing country in 2012, accounting for 43 percent of production followed by the United States at 14 percent and Morocco & Western Sahara at 13 percent. Russia's contribution declined to 5 percent (Fig.80).

FIGURE 80: PHOSPHATE ROCK PRODUCTION BY COUNTRY, 2012



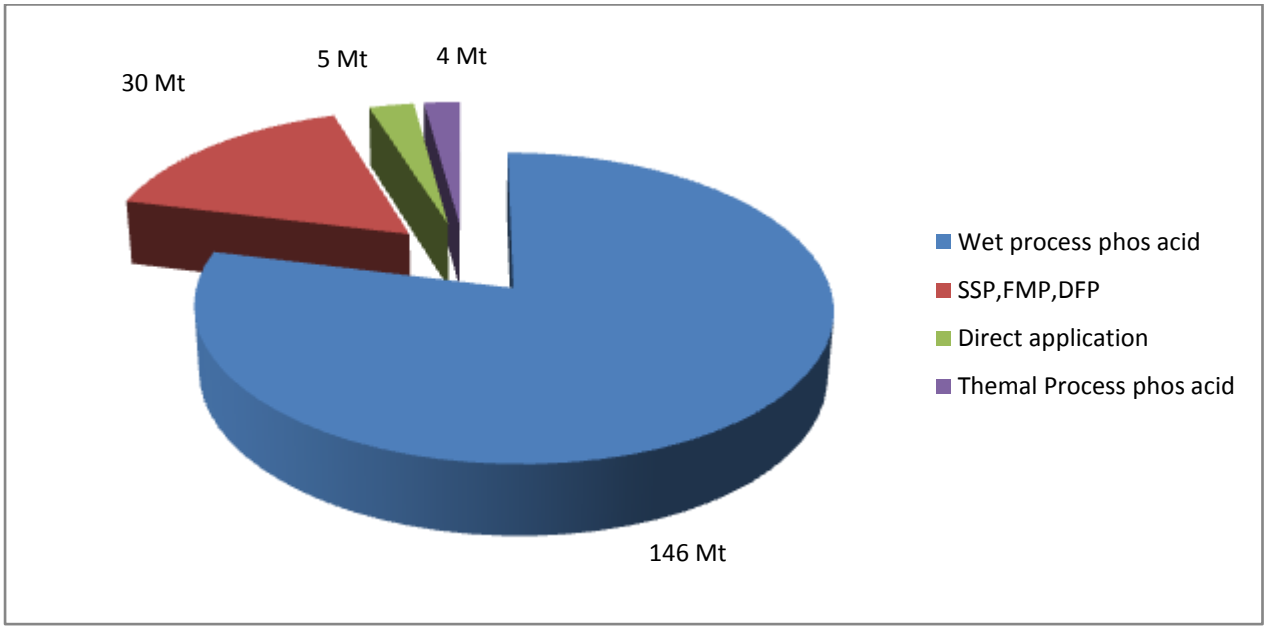
Source: USGS, 2013

World production of phosphoric acid (H_3PO_4), measured as P_2O_5 content, increased by 9.1 percent to 44.3 Mt in 2012, compared with 40.6 Mt in 2011, due to a much firmer demand from consumers after a sharp rebound of economic activity. Global production of phosphate fertilizers is estimated to have amounted to 41.9 Mt.

WORLD DEMAND

Of the phosphate rock produced globally, about 5 Mt (2.7 %) is applied directly to the soil, 146 Mt (78.9 %) is used in the production of wet-process phosphoric acid, 30 Mt (16.2 %) is transformed into single superphosphates (SSP), while 4 Mt (2.2 %) is converted into thermal process phosphoric acid (Fig.81). The United States, which is the world's second largest producer of phosphate, used about 80-95 percent of phosphate rock to manufacture phosphoric acid and super phosphoric acid, which were used as intermediate feedstock in the manufacture of granular and liquid ammonium phosphate fertilizers and animal feed supplements. The balance of the phosphate rock was used for the manufacture of elemental phoshorus, which was used to produce phosphorus compounds for a variety of food-additive and industrial applications. In China, production of di-ammonium phosphates (DAP) and Mono-ammonium Phosphates (MAP) combined has increased by roughly sevenfold to 22 Mt, and created a significant surplus to domestic requirements. MAP and DAP are the most important phosphate fertilisers, and are manufactured by the neutralisation of phosphoric acid with ammonia. MAP contains 11 percent nitrogen and 22 percent phosphorus, whereas DAP contains 18 percent nitrogen and 20 percent phosphorus.

FIGURE 81: WORLD PHOSPHATE USES, 2012



Source: CRU

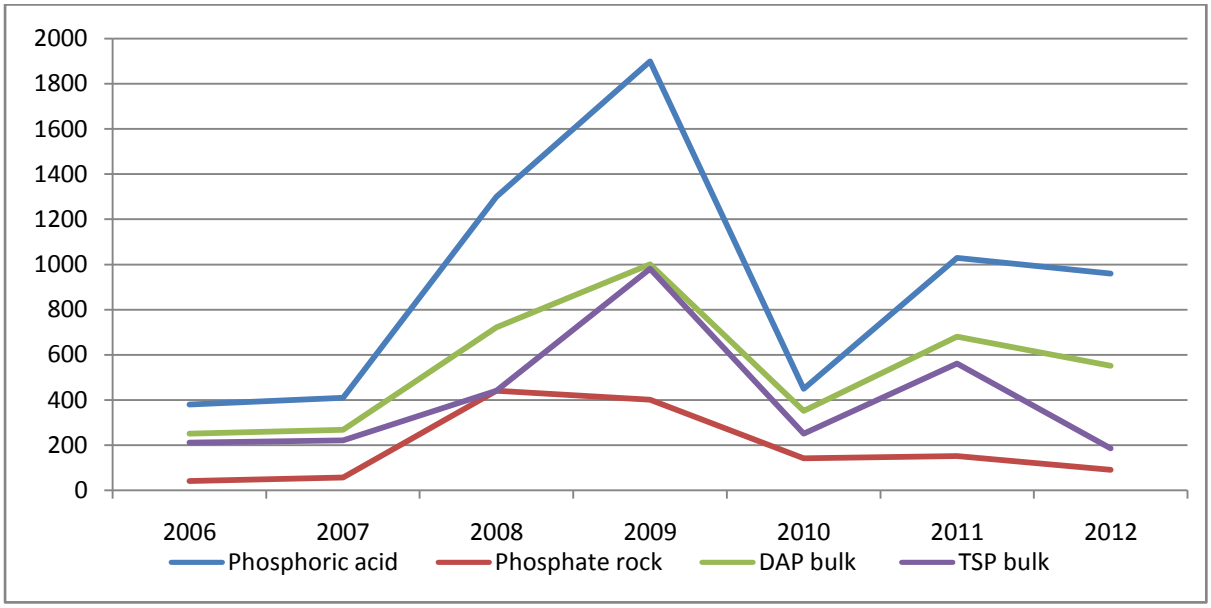
TRADE

The largest concentration of phosphate rock exporters are in the Middle East and North Africa, which together account for 80 percent of world trade of phosphate. Morocco and Western Sahara account for roughly one-third of world trade; it is the largest phosphate rock exporter. India is the second largest global consumer of phosphates after China. With very limited indigenous rock supplies, India imports phosphate rock and phosphoric acids to produce DAP domestically. As a result, it is the top importer of these raw materials, accounting for approximately one quarter of world phosphate rock imports and almost half of phosphoric acid trade. Consumption and imports of phosphate rock were estimated to have been lower in 2012 as compared to 2011, owing to lower seasonal demand in the first quarter of the year, which resulted in the temporary closure of some fertilizer plants. South Africa's Foskor, is one of the largest suppliers of phosphoric acid to India.

PRICES

Phosphate rock prices decreased by 40.0 percent to $90/t in 2012 compared with $150/t in 2011. Phosphoric acid prices decreased by 6.8 percent to $960/t in 2012 compared with 1030/t in 2011. Diammonium phosphate (DAP) prices declined by 19 percent to $550/t and trisodium phosphate (TSP) prices increased by 67.0 percent to $185/t in 2012 (Fig.82). DAP prices were under pressure during the first half of 2012 due to rising prices of phosphorous and nitrogen. Prices have been fairly buoyant since 2009, with phosphate rock prices closely tracking DAP. However, prices came under pressure during the first quarter of 2012, reflecting weaker import demand from India.

