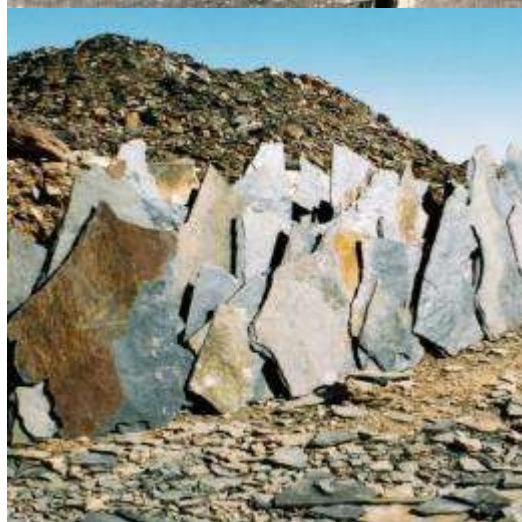




SOUTH AFRICA'S MINERAL INDUSTRY

2011/2012

- SAMI -



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DEPARTMENT: MINERAL RESOURCES REPUBLIC OF SOUTH AFRICA

Directorate: Mineral Economics

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2011/2012

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

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FOREWORD



After several years of sustained growth, for the first time since 1992, South Africa's economy fell into recession in 2009. The sectors affected the most include manufacturing and mining which declined as a result of lower exports. However, the firm global economic activity entered a fifth straight year of cyclical strength with virtually all minerals and metals prices at levels significantly above their long run historical trends and in many cases above start of year levels. The mining industry has now entered a new era, with demand continuing to be spurred by strong growth in emerging markets.

Supply is increasingly constrained, as development projects become more complex and are typically in more remote and unfamiliar territory. Most minerals and metals prices recorded substantially higher prices in 2011 compared with 2010.

South Africa's mining industry continues to play a critical role in the country's economic growth and development. In 2011, mining contributed R260.4 billion (US\$31.5 billion) or 9.8 per cent to the gross domestic product and accounted for 37.8 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 markets made up the largest contributions to export growth performance. The total export categories included precious stones and metals, (mainly platinum, gold and to a much lesser extent, diamonds), 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 continues to make significant contribution to public finances in terms of the large labour force it employs. In 2011, the mining 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 marginally by 3 per cent or 14305 workers, from 498 908 in 2010 to 513 211 in 2011. Over the last ten year period, 2002 to 2011, a total of 97223 jobs were created, further highlighting the significance of mining to the country's economy.

The mining industry is also reflecting an increased appetite in the commodity investments compared to over a decade ago when gold contributed to 39 percent of total mining revenue. In 2005, coal and platinum group metals (PGMs) overtook gold as the biggest revenue-generating commodities. In 2011 coal was biggest revenue generator at R87.8 billion followed by Platinum Group Metals at R83.9 billion. Gold sales revenues amounted to R68.9 billion, well below combined revenues of ferrous minerals which accounted for R81.2 billion. With the decline in PGM prices since June 2011, ferrous minerals could be vying for the second spot in 2012.

South Africa has over a century been a resource economy and an independent evaluation has the in-situ mineral wealth estimated at US\$2.5 trillion. However, a considerable amount of the country's resources are exported as raw concentrates or as partially processed minerals. The approval of the beneficiation strategy therefore is an indication that the country seeks to maximize the value it derives from its mineral resources. The strategy is aligned to the national industrialization programme, which seeks to enhance the quality and quantity of exports, promote creation of decent employment and diversification of the economy. Lucrative

opportunities exist for downstream processing and value addition locally throughout the five value chains as outlined in the strategy.

In 2009, the Department of Mineral Resources commissioned a task team to review factors impeding the competitiveness of the South African Mining sector. A comprehensive strategy has been developed outlining several reforms aimed at improving investor confidence. The strategy recognizes that simplifying the regulatory framework and policy certainty will support higher investment in mining. To streamline the process of applications for prospecting and mining rights, government launched a new licensing system in April 2011. Applications can now be made through the department's website. Complementary amendments to the Minerals and Petroleum Resources Development Act (2004) are to be legislated in the second half of 2012 to provide clarity and certainty about administrative processes for transferring mining rights and to speed up applications for water licenses, while amendments to the Mine Health and Safety Act will simplify administrative processes.