FIGURE 82: PRICES OF PHOSPHATE RESOURCES, 2006 –2012



Source: Fertilizer International, 2012

SOUTH AFRICA

South Africa's production of phosphate rock decreased by 28.6 percent to 1 831 kt in 2012 compared with 2 575 kt in 2011, as a result of wet weather conditions and structural failure of the South Pit Crusher stockpile gantry at Foskor mine, the country's largest producer of phosphate rock (Table 99). Local sales mass decreased by 34.3 percent to 1 415 kt compared with 2 155 kt in 2011, due to the less demand from phosphoric acid and granular fertilizer producers. Local phosphate rock prices decreased by 5.5 percent, phosphoric acid prices by 18.3 percent and granular fertiliser's prices by 6.8 percent.

TABLE 99: SOUTH AFRICA'S PRODUCTION AND SALES OF PHOSPHATE ROCK, 2001– 2012

YEAR	PRODUCTION	LOCAL SALES	EXPORTS
	Mass	Mass	Mass
	Kt	kt	kt
2001	2 420	2 591	555
2002	2 803	2 532	349
2003	2 643	2 665	250
2004	2 735	2 484	268
2005	2 577	2 498	91
2006	2 629	2 252	0
2007	2 556	2 523	36
2008	2 287	2 687	0
2009	2 237	2 268	0
2010	2 148	1 880	25
2011	2 575	2 155	194
2012	1 831	1 415	620

Source: DMR, Directorate Mineral Economics

Foskor mines approximately 2.6 Mt of phosphate rock per annum of which 70 percent is used for the production of phosphoric acid, 15 to 20 percent is exported to Japan, New Zealand and the Netherlands and the rest is sold locally. Omnia Fertiliser and Farmers World Bosveld are the key local customers. Foskor depends on Palabora Mining Company (PMC) to provide 20 to 25 percent of crushing and milling capacity in the production of phosphate rock. The declining perfomance at PMC has affected Foskor's production and ability to forecast accurately. However, the two companies will continue to engage in an effort to improve perfomance. Foskor is also planning to expand the fertiliser product range to include soluble MAP, NPKs (fertiliser products containing nitrogen, phosphate and potassium), and bagged products for distribution to lucrative markerts in New Zealand, Central Africa and Israel.

OUTLOOK

According to the International Fertilizer Industry Association (IFA), world fertiliser demand was stagnant in 2012 despite stronger agricultural market fundamentals. However, in the coming year, demand for fertilisers is expected to increase as phosphate and potassium demand increases in India. Phosphate production is forecast to increase as a result of mine expansion projects and development of new mines in several countries. Future expansions will be driven by increasing demand in fertiliser and feed markets despite the fact that phosphate rock is used to produce a wide range of products including food and industrial grade phosphates. The world phosphate consumption is forecast to increase by 6 Mt of phosphoric acid between 2012 and 2017, representing an annual growth of 2.5 percent. High inventories of downstream products in India will constrain demand of phosphate rock, which is forecast to grow at a slightly lower pace. Product prices are expected to be under pressure for the coming year, though offset by the weakening rand. Global phosphoric acid demand for all uses is expected to grow at an annual rate of 2 percent to 46.5 Mt in 2017 due to global growth driven by developing and emerging economies. Supply and demand projections show a stable balance in the short term. Global granulation capacity is estimated to rise by 7 Mt of phosphoric acid input between 2012 and 2017.

Foskor has forecast a further decline in production of phosphate rock for the coming year as a result of a number of challenges that the company is experiencing, particularly around issues of primary crushing facilities. The effect of population growth, food shortages and climate change patterns are expected to continue driving the demand for phosphates. Phosphate rock is emerging as an essential tool to address food shortages as ways are sort, to best use phosphate fertilisers to tackle food shortages.

The National Development Plan outlines food security as an important component of South Africa's vision for growth. While food shortage is on the rise within the country, the government is looking at ways to ensure food security. The strong linkages between the mining industry and the agricultural industry can make a significant contribution towards food security. As new systems are introduced, jobs are created to accomplish the ultimate goal of alleviating poverty and unemployment.

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SPECIAL CLAYS

M Muravha

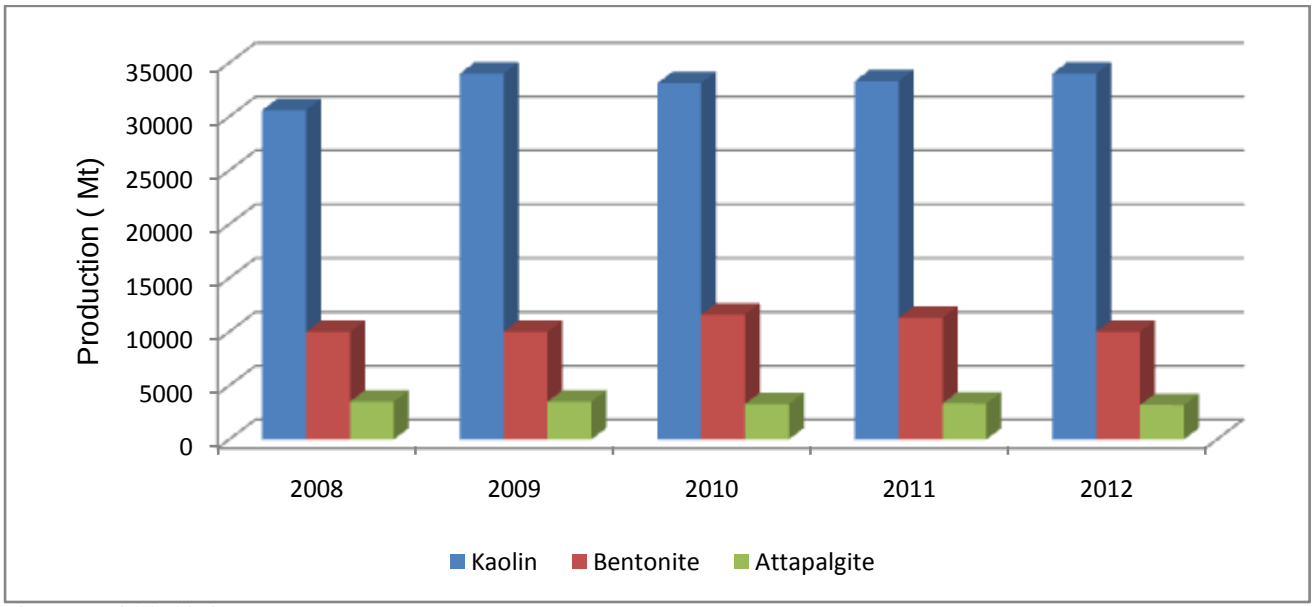
WORLD SUPPLY

Total world kaolin production increased by 0.3 percent from 34.0 Mt in 2011 to 33.9 Mt in 2012. Demand from the paper end market stabilised and did not decrease further in 2012, while construction activities continued to increase. The United States (US) accounted for 17.3 percent of the total world production of kaolin followed by Uzbekistan at 16.1 percent and Germany at 13.2 percent.

Bentonite production decreased by 2.9 percent from 10.3 Mt in 2011 to 10.0 Mt in 2012 as a result of weaker demand from the foundry and construction industries. The US accounted for 46.6 percent of total world bentonite production, followed by Turkey's 9.7 percent, Greece's 8.7 percent and Brazil 5.3 percent. The US continues to claim a much bigger share of the bentonite market as production decreases from the rest of the world.

World attapulgite production decreased marginally from 3.21 Mt in 2011 to 3.2 Mt in 2012. The US remained the major primary producer accounting for 62.1 percent of total world attapulgite production, followed by Spain's 25.4 percent and Mexico's 3.1 percent.

FIGURE 83: WORLD PRODUCTION OF SPECIAL CLAYS, 2012



Source: USGS, 2013

WORLD DEMAND

In the last few years, demand for kaolin decreased due to the world economic recession. While, kaolin markets are recovering, growth is still lower when compared to growth of the 1990s. The markets have moved to a stage where calcium carbonate is the major pigment used in paper throughout the world, displacing kaolin as the main pigment for paper production. Approximately 65 percent of the paper market is using calcium carbonate.

The residential market has been squeezed owing to stricter conditions placed by banks on mortgage applications stemming from the 2008 recession, driving the demand for kaolin used in construction even lower. Output of kaolin in Europe has recovered since 2009, despite capacity closures in the United Kingdom, one of the main centres of production within the region. Production in North America has been declining because of competition with calcium carbonate and imports from Brazil. This has led to industry consolidation. The trend of consolidation of major kaolin producing companies in recent years continued into 2012, with Imery's acquisitioning of Goonvean and KaMin's purchase of CADAM SA from Vale. The

major producing companies operating in the 1980's consolidated to about 12 in the 1990's, and the number has even reduced further to six companies. Imerys is the market leader with KaMin, Thiele, Sibelco, AKW (Quartzwerke) and Basaf being the other participants.

The market of bentonite is mature and grows in relation to population growth. It is a cyclical market that follows the cycles of energy, housing and other indices. Demand for bentonite strengthened throughout 2012 as the search for alternative energy sources intensified. Consumption of bentonite in oilfield applications accounts for about 70-80 percent of the drilling grade bentonite produced and around 20 percent of the total bentonite produced. Many countries have now accepted the hydraulic fracturing (fracking) process, which is used to extract natural oil and gas from beneath the surface. Fracking utilises a mixture of water, silica and sand (or other prop pant variations) and drilling fluids in which bentonite is used. Bentonite is also widely used for iron ore pelletising. The iron ore pelletising end market experienced a knock due to the European sovereign debt crisis resulting in decreased demand for bentonite.

PRICES

The kaolin price for No 1 paper coating grade increased by 7.3 percent by the end of 2012 compared with 2011, while No 2 paper coating grade, ex-works USA also increased by 7.5 percent in 2012 compared with 2011(Table 96). The prices for cat litter grade FOB Kandla and FOB European port remained stable in 2011 and 2012.

US bentonite (ex-works Wyoming) also remained stable except for the American Petroleum Institute (API) grade, bagged, railcars, ex-works Wyoming and Iron Ore Pelletising (IOP) grade, crude, bulk, ex-works Wyoming. The API grade increased from a range of $78-120/s.ton in 2011 to a range of $97-122/s.ton by the end of 2012. The Iron Ore Pelletising (IOP) grade, increased from a range of $55-60/s.ton in 2011 to a range of $62-77s.ton in 2012. The Indian, crushed, dried, loose, in bulk, cat litter grade price remained constant for the period 2010 and 2011.

TABLE 100: WORLD PRICES OF KAOLIN AND BENTONITE, 2011-2012

KAOLIN	**2011**	**2012**
No 1 paper coating grade	$150-195/s.ton	$161-209
No 2 paper coating grade	$100-155/s.ton	$107.50-166.70
BENTONITE	**2011**	**2012**
Cat litter, grade 1-5 mm, bulk, FOB Main European port	€42-60	€42-60
Indian, cat litter grade, crushed, dried, loose, in bulk, FOB Kandla	$34-38/s.ton	$34-38/s.ton
Oil Companies Materials Association (OCMA)/Foundry grade, crude and dried, bulk, FOB Milos	€50-75	€60-80
American Petroleum Institute (API) grade, bagged, railcars, ex-works Wyoming	$78-120/s.ton	$97-122/s.ton
Foundry grade, bagged, railcars, ex-works Wyoming	$90-115/s.ton	$90-130/s.ton
Iron Ore Pelletising (IOP) grade, crude, bulk, ex-works Wyoming	55-60/s.ton	66-72/s.ton

Source: Industrial Minerals

SOUTH AFRICA

South Africa's production of kaolin increased by 35 percent from 15.2 kt in 2011 to 20.4 kt in 2012 due to increased demand from consumers that are producing for exports to other expanding African markets of

paper (Table 97). Local sales mass decreased by 2.4 percent to 21.9 kt but local sales value increased by 17.5 percent to R12.2 million in 2012 compared with the previous year owing to higher unit values. Kaolin imports increased by 30.8 percent to 17.8 kt in 2012 owing to ceramic markets that have stabilized.

TABLE 101: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND IMPORTS OF KAOLIN, 2001-2011

YEAR	PRODUCTION	LOCAL SALES			IMPORTS[#]		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	Kt	R'000	R/t	Kt	R'000	R/t
2001	83.5	71.3	32 219	452	15.7	31 491	2 009
2002	86.7	79.4	37 332	470	17.8	53 254	2 988
2003	86.4	72.9	40 573	556	11.6	24 925	2 156
2004	81.9	67.8	42 880	633	15.9	23 562	1 478
2005	59.4	52.7	30 321	575	9.8	16 641	1 690
2006	51.6	39.1	15 809	404	17.6	31 219	1 774
2007	50.8	39.3	10 232	260	15.8	27 927	1 768
2008	39.2	33.5	9 068	271	10.2	25 775	2 527
2009	31.0	30.1	9 343	311	11.0	31 469	2 861
2010	29.9	28.2	9 960	353	18.1	36 233	2 002
2011	15.2	22.4	10 375	463	13.0	30 533	2 346
2012	20.4	21.9	12 187	586	17.8	46 389	2 601

Source: DMR, Directorate Mineral Economics
Source: # RSA, Commissioner for South African Revenue Services, 2002-2012
Notes: Import figures also include "other kaolinitic clays"

Bentonite production increased by 0.1 percent from 120.4 kt in 2011 to 120.6 kt. Demand from the foundary and the ferrochrome end markets was low, which provided no room for any huge increase throughout the year. Furthermore, local sales volume decreased by 9.6 percent to 159.9 kt in 2012, while local sales value increased by 1.1 percent to R119.6 million (Table 98). Local sales value increased due to increased bentonite prices. Export sales volumes decreased by 87.3 percent from 0.165 kt in 2011 to 0.021kt in 2012, despite the increase in drilling oil activity globally. Currently, there is only one producer in South Africa that exports bentonite in a form of drilling mud combined with clay (attapulgite) in relatively small volumes.

Ecca Holdings will continue to supply bentonite for the Eskom's Medupi project after the completion date was moved to 2014. Bentonite is also currently being used in many other construction projects in South Africa. Some of the bentonite produced is used as a binder at Xstrata Process Support (Glencore). Producers continue to tackle high transportation cost challenges every year. However, as the years go by producers are adjusting to fuel prices that seem to be perpetually increasing. Consequently, bentonite prices are also affected, creating a continued challenge for the supplier since consumers cut on demand if the prices are too high. Some producers are finally giving in to the pressure of high operational cost, leading to a number of closures of bentonite consumers.

TABLE 102: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF BENTONITE, 2002-2012

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	Kt	R'000	R/t	Kt	R'000	R/t
2002	101.1	67.8	32 916	485	10.0	4 065	408
2003	145.1	74.4	31 210	420	11.0	3 728	338
2004	55.9	75.5	35 662	473	10.5	5 956	566
2005	139.8	75.9	35 738	471	6.9	4 778	688
2006	32.9	75.1	39 005	520	4.0	2 887	715
2007	45.8	87.3	49 749	570	3.2	2 434	761
2008	44.1	96.1	64 670	673	3.4	4 399	1 294
2009	40.3	59.8	37 585	628	1.8	2 529	1 393
2010	82.3	124.6	82 594	659	1.3	1 667	1 293
2011	120.4	177.0	118 344	669	0.165	255	1 551
2012	120.6	159.9	119 629	748	0.021	29	1 412

Source: DMR, Directorate Mineral Economics

South Africa's production of attapulgite increased by 9.7 percent to 15.8 kt in 2012 from 14.4 kt in 2011 and local sales volume increased by 9.8 percent to 15.9 kt in 2012 as a result of increased demand for cat litter (Table 99). Local sales value increased by 9.1 percent to R7.2 million in 2012 compared with 2012. About 90 percent of attapulgite is used for cat litter and the rest for environmental purposes (filtration of various products – acid, water, oil).

Attapulgite, like most industrial minerals, is faced with the challenge of being a high bulk-low value product. As a result, distance and transport costs are critical issues. Producers have tried to minimize the effects, some successfully doing so by adding value to attapulgite. Fine attapulgite could be used to substitute bentonite for binding in the Ontokumpo ferrochrome smelting process. The attapulgite industry has never been successful with overseas exports. However, a niche market that seems to be growing steadily is that of drilling mud.