Economic recovery in South Africa has continued to gather strength. The Gross Domestic Product (GDP) growth picked up from -1.7 per cent in 2009 to 2.8 per cent in 2010 and 3.2 per cent in 2011. Although South Africa has the lowest growth rate in Sub-Saharan Africa, it still remains the economic powerhouse of Africa, leading the continent in industrial output and mineral production. Until the global economic crisis hit South Africa in late 2008, economic growth had been steady and unprecedented. The country GDP rose 2.7 per cent in 2001, 3.7 per cent in 2002, 3.1 per cent in 2003, 4.9 per cent in 2004, 5 per cent in 2005, 5.4 per cent in 2006, 5.1 per cent in 2007 and 3.1 per cent in 2008. From the first quarter of 1993 to the second quarter of 2008, the country enjoyed unprecedented 62 quarters of uninterrupted growth.

I take this opportunity to thank and congratulate the staff of the Minerals Policy and Promotion Branch for their sterling performance in contributing to the compilation of this publication and the many South African companies, both big and small, for their co-operation and support. Special appreciation is given to Mr. Ian Robinson, who undertook the task of being the external editor for the 29 edition of the 2011/2012 SAMI.

Hon. Susan Shabangu (MP)
Minister of Minerals Resources.

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ABBREVIATIONS AND SYMBOLS

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

GENERAL REVIEW

Mildred Mnguni

INTRODUCTION

The South African mining industry has played a prominent and significant role in shaping the development trajectory of the country's economy over more than a century. The importance of the mining industry is recognized in the National Growth Path (NGP) which outlines the 12 government outcomes between 2011 and 2014. The NGP cites SA's mining industry as one of the main key economic drivers with a potential to create employment and stimulate inclusive growth and further diversify the economy towards higher value added activities. In order to address the unemployment challenge and the structural constraints of our economy, the country will require active investment and interventions by the state to create an enabling environment to stimulate inclusive growth and support the creation of decent employment on a large scale.

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 1 592 mines and quarries in 2011 as well as exporting to approximately 83 countries. Gold was produced from 55 mines, platinum-group metals (PGMs) from 35 mines, coal from 107 mines and diamonds from 396 mines, all as primary commodities.

STRUCTURE OF THE MINING INDUSTRY

South Africa is now in its second decade of a constitutional democracy that has endorsed the principles of private enterprise within a free-market system, offering equal opportunities for its entire people.

Private Sector

Corporate restructuring of the South African mining industry remains an ongoing exercise. Not only does South Africa possess large mineral resources and is a leading producer of a wide range of minerals, but some of the largest mining companies in the world have operations in the country. 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:

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 Chamber is represented on the Minister of Mineral Resources' Advisory Board, whose founding is rooted in Chapter 5 of the MPRDA.

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 and the maintenance of standards of good practice in the junior mining sector.

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 (FIOT), the International Confederation of Free Trade Unions (ICFTU), and the World Confederation of Labour (WCL).
- Solidarity is another movement which fights for 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.

The South African Mining Legislation

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 safety and 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. It also pertains to all other industries and entities that associated with the minerals industry.

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 a safe haven 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 to promote 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 first 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 2009, 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 it is thus the background to the revised Mining Charter is located within the broader context of the strategy. The revised Mining Charter which includes "sustainable development" as an additional element was published on the 13 September 2010.

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).
- Geoscience 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 Precious Metals Act, 2005 (Act No. 37 of 2005)

The objective of this 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 which is produced as a byproduct 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 was influenced by the need identified by the department to facilitate the creation and development of relevant avenues for human resources development, economic development within mining communities and ethical employee directed practices in order 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 and further to serve as a guidance to the mining and minerals

industry that in pursuance of their individual economic gains, they should guard against supporting practices which do not promote the spirit, purport and objectives of the constitution of the Republic of South Africa on which the MPRDA and the Mining Charter are premised so as to bestow a sense of dignity and promote ethical practices in the industry.

The objective of the Codes of Good Practice is to create an industry that will proudly reflect the vision of a non-racial, non-sexist and prosperous South Africa and to set out administrative principles in order to facilitate the effective implementation of the minerals and mining legislation and enhance the implementation of the Broad-Based Socio-Economic Charter 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.

The process of reviewing the Codes was initiated in September 2010. 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.

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 geohazards 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

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). Section 22 (5) 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 as well as 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.