TABLE 103: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF ATTAPULGITE, 2001-2012

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	Kt	R'000	R/t	T	R'000	R/t
2001	9.2	5.8	3 224	549	20	11	574
2002	13.3	11.0	5 883	535	0	-	-
2003	14.6	14.5	6 750	466	0	-	-
2004	20.4	20.2	8 962	443	0	-	-
2005	33.7	29.8	10 785	362	0	-	-
2006	49.2	49.0	13 201	270	0	-	-
2007	68.4	68.4	17 989	263	0	-	-
2008	69.9	69.9	20 783	297	0	-	-
2009	54.4	54.2	16 015	295	0	-	-
2010	57.6	57.3	17 585	290	0	-	-
2011	14.4	14.4	6 572	455	0	-	-
2012	15.8	15.9	7 171	452	0	-	-

Source: DMR, Directorate Mineral Economics

OUTLOOK

The kaolin market is projected to continue growing as there are a number of global projects online for the paper industry. The key factor that is leading to this growth is the abundant sources of good quality kaolin in many parts of the world. However, demand is expected to increase as GDP increases. According to Industrial Minerals Magazine, worldwide consumption of paper and board is set to grow by approximately 2-2.5 percent for the next two decades. Prices are forecast to increase slightly but not to largely affect demand. The kaolin market has struggled with the threat of substitution and the dramatic consolidation of the industry, but lately kaolin is slowly reclaiming its position as the preferred material in the paper and pulp industry. South Africa's kaolin output is expected to continue rising as the demand from construction industry strengthens, on the back of government's infrastructural programmes that are on the pipeline.

Global production of bentonite is expected to increase by approximately 2.5 percent per annum to 17 Mt by 2016. There is a high demand for the use of the mineral for large exploration programmes as a drilling fluid in different countries. Many producers are ploughing ahead with bentonite production for the main end markets, while others are looking to expand production for new markets which are yet to be explored. Prices increased by more than 8 percent in 2012 and expected to increase further in the coming years. As the world completely recovers from the global recession, the bentonite market will also continue to swell. South Africa's production of bentonite is forecast to continue increasing as Eskom's Medupi project continues. South Africa has approved the exploration for shale gas and soil using hydraulic fracturing, signalling potential growth of the bentonite industry as bentonite can be used as a drilling fluid. The continued influx of imports is expected to put some downward pressure on local prices, as competition for customer's increases.

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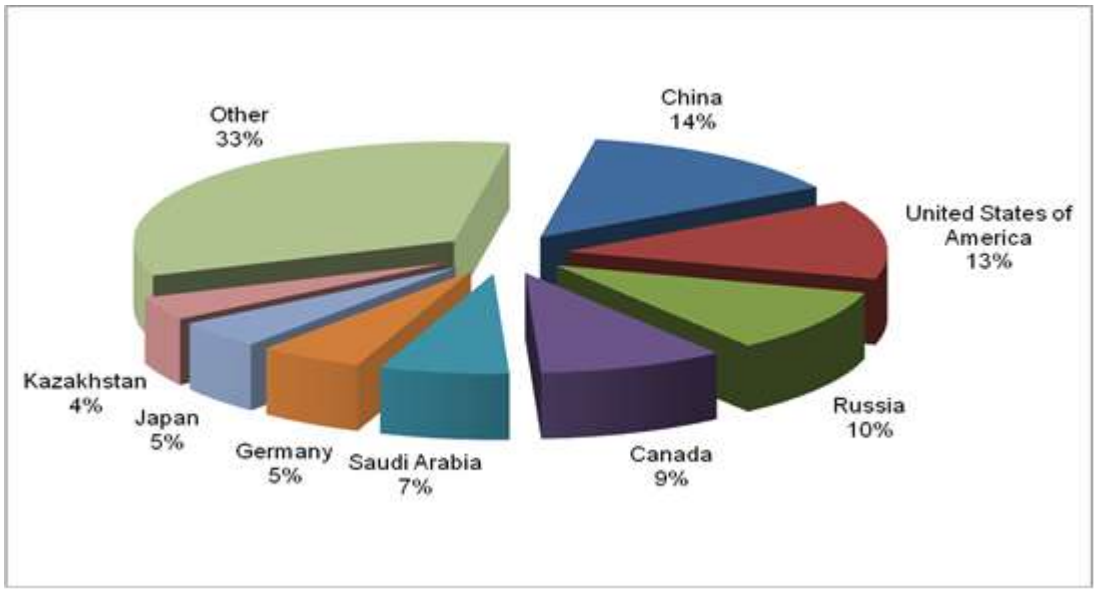
SULPHUR

M Modiselle

WORLD SUPPLY

World production of sulphur in all forms (SAF) decreased by 500 kt to 70 Mt in 2012 compared with 70.5 Mt in 2011. In the fertiliser industry, sulphur is used to process the phosphate rock into phosphate fertilisers. Lower phosphate rock consumption in the fertiliser industry in 2012 also contributed towards a lower sulphur demand. The slowdown has been attributed to uncertain economic conditions, exchange rate variation and unfavourable weather that have affected crop farming. China was the largest producer accounting for 14 percent, followed by the United States of America (USA) at 13 percent, Russia at 10 percent (Fig. 84). Global elemental sulphur production was 5.5 Mt in 2012, a 0.12 percent increase compared with 5.2 Mt in 2011.

FIGURE 84: WORLD PRODUCTION OF SULPHUR BY COUNTRY, 2012



Source: USGS, 2013

WORLD DEMAND

The international sulphur market in 2012 was weak despite the overall global deficit in supply, with pressure from the softer phosphate fertilizer market as well as macroeconomic uncertainty. Sulphur demand came under pressure due to a weaker fertilizer market as well as softer macroeconomic factors, which also put pressure on the industrial demand sectors. Weaker demand was reflected by prices that remained below 2011 levels. Additional sulphur demand from the nickel leaching industry saw mixed developments as the Goro project in New Caledonia which halted its operations. Global tightness of sulphur has been counterbalanced by a slowdown in demand. Major producers across the globe are under pressure to slash prices further. Sulphuric acid supply remains long in the Far East and America as a result of flat demand.

WORLD PRICES

Sulphur price follow international trends and the collapse of price springs from the demand side and is led by China. Chinese fertiliser producers were faced with declining Di-ammonium phosphate (DAP) export prices, further exacerbated by the near-catastrophic weakening of the Indian rupee against the dollar. The Indian rupee has been under pressure relative to the dollar, suggesting that imports into India, including phosphate fertilisers and raw material sulphur, were too expensive for buyers. This brought Indian DAP buying to a standstill and has raised concerns about the prospects for DAP exports out of China. Sulphur price has fallen at the back of a decreased demand for agrimarkets and weak economic markets.

SOUTH AFRICA

In South Africa, elemental sulphur is recovered from pyrite, sulphide smelter gasses, coal and crude oil. Most elemental sulphur is converted to sulphuric acid. In 2012, Sulphur was recovered as a by-product from one oil refinery/ synthetic fuels producer, seventeen platinum mines, two zinc mines and one copper mine.

South Africa's production of SAF decreased by 24 percent to 257 kt in 2012. SAF includes elemental sulphur and sulphuric acid. Sulphur production is a function of plant availability and crude oils processed. Sulphur recovery from synthetic fuels registered a 5.5 percent decrease to 154 kt in 2012, owing to two months full shutdown experienced at Natref refinery. Sulphuric acid production from the copper mine, Palabora Mining Company (PMC) decreased by 29.5 percent to 68.8 kt in 2012 owing to decreased anode copper production. Sulphuric acid production from zinc mines plummeted by 99.5 percent to 0.2 kt in 2012 owing to the closure of Exxaro Base Metals Zincor mine in the later part of 2011. Whilst, sulphuric acid production from PGM mines decreased by 7.9 percent to 34.1 kt in 2012, as a result of labour unrests in the sector.

TABLE 104: SOUTH AFRICA'S PRODUCTION OF SULPHUR IN ALL FORMS, 2010-2011

SOURCE	2011		2012	
	Mass		Mass	
	t	%	t	%
Oil refineries / Synthetic fuels	162 884	48	153 905	60
Gold mines	0	0	0	0
Copper mines	97 491	29	68 773	27
Zinc mines	40 522	12	196	0
PGM mines	37 075	11	34 145	13
	337 972	100	257 019	100

Source: DMR, Directorate Mineral Economics

Local sales mass of SAF decreased by 30.9 percent to 150 kt in 2012, while local sales value increased by 5.8 percent from R116.7 million in 2011 to R123.4 million in 2012. Export sales mass of SAF increased by 3.3 percent from 120 kt in 2011 to 125 kt in 2012 (Table 101). Sales value from exports rose by 20.9 percent from R199.6 million in 2011 to R241 million in 2012.

TABLE 105: SOUTH AFRICA'S PRODUCTION AND SALES OF SULPHUR IN ALL FORMS, 2002-2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
Kt	Kt	Kt	R'000	R/t	Kt	R'000	R/t
2002	532	324	168 233	520	43	22 993	533
2003	614	480	237 783	495	32	21 799	671
2004	633	390	201 706	517	69	47 677	692
2005	776	481	231 118	481	103	65 592	638
2006	643	351	181 450	517	124	77 919	630
2007	642	358	212 258	593	125	96 571	770
2008	571	315	548 705	1 740	110	351 860	3 190
2009	536	332	293 105	883	62	27 193	436
2010	375	256	168 911	660	96	48 795	511
2011	338	217	116 645	538	121	199 581	1 658
2012	257	150	123 405	821	125	241 351	1 924

Source: DMR, Directorate Mineral Economics

South Africa's imports of crude sulphur decreased by 33.8 percent to 600 kt in 2012 compared with 906 kt in 2011 (Table 102). South Africa imports crude sulphur mainly from Canada, United Arab Emirates, Saudi Arabia, Kuwait and Iran.

TABLE 106: SOUTH AFRICA'S IMPORTS OF SULPHUR, 2007 – 2012

YEAR	CRUDE/UNREFINED			SUBLIMED & OTHER+			TOTAL		
	Mass	Value (FOB)		Mass	Value (FOB)		Mass	Value (FOB)	
	Kt	R'000	R/t	Kt	R'000	R/t	Kt	R'000	R/t
2007	599	365 921	610	78	87 705	1 124	677	453 626	670
2008	791	3 436 560	4 344	173	754 037	4 358	964	4 190 597	4 347
2009	525	354 611	675	46	10 141	220	571	364 752	639
2010	593	377 801	637	63	51 396	816	656	429 197	654
2011	715	1 073 705	1 502	191	336 572	1 762	906	1 410 277	1 557
2012	506	843 456	1 667	94	124 605	1 326	600	968 061	1 613

Source: RSA, Commissioner for South African Revenue Service, 2007 – 2011
Notes: + All forms of sulphur other than those specifically referred to

OUTLOOK

World production of elemental sulphur is projected to grow by 34 percent over 2012, to reach 72 Mt *S* in 2017. Significant increases in sulphur output are forecasted to grow in North America, Middle East, Commonwealth of Independent States (CIS) and China by 2017. Global consumption of elemental sulphur is projected to grow at an annual rate of 2.6 percent over 2012, to 64.2 Mt *S* in 2017. Several refineries have been modified to enable them to run higher volumes of heavy crude refining because of attractive margins being achieved for refined products, which in turn would increase sulphur production. This will largely depend on successful ramping up of new capacity and its utilisation as well as global demand.

Sulphur is primarily used in the production of sulphuric acid the main use of which is in the manufacture fertilisers. In 2013, the sulphur market is expected to be under the shadow of uncertain demand in industrial and fertilizer sectors, comfortable stocks across China, Brazil, North Africa and India, and a shaky economic outlook. The recent increased awareness of sulphur-based fertilisers is driving the growth area to improve fertiliser efficiency, reflecting the potential market growth of sulphur fertilisers in the future.

According to The Sulphur Institute (TSI), the rate of global population and calorie consumption growth will cause food demand to double by 2050, meaning an increase in fertiliser application will be needed to achieve food security. Increasing populations in developing countries will be key to fertiliser demand and growing food demand of expanding populations, market share of sulphur fertilisers definitely has potential to grow in the future. Increasing use of sulphur fertilisers will also benefit South African farmers, agricultural community, human health, nutrition and environment. Sulphur demand for phosphates will recover from 2013 and nickel leaching demand is expected to increase from 0.6 Mt to 3.0 Mt by 2017.

Pricing is expected to remain volatile, fluctuating in a range similar to 2012 levels. Some buyers are holding adequate inventories and are in no hurry to enter into negotiations. Looking further into 2013, China issued its new tax export policy for 2013 which is expected to stimulate the Chinese DAP market. The more relaxed policy could potentially see more phosphates exported from China next year, which would put pressure on prices globally and may lead to increased competition in key markets for DAP/Mono-ammonium phosphate (MAP). This could have a detrimental impact on sulphur. The Chinese sulphur market is currently fatigued and weak, owing to the excess in the phosphate fertiliser industry; this is according to Industrial Minerals.

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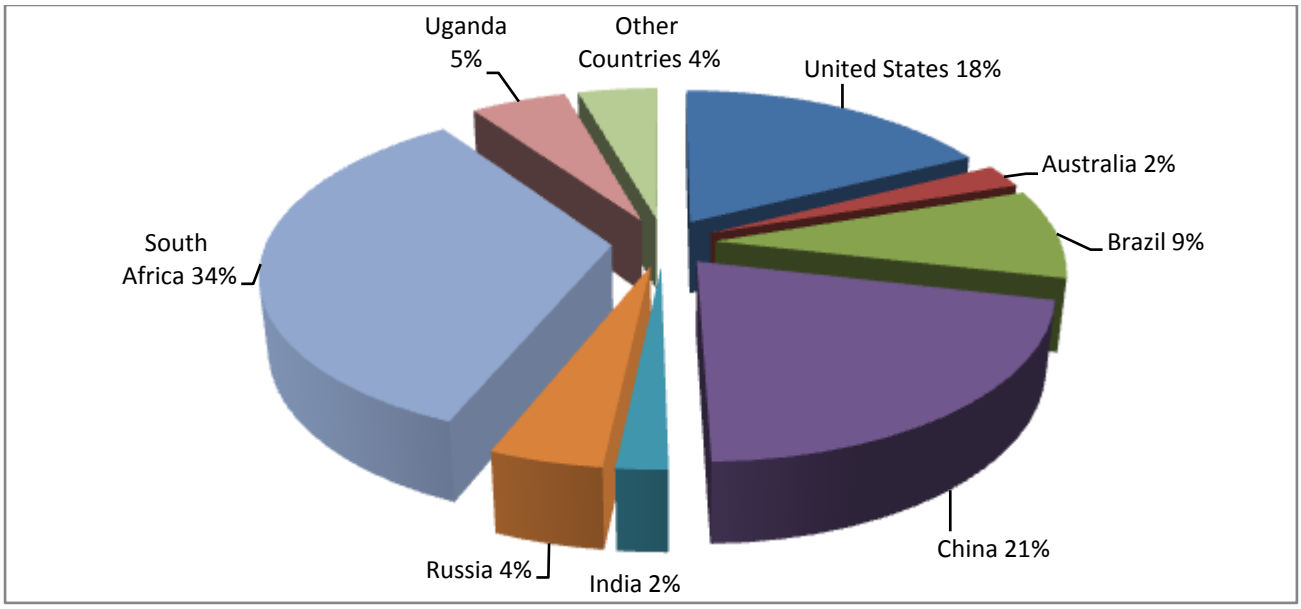
VERMICULITE

M Muravha

WORLD SUPPLY

World vermiculite production is estimated to have increased by 5.2 percent to 570 kt in 2012 compared with 542 kt in 2011 (Fig.85). The increase in world output is attributed to continued expansion of existing companies as they ramp up their production capacity. Dupre Minerals continued development of the East African Namekara vermiculite deposit in Uganda. Gulf Industrials in Uganda, increased its production by 59 percent to 11 kt in 2012.