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. At the time of inception, the Republic of Angola held the Chairmanship until July 2010 when Hon. Minister Susan Shabangu, of Mineral Resources, assumed the role of chairperson. This coincided with South Africa hosting the Association's 2nd ordinary council of Ministers' meeting from the 14th – 15th July 2010 in Pretoria.

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). This 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. South Africa as one of the founding members of the KPCS 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 50 participants representing 76 countries (including the European Union, which represents 27 states that counts as a single participant), which accounts for 99.8% of the global production of rough diamonds. It is governed by the KPCS core document (statutes), which stipulate the objectives, definitions, internal controls and, most importantly, minimum requirements that each participant must comply with. The United States of America (USA) which is the current Chair of the KP hosted the Intercessional meeting from the 4-7 June 2012 which was attended by the Minister and several officials from the Department of Mineral Resources (DMR), Department of International Relations and Coordination (DIRCO), the State Owned Entities (SOEs), namely the State Diamond Trader (SDT), the State Diamond and Precious Metals Regulator (SDPMR), Mintek and the Council for Geoscience (CGS). The USA will subsequently host the plenary session from 27- 30 November 2012. South Africa has been elected as KPCS vice- chair for the year 2012 and will subsequently be the chair in 2013. This will be the year which marks the 10th anniversary of the establishment of the KPCS and, as chair, South Africa will host the anniversary meetings.

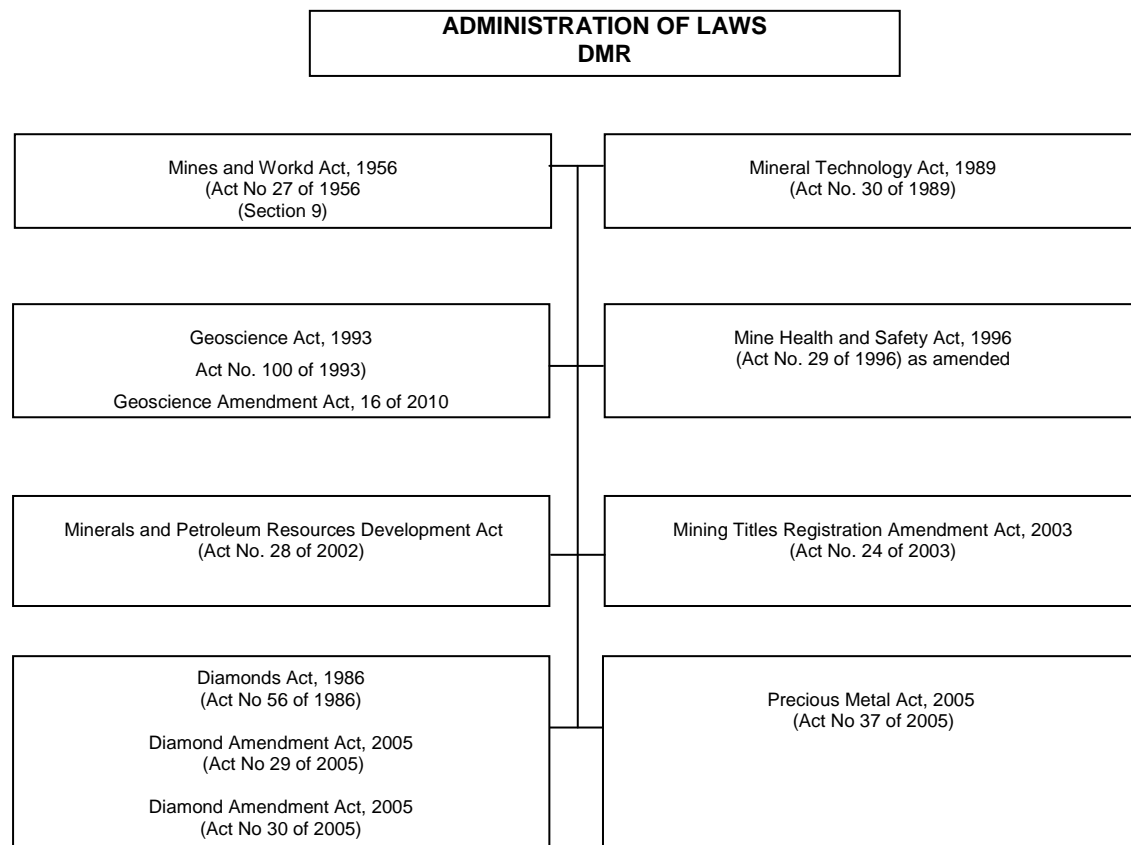
Department of Mineral Resources (DMR)