FIGURE 85: WORLD PRODUCTION OF VERMICULITE BY COUNTRY, 2012



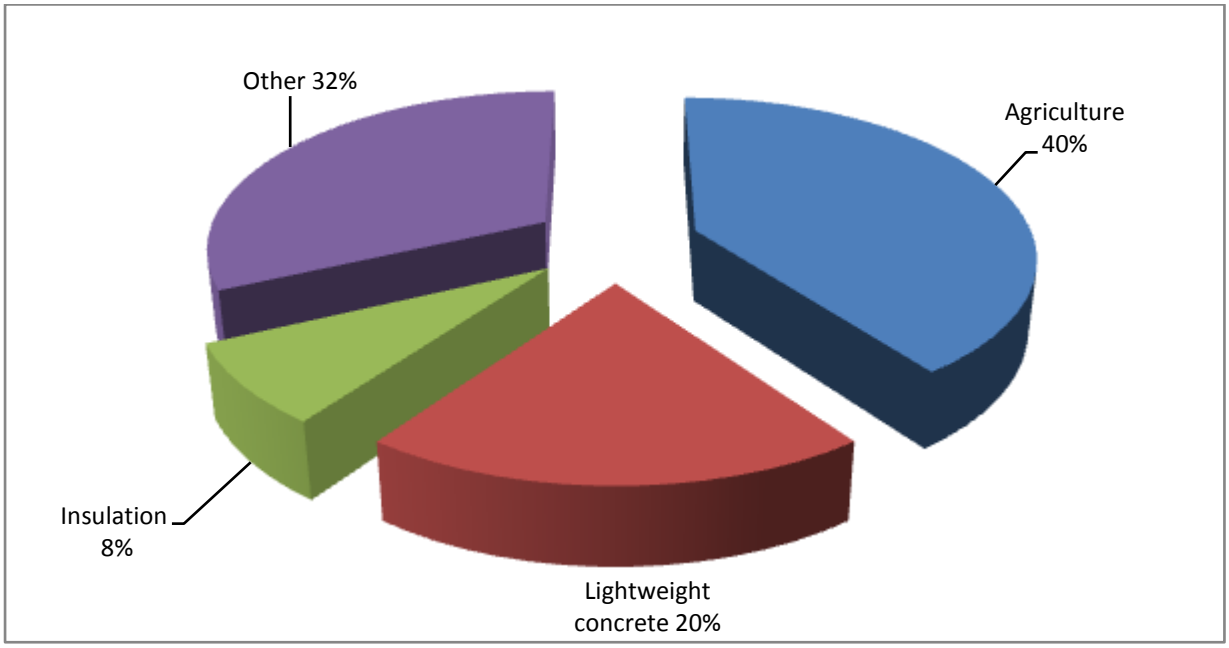
Source: USGS, 2013

In 2012, Palabora Mining Company (PMC) remained South Africa's sole producer of vermiculite and the world's largest producer contributing about 34 percent to total production, followed by China's Xinjuiang Weili Xinlong Vermiculite Company at 21 percent and Virginia Vermiculite in USA at 17.5 percent. Other significant producers were Gulf Industrials in Uganda and Basil's Minerios Ltd in Brazil.

DEMAND

Vermiculite faces the challenge of many other substitutes that are denser but less costly, which have become better alternatives in the market such as expanded perlite, shale, clay and slag. Vermiculite consumption is mainly driven by the construction industry (light concrete aggregates and plaster) and agricultural sector (horticulture).

FIGURE 86: VERMICULITE CONSUMPTION BY SECTOR, 2012



Source: USGS Commodity Summaries 2013

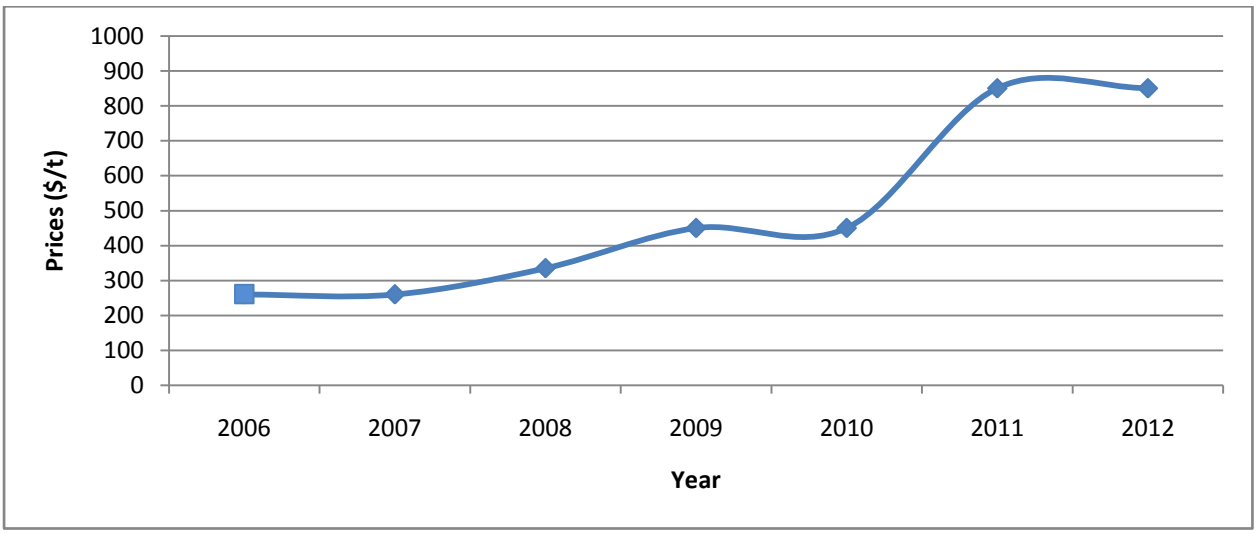
TRADE

Demand for vermiculite was low globally due to the European debt crisis. The USA was flooded by imports from South Africa, China and Brazil despite the tight supplies of the preferred coarser grades. South Africa's export volumes decreased by 40.6 percent to 96.5 kt in 2012, with Europe and North America accounting for about 73 percent of the country's exports.

PRICES

Prices that had risen significantly in mid-2011 began to level off in 2012 as suppliers reduced prices in a bid to hold on to market share. Tight supply conditions have been the driver of the rocketing vermiculite prices in the past years, however, customers have adjusted to supply finer grains. Vermiculite prices depend largely on size, with coarser grades commanding much higher prices. The price of unprocessed vermiculite was mostly constant at $/t 400-850/t FOB Antwerp throughout 2012 (Fig 87.).

FIGURE 87: VERMICULITE PRICES, 2006-2012



Source: Various editions of Industrial Minerals Magazine

SOUTH AFRICA

South Africa's production of vermiculite decreased by 22.1 percent to 132.8 kt in 2012 (Table 103), as a result of reduced demand in Europe. Palabora's mix of vermiculite continued shifting towards superfine grades due to lower recovery rates from the vermiculite ore body.

Local sales tonnages decreased by 22.4 percent to 7.5 kt in 2012 compared with 9.6 kt in 2011, while local sales values decreased by 5.3 percent to R15.7 million in the same period, due to reduced demand. Export volumes decreased by 40.6 percent to 96.5 kt in 2012, while export sales values decreased by 15.0 percent to R279.7 million, owing to lower prices and increased supply distribution on finer grades which are much cheaper.

TABLE 107: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF VERMICULITE, 2003 – 2012

YEAR	PRODUCTION	LOCAL SALES			EXPORTS SALES		
	Mass	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	182.8	6.5	5 114	784	163.3	144 759	886
2004	196.9	7.3	6 229	855	178.8	150 944	844
2005	209.9	6.9	6 368	923	163.7	188 402	1 151
2006	197.8	7.6	7 087	927	166.7	170 029	1 056
2007	198.5	9.1	8 896	981	173.2	195 577	1 129
2008	199.8	10.7	11 002	1 026	204.5	273 239	1 336
2009	193.3	9.5	10 236	1 073	164.6	238 295	1 448
2010	199.3	10.4	12 927	1 241	166.5	216 305	1 299
2011	167.5	9.6	16 576	1 722	162.4	328 921	2 215
2012	132.8	7.5	15 692	2 102	96.5	279 696	2 898

Source: DMR, Directorate Mineral Economics

In South Africa, vermiculite is used in refractory bricks (15%), fire proofing (18%), agriculture (20%), metallurgical (17%) and light concrete aggregates (12%). Smaller niche markets (18%) include: animal feeds, brake linings, sanitation and packaging. Other opportunities exist in the manufacture of insulating and sound proofing material.

OUTLOOK

World supply of vermiculite is expected to continue increasing as producers around the world are embarking on expansion plans to ramp up capacity. Global demand for larger grades continues to be strong although supply distribution is increasing on finer grades, as consumers try to contain costs.

The European debt crisis has led to consumers cutting orders and vermiculite prices are expected to remain constant as producers focus on keeping their current customers. South Africa's PMC has laid out significant expansion plans, which could see prices fall as soon as additional output comes online. However, transportation costs, especially higher fuel prices might mitigate against a significant decrease in prices.

Despite plans to raise current production capacity, South Africa's production is forecast to decrease further as European purchasers continue to cut back orders. However, this will be offset by government's continued infrastructural development programmes which are expected to stimulate the construction industry and strengthen vermiculite demand in the medium to long term. The government's Strategic Infrastructural Projects (SIPs) will create the much needed employment opportunities and further alleviate poverty. Due to the nature of its wide applications in the construction industry, vermiculite will be required in large amounts for such projects. Furthermore, SIP 11 is aimed at improving investment in agricultural

and rural infrastructure that supports expansion of production and employment. Vermiculite demand in the agricultural sector is expected to increase following establishments of these projects and the plans to secure enough food locally.

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STATISTICS FOR OTHER INDUSTRIAL MINERALS

R Motsie and M.E Malematja

NOTE: The following applies to all tables.
** Withheld for reasons of company confidentiality
* Nil

1. NATURAL ABRASIVES

TABLE 108: SOUTH AFRICA'S IMPORTS OF NATURAL ABRASIVES, 2003–2012

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2003	1 750	8 010	4 577
2004	1 554	5 573	3 586
2005	1 706	3 610	2 112
2006	1 311	4 888	3 728
2007	1 282	6 095	4 654
2008	1 183	5 198	4 394
2009	1 208	7 419	6 141
2010	1 919	6 837	3 563
2011	2 095	6 393	3 051
2012	2 251	7 152	3 177

Source: RSA, Commissioner for South African Revenue Service, 2003–2012

2. BARYTES

TABLE 109: SOUTH AFRICA'S PRODUCTION AND LOCAL SALES OF BARYTES, 2003–2012

YEAR	PRODUCTION	LOCAL SALES		
	Mass	Mass	Value (FOR)	
	t	t	R'000	R/t
2003		355	149	420
2004	*	275	116	795
2005	*	146	61	418
2006	*	126	52	413
2007	*	535	225	421
2008	*	432	181	419
2009	*	284	119	419
2010	*	319	134	420
2011	*	189	79	420
2012	*	*	*	*

Source: DMR, Directorate Mineral Economics

TABLE 110: SOUTH AFRICA'S IMPORTS OF BARYTES, 2002–2013

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2003	3 245	4 352	1 341
2004	3 056	7 008	2 293
2005	2 013	7 748	3 849
2006	2 736	7 908	2 890
2007	3 114	14 921	4 792
2008	3 568	14 106	3 953
2009	2 823	13 805	4 890
2010	4 105	17 200	4 190
2011	3 146	11 747	3 740
2012	2 962	11 469	3 872

Source: RSA, Commissioner for South African Revenue Service, 2003–2012

3. DIATOMACEOUS EARTH (KIESELGUHR)

TABLE 111: SOUTH AFRICA'S IMPORTS OF DIATOMACEOUS EARTH, 2003–2012

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2003	5 002	14 975	2 994
2004	4 594	10 670	2 232
2005	5 318	12 944	2 434
2006	5 032	14 321	2 846
2007	4 828	18 930	3 921
2008	5 539	23 205	4 189
2009	3 930	16 075	4 090
2010	4 580	17 496	3 820
2011	5 261	19 572	3 720
2012	5 217	19 970	3 828

Source: RSA, Commissioner for South African Revenue Service, 2003–2012
Note: Production statistics are not published because there is only one producer

4. FELDSPAR

TABLE 112: WORLD PRODUCTION OF FELDSPAR, 2012

COUNTRY	Mass		
	kt	%	Rank
China	2100	10	3
France	650	3	4
Iran	500	2	11
Italy	4 700	24	1
Japan	600	3	7
Korea	630	3	5
Poland	550	2	10
Saudi Arabia	500	3	11
Spain	580	3	8
Thailand	620	3	6
Turkey	5000	24	2
United States	690	3	9
Other	3 435	17	
Total	20 700		

Source: USGS Mineral Commodity Summaries, 2013: www.usgs.gov
Note: # Includes weathered granite, feldspar

TABLE 113: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF FELDSPAR, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES+		
		Mass	Value (FOR)		Mass	Value (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	57.7	57.4	29 943	521	*	*	*
2004	53.7	66.4	37 477	565	*	*	*
2005	57.5	75.2	44 256	588	*	*	*
2006	75.4	85.2	54 649	641	0.2	218	903
2007	90.2	106.8	62 080	581	*	*	*
2008	105.8	70.1	49 260	702	*	*	*
2009	101.4	72.9	55 248	758	*	*	*
2010	94.3	69.9	56 204	804	*	*	*
2011	101.6	98.9	61 031	617	*	*	*
2012	94.5	92.9	45 899	494	*	*	*

Source: DMR, Directorate Mineral Economics
Note: + Exports are largely of the potassium type and consist almost entirely of ground material

5. GRAPHITE

TABLE 114: SOUTH AFRICA'S IMPORTS OF NATURAL GRAPHITE, 2003–2013

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2003	1 447	4 926	3 404
2004	1 427	4 879	3 419
2005	1 270	3 909	3 078
2006	1 220	5 193	4 257
2007	1 008	8 207	8 142
2008	1 003	20 101	20 041
2009	921	8 657	9 400
2010	1 108	12 891	11 634
2011	1 099	54 293	49 390
2012	768	10 372	13 505

Source: RSA, Commissioner for South African Revenue Service, 2003–2012

6. GYPSUM

TABLE 115: WORLD PRODUCTION OF GYPSUM, 2012

COUNTRY	Mass		
	kt	%	Rank
Australia	3 500	2	9
Canada	2 300	2	10
China	47 000	32	1
France	2 300	2	11
Iran	13 000	9	2
Italy	4 100	2	8
Japan	5 700	4	6
Mexico	5 800	4	7
Spain	11 500	8	3
Thailand	8 500	6	5
USA	9 400	6	4
Other	34 100	23	
TOTAL	148 000	100	

Source: USGS Mineral Commodity Summaries, 2013: www.usgs.gov

TABLE 116: SOUTH AFRICA'S PRODUCTION, LOCAL SALES, AND CONSUMPTION OF NATURAL GYPSUM, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			CONSUMPTION FOR CEMENT[+#]
		Mass	Value (FOR)		
	kt	kt	R'000	R/t	kt
2003	394	427	20 832	49	410
2004	524	459	18 783	41	452
2005	547	503	18 690	37	500
2006	557	370	30 605	83	550
2007	627	388	33 517	86	543
2008	571	393	33 666	86	519
2009	598	397	36 616	92	***
2010	513	307	32 228	105	***
2011	476	323	36 831	114	***
2012	558	358	56 876	159	***

Sources: Cement and Concrete Institute
DMR, Directorate Mineral Economics
Notes: [+] Based on cement sales and assuming 38,5t gypsum/1 000t cement.
[#] Includes synthetic gypsum.
**** Not available*

TABLE 117: SOUTH AFRICA'S IMPORTS OF GYPSUM AND GYPSUM PLASTERS, 2003–2012

YEAR	GYPSUM			GYPSUM PLASTERS		
	Mass	Value (FOB)		Mass	Value (FOB)	
	t	R'000	R/t	t	R'000	R/t
2003	1 931	2 732	1 415	5 256	6 560	1 248
2004	2 624	3 039	1 158	4 761	6 365	1 337
2005	1 971	2 218	1 125	4 268	5 704	1 337
2006	2 408	3 703	1 537	5 313	8 827	1 661
2007	3 007	4 555	1 515	17 205	15 004	872
2008	1 939	3 343	1 724	11 290	14 303	1 267
2009	3 427	8 379	2 445	3 790	8 200	2 164
2010	24 506	7 884	321	6 386	10 903	1 707
2011	2 969	4 816	1 622	6 181	10 926	1 678
2012	10 957	10 015	9 141	7 407	12 775	1 725

Source: RSA, Commissioner for South African Revenue Service, 2003-2012

7. MAGNESITE

TABLE 118: SOUTH AFRICA'S PRODUCTION AND LOCAL SALES OF MAGNESITE AND DERIVED PRODUCTS, 2003–2012

YEAR	PRODUCTION	LOCAL SALES		
		Mass	Value (FOR)	
	kt	Kt	R'000	R/t
2003#	86.1	131.3	33 165	253
2004	65.9	122.9	25 513	208
2005	54.8	103.4	31 327	303
2006	73.3	110.8	35 104	317
2007	80.7	117.4	42 323	360
2008	83.9	111.1	51 864	467
2009	47.6	72.3	43 234	598
2010	27.7	73.6	63 982	869
2011	**	**	**	**
2012	**	**	**	**

Source: DMR, Directorate Mineral Economics
Note: # Exports amounting to 4 798 tons valued at R30 044 868 were recorded

TABLE 119: SOUTH AFRICA'S IMPORTS OF MAGNESITE AND MAGNESIA, 2003–2012

YEAR	MAGNESITE			MAGNESIA		
	Mass	Value (FOB)		Mass	Value (FOB)	
	kt	R'000	R /t	kt	R'000	R/t
2003	15.3	17 030	1 116	40.0	64 898	1 624
2004	11.6	15 007	1 202	42.1	62 299	1 480
2005	13.4	24 599	1 840	38.6	58 729	1 521
2006	11.2	15 444	1 379	36.2	61 115	1 688
2007	24.9	51 790	2 080	48.0	91 115	1 898
2008	15.3	39 509	2 582	36.2	136 071	3 759
2009	25.5	10 850	4 254	41.8	139 175	3 328
2010	12.3	10 389	844.6	65.7	205 594	3 129
2011	10.4	14 709	1 410	96.2	324 992	3 376
2012	11.3	22 555	1 996	50.6	185 019	3 655