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, development and to ensure 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, viz 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 provide 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 Oversight that develops policy and legislation to guide enforcement work, 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 advise 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 safety statistics 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 is 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 has 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 MHS Act, 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 host 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;
- 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, 2011

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	21	1,2	5	t	3 239	2,2	2		*	*	*
Chrome Ore	Mt	3 100	85	1	kt	10 721	42	1	kt	1 929	22.3	2
Coal	Mt	30 156	3,5	8	Mt	252.8	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	128	2,4	6	kt	59	3,1	5
Fluorspar	Mt	41	17,1	1	kt	195,5	3.1	6	kt	175,4	*	*
Gold	t	6 000	11,8	2	t	180,2	6,5	5	t	175,5	*	*
Iron Ore	Mt	650	0,7	10	Mt	58,1	3,2	6	Mt	51,9	4,4	5
Lead	kt	3 00	2,1	14	kt	54	1,2	12	kt	50	1,9	14
Manganese Ore	Mt	150	23,8	2	kt	8 652	18	2	kt	6 773	29,1	1
Nickel	Mt	3,7	4,6	7	kt	43,3	2,4	10	kt	26,6	*	*
PGMs	t	63 000	95,5	1	t	288,9	59	1	t	244	*	*
Phosphate Rock	Mt	1 500	2,1	5	kt	2 565	1,3	12	kt	1.9	*	*
Silicon Metal		*	*	*	kt	46,4	2,5	8	kt	62,4	4,5	6
Silver		*	*	*	t	79,3	0,3	20	t	78,9	*	*
Titanium Minerals	Mt	71,3	10,3	4	kt	1 250	17,3	2		*	*	*
Uranium	kt	295 [#]	5.5	5	t	582	1,1	11		*	*	*
Vanadium	kt	3 640	26	2	kt	21,7	35	2	kt	17,9	*	*
Vermiculite	Mt	14	*	*	kt	165	29.4	1	kt	162,4	*	*
Zinc	Mt	14	3,3	8	kt	37	0,3	26	kt	7	0,1	25
Zirconium	Mt	14	27	2	kt	380	26,9	2		*	*	*

Sources: USGS, BP statistical review of world energy 2011, Mineral Economics Directorate,

Notes: Full details given in respective commodity chapters

* Information not available

[#]Resource

INFRASTRUCTURE DEVELOPMENTS

In 2011, South African government established the Presidential Infrastructure Coordinating Commission (PICC) that is intended to accelerate investment in social and economic infrastructure. The social infrastructure identified for attention relate to housing, schools, water, sanitation and health backlogs in informal settlements, rural towns and large cities, while the economic infrastructure priorities relate to roads, ports, rail, power and communications. The overarching aim is to deal decisively with the current lack of coordination and integrated planning surrounding key infrastructure projects, as well as poor or delayed project execution. But it also reaffirms the importance government ascribes to infrastructure development as a critical tool in stimulating growth, bolstering local supply industries and growing employment.

South Africa is one of 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 sets out a vision 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 infrastructure, supporting the country's freight logistics network. Its activities extend beyond the borders of South Africa into Africa and the rest of the world. Transnet's budget for 2011/12 was R25,8 billion, of which R15,1 billion (58,6 percent) was spent on rail. Transnet's rolling five-year investment programme is expected to total R110,6 billion. The new Multi-Product Pipeline connecting Durban with Johannesburg will ensure the supply of liquid fuels to the hinterland. Transnet Freight Rail (TFR) is the largest division within Transnet, representing the group's rail freight transport interests. The total rail infrastructure comprises 30 000 km of track, of which about 1 500 km comprises heavy-haul lines. 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 operators 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 with the capacity of 92 Mt per annum mainly for coal exports. During the 2011/12 financial year ended 31 March 2012, Richards Bay 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. During the period under review Port of Ngqura handled a total volume of 7 Mt tons of cargo, mostly containers, with the port's container terminal handling 513 530 Twenty Foot Equivalent Units (TEUs) during the year.

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 and 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. In 2005, Eskom embarked on a capacity expansion

programme, the largest in its history, which will increase its generation capacity by 17 120 MW and its transmission lines by 4 700 km.