Source: RSA, Commissioner for South African Revenue Service, 2003-2013

8. MICA

TABLE 120: WORLD PRODUCTION OF MICA, 2012

COUNTRY	Mass		
	kt	%	Rank
Canada	15	1	7
China	750	67	1
Finland	70	6	3
France	20	2	6
Korea	28	3	5
Russia	100	9	2
United States	64	6	4
Other	71	6	
Total	1090	100	

Source: USGS Mineral Commodity Summaries, 2013: www.usgs.gov

TABLE 121: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF SCRAP AND FLAKE MICA, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
	t	t	R'000	R/t	t	R'000	R/t
2003	1 003	470	**	**	470	**	**
2004	285	55	**	**	766	**	**
2005	922	*	*	*	856	**	**
2006	828	254	1 136.7	4 480	327	2 070.0	6 331
2006	828	254	1 136.7	4 480	327	2 070.0	6 331
2007	437	201	870 727	4 329	261	1 679.8	6 428
2008	426	179	**	**	232	**	**
2009	299	245	**	**	106	**	**
2010	904	794	**	**	25	**	**
2011	633	431	**	**	174	**	**
2012	400	185	**	**	195	**	**

Source: DMR, Directorate Mineral Economics

TABLE 122: SOUTH AFRICA'S IMPORTS OF MICA, 2003–2012

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2003	375	1 021.3	2 720
2004	495	846.6	1 709
2005	581	1 073.2	1 847
2006	901	1 365.0	1 515
2007	865	1 667.4	1 928
2008	296	1 103.1	3 727
2009	358	933.8	2 608
2010	483	1 152	2 385
2011	507	1 353	2 668
2012	425	1 353	3 184

Source: RSA, Commissioner for South African Revenue Service, 2003–2012

9. MINERAL PIGMENTS

TABLE 123: SOUTH AFRICA'S PRODUCTION AND SALES OF MINERAL PIGMENTS, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value		Mass	Value	
	t	t	R'000	R/t	t	R'000	R/t
2003	764	1 080	678	628	*	*	*
2004	512	1 027	769	749	20	44	2 181
2005	510	801	554	692	226	472	2 091
2006	590	811	751	927	*	*	*
2007	232	737	769	1 043	*	*	*
2008	39	288	94	327	*	*	*
2009	183	119	40	339	*	*	*
2010	244	66	22	340	*	*	*
2011	226	19	7.6	400	*	*	*
2012	*	*	*	*	*	*	*

Source: DMR, Directorate Mineral Economics

10. POTASH

TABLE 124: WORLD POTASH RESERVES AND PRODUCTION, 2012

COUNTRY	RESERVES			PRODUCTION		
	Mt K_2O	%	Rank	kt K_2O	%	Rank
Belarus	750000	8	3	5 650	16	3
Brazil	300000	3	4	460	1	9
Canada	4400000	46	1	9 000	26	1
Chile	150000	1.6	7	900	3	8
China	210000	2	4	3900	11	4
Germany	140000	1.5	5	3000	9	5
Israel	40000	0.4	8	1900	6	6
Jordan	40000	0.4	8	1400	4	7
Russia	3300000	35	2	6500	19	2
Spain	20000	0.2	11	425	1	11
UK	22000	0.2	10	430	1	10
USA	130000	1	6	900	3	8
Other	50000	0.5		-		
Total	9 500 000	100		34 000	100	

Source: USGS Mineral Commodity Summaries, 2013: www.usgs.gov

TABLE 125: SOUTH AFRICA'S IMPORTS OF POTASH, 2003–2012

YEAR	POTASSIUM CHLORIDE		POTASSIUM SULPHATE		POTASSIUM NITRATE		TOTAL	
	kt	R'000	kt	R'000	kt	R'000	kt	R'000
2003	245.8	197 952	31.2	47 621	35.2	80 245	312.2	325 818
2004	276.8	253 155	22.6	30 776	40.0	99 972	339.4	383 903
2005	198.3	241 859	39.0	58 400	30.1	85 496	267.4	385 755
2006	260.4	381 811	40.2	79 892	20.6	79 737	321.2	541 440
2007	255.4	409 632	38.8	93 446	26.0	79 083	320.2	582 181
2008	271.4	1 546 452	46.1	330 639	26.2	281 162	343.7	2 158 253
2009	139.6	618 360	24.0	129 297	14.8	101 451	178.4	849 108
2010	267.4	697 166	46.2	159 251	23.6	106 461	337.2	962 878
2011	265.1	867 674	52.6	219 149	27.8	170 730	345.5	1 257 553
2012	249.4	978 958	60.7	305 573	43.0	266 741	353.1	1 551 272

Source: RSA, Commissioner for South African Revenue Service, 2003–2012
Note: Up to 10 percent of the imports were probably for non-fertiliser uses

11. PYROPHYLLITE

TABLE 126: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF PYROPHYLLITE, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
	t	t	R'000	R/t	t	R'000	R/t
2003	**	**	24 541	**	**	8 876	**
2004	**	**	34 824	**	11 683	1 266	**
2005	**	**	34 798	**	**	6 038	**
2006	**	**	34 576	**	**	52 879	**
2007	**	**	39 962	**	**	7 483	**
2008	**	**	42 230	**	**	8 438	**
2009	**	**	38 449	**	**	9 795	**
2010	**	**	49 566	**	**	16 762	**
2011	**	**	31 277	**	**	201 423	**
2012	**	**	7 511	**	**	4 585	**

Source: DMR, Directorate Mineral Economics

12. SALT

TABLE 127: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF SALT, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2003	441	467	84 113	180	1,2	140	114
2004	332	349	65 730	188	<1	70	168
2005	399	436	79 306	182	*	*	*
2006	405	425	89 583	211	*	*	*
2007	411	450	101 951	227	*	*	*
2008	430	437	123 537	282	*	*	*
2009	408	438	104 309	321	*	*	*
2010	394	423	126 306	298	*	*	*
2011	380	440	139 829	318	*	*	*
2012	399	480	155 293	324	*	*	*

Source: DMR, Directorate Mineral Economics

13. SILICA

TABLE 128: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF SILICA, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
	kt	kt	R'000	R/t	t	R'000	R/t
2003	2 311	2 070	165 096	80	884	1 199	1 356
2004	2 249	1 996	187 474	94	649	1 007	1 551
2005	2 671	2 290	189 469	83	652	1 017	1 560
2006	3 231	2 884	236 296	82	424	896	2 113
2007	3 352	2 726	280 191	103	806	1 541	1 913
2008	3 342	3 059	351 474	115	959	1 486	1 550
2009	2 306	2 431	330 404	136	1 222	1 652	1 352
2010	2 863	3 026	470 618	155	1 042	1 632	1 567
2011	2 688	3 008	487 779	162	3 843	5 127	1 334
2012	2 151	2 356	543 599	205	18 882	334 899	1 7 794

Source: DMR, Directorate Mineral Economics

14. TALC

TABLE 129: SOUTH AFRICA'S PRODUCTION AND SALES OF TALC, 2003–2012

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
	t	t	R'000	R/t	t	R'000	R/t
2003	6 719	7 286	4 051	542	*	*	*
2004	8 141	8 094	4 163	514	*	*	*
2005	8 469	7 439	4 319	581	*	*	*
2006	10 966	7 134	4 957	695	*	*	*
2007	14 281	7 326	5 639	770	*	*	*
2008	5 145	6 591	5 606	851	*	*	*
2009	4 718	6 213	5 893	948	*	*	*
2010	3 150	5 370	5 573	1 038	*	*	*
2011	4 453	5 489	6 050	1 102	*	*	*
2012	4 765	5 568	7 084	1 272	*	*	*

Source: DMR, Directorate Mineral Economics

TABLE 130: SOUTH AFRICA'S IMPORTS OF TALC, 2003–2012

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2003	6 000	7 063	1 177
2004	5 480	11 713	2 137
2005	10 541	17 713	1 694
2006	9 565	20 344	2 127
2007	11 721	26 040	2 222
2008	8 142	25 114	3 084
2009	10 254	23 851	2 326
2010	9 818	26 908	2 741
2011	7 126	28 015	3 931
2012	7 696	27 556	3 581

Source: RSA, Commissioner for South African Revenue Service, 2003–2012

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