The capacity expansion programme both aims to meet increasing demand and to diversify Eskom's energy sources. In the six years ended 31 March 2011, the programme has cost R140 billion including capitalised interest. The total cost of the programme to completion in 2018 is estimated to be R340 billion excluding capitalised interest.

During 2011/12 financial year, Eskom invested over R76 billion in infrastructure. Its rolling capital investment programme increased from R92 billion in 2005 to R549 billion in 2011. Through its Medium-Term Power Purchase Programme, Eskom signed contracts with five independent power producers, totalling some 373 MW of capacity. It also signed up about 200 MW of municipal generation for the 2011 winter season. The African Development Bank approved a \$365 million loan to Eskom for the 100 MW Concentrated Solar Power Plant and the 100 MW Wind Power Plant. Eskom submitted a \$250 million loan application to the World Bank for funding from the Clean Technology Fund.

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 123 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 AFRICA'S PRODUCTION OF SELECTED MAJOR MINERALS, 2007 - 2011

COMMODITY	UNIT	PRODUCTION				
		2007	2008	2009	2010	2011
Coal	t	247 666 358	252 699 108	250 538 125	257 205 807	252 756 845
Cobalt	t	293	244	238	840	862
Copper	t	117 066	97 185	92 884	83 640	89 298
Chromite	t	9 664 656	9 682 640	7 560 938	10 871 095	10 721 360
Diamonds	ct	15 250 215	12 894 874	6 112 834	8 870 967	7 046 644
Gold	kg	252 598	212 571	197 628	188 702	180 184
PGMs	kg	304 031	275 767	271 393	287 304	288 851
Nickel	t	37 163	31 675	34 605	39 960	43 321
Lead	t	41 857	46 440	49 149	50 625	54 460
Manganese	t	5 996 086	6 807 059	4 575 766	7 171 745	8 651 842
Iron Ore	t	42 083 081	48 982 537	55 313 053	58 709 330	58 056 897
Zinc	t	30 859	29 002	28 159	36 142	36 629

Source: Department of Mineral Resources, Directorate: Mineral Economics

South Africa is the world's top producer of PGMs, chrome ore, vermiculite and alumino-silicates, and is among the top three producers of antimony, manganese ore and titanium minerals (Table 2). The country accounted for 59 percent of the global production of PGMs and 58 percent of alumino-silicates. South Africa is also ranked as the world's second largest exporter of manganese ore, with coal and iron ore both ranked fifth.

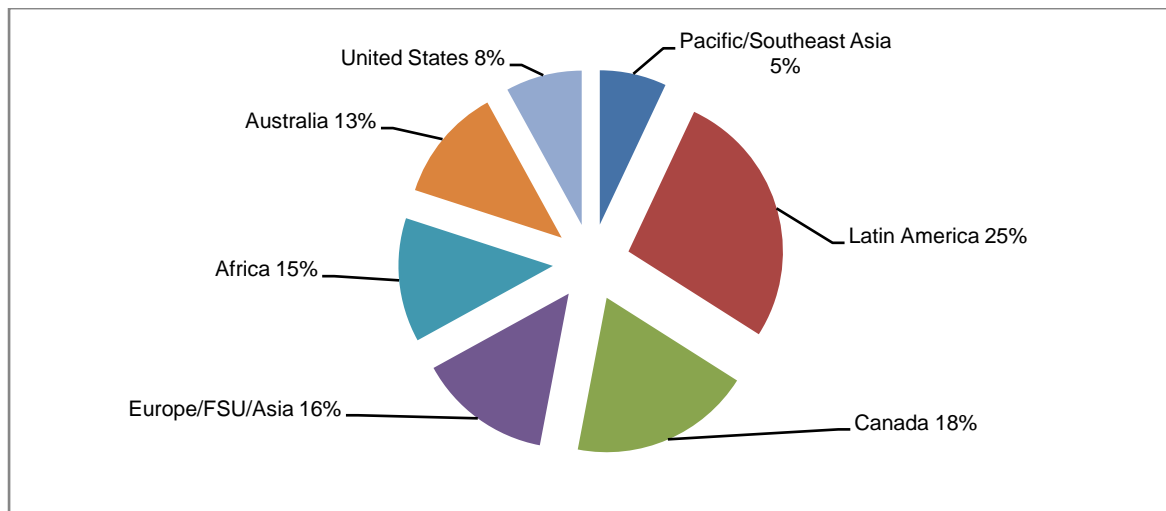
In 2011, production of most commodities improved following increased demand due to the global economic recovery. However, gold production continued with its declining trend since 1994, recording a decline of 28.7 percent from 252t in 2007 to 180t in 2011, (Table 2). The continuing decrease in gold production is due to lower ore grades being mined at great depth. During the period under review, diamonds registered the largest production decline of 20.6 percent, while coal and chromite decreased by 1.7 percent and 1.4 percent, respectively. On the other hand, production of PGMs rose by a marginal 0.5 percent to 288 851 kg in 2011 from 287 304 kg in 2010.

MINERAL EXPLORATION

Global exploration expenditure continued its upward trends during the 2010 – 2011 period, driven mainly by improved metal prices and demand for specific commodities. The world total exploration expenditure increased significantly by 62.5 percent from \$11.2 billion in 2010 to \$18.2 billion in 2011. Canada at 18 percent and Australia at 13 percent remained the top contributing countries to global exploration expenditure. Other regions attracting large exploration expenditure included Latin America at 25 percent, followed by Europe/FSU/Asia and Africa at 16 percent and 15 percent, respectively (Figure 2). Although South Africa lost its spot in the top ten countries to Argentina, it regained the first position for planned exploration spending in Africa, after slipping to second position behind Democratic Republic of Congo in

2010. It is anticipated that global exploration expenditure will continue to increase underpinned by high levels of international commodity prices on the back of economic recovery.

FIGURE 2: EXPLORATION EXPENDITURE BY REGION, 2011



Source: Metal Economics Group, 2012

At the beginning of September 2011, the Minister of Department of Mineral Resources (DMR) announced a moratorium on new applications to allow the Department to conduct a full audit of all mining and prospecting licences granted since 2004. Since the announcement of the lifting of the moratorium on 18 April 2011, a total amount of 4 937 applications for prospecting and mining rights were received by the DMR. Of the total number of applications received, 3 981 applications were for prospecting rights, 192 were for mining rights. Overwhelming number of prospecting rights applications received since 2004, South Africa still continues to attract new investment in exploration. The 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.

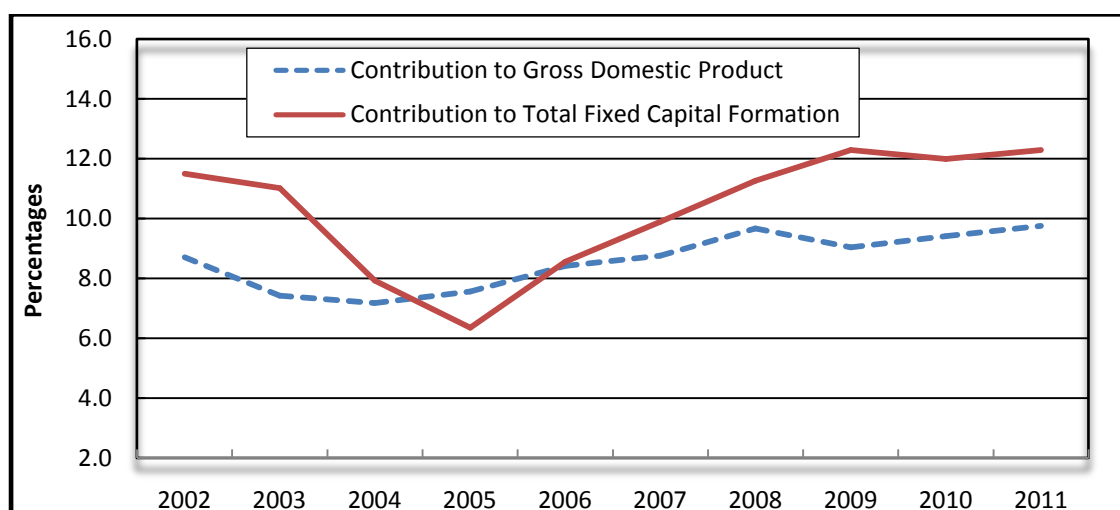
The depleting nature of the mineral resources necessitates that South Africa should refocus its support towards investment in greenfield exploration, in order to sustain the mining industry through the opening of new mines and expansion of existing operations. Mineral exploration investment as prescribed 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. In August 2010, Pretoria, a task team was then established to develop mechanisms of accelerating mineral exploration investment in the country.

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 growth, job creation and transformation, consistent with the Government's objectives of higher and more balanced economic growth. In 2011, mining contributed R260.4 billion (\$31.5 billion) or 9.8 percent to gross domestic product (Figure 3 and Table 3), an increase of R33.3 billion over the previous year.

The increase in value added by mining can be attributed to improved mineral commodity prices due to higher demand in the wake of the global economic recovery, as well as increases in the production of base metals, PGMs and 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. During 2011, mining and quarrying contributed 12.3 percent to Gross Fixed Capital Formation (GFCF) from 12 percent in 2010.

FIGURE 3: PERCENTAGE CONTRIBUTION OF MINING AND QUARRYING TO GROSS DOMESTIC PRODUCT AND TOTAL FIXED CAPITAL FORMATION OF SOUTH AFRICA, 2002 – 2011 (Current Rand Prices)



Source: South African Reserve Bank: Quarterly Bulletin, June 2011

TABLE 3: CONTRIBUTION OF MINING AND QUARRYING TO GROSS DOMESTIC PRODUCT, FIXED CAPITAL FORMATION AND TOTAL NATIONAL EXPORTS OF GOODS, 2002–2011 (at current prices)

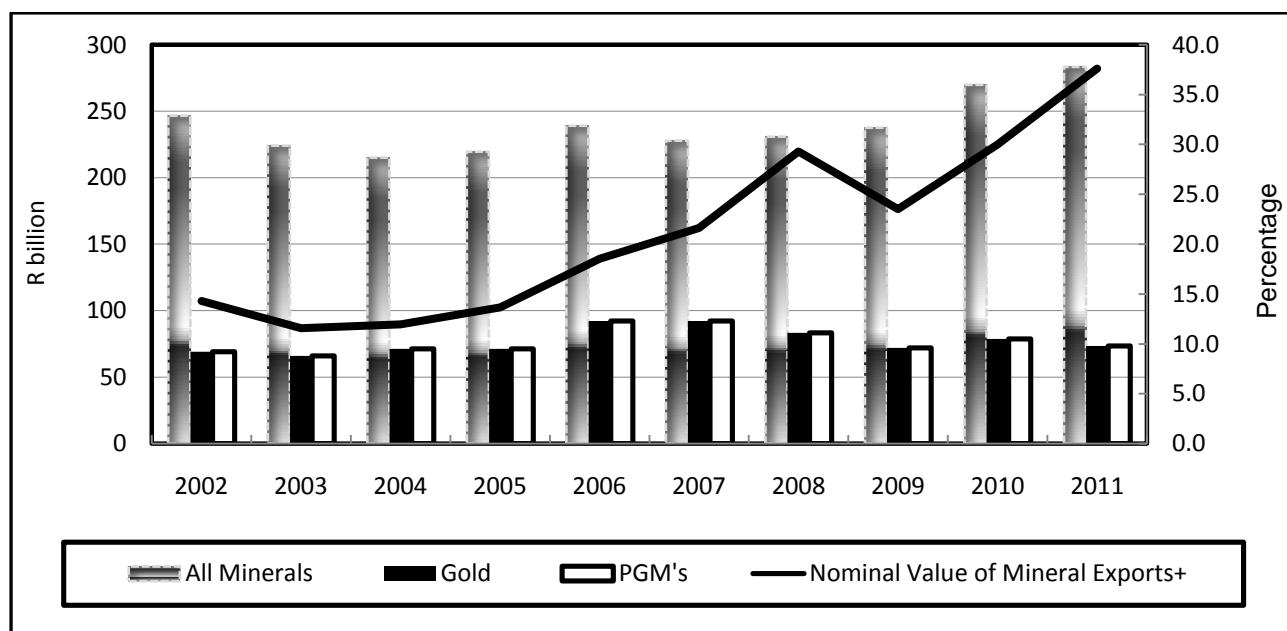
Year	CONTRIBUTION TO VALUE ADDED			CONTRIBUTION TO FIXED CAPITAL FORMATION			CONTRIBUTION TO NATIONAL TOTAL EXPORT OF GOODS		
	National Gross			Total Fixed			Total		
	Domestic Product	From Mining		Capital Formation	From Mining		Exports	From Mining	
	R'million	R'million	%	R'million	R'million	%	R'million	R'million	%
2002	1 171 086*	92 730*	7.9	172 151*	19 802*	11.5	333 251*	109 357*	32.8
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	520 434	62 431*	12.0	625 359	224 956	35.9
2011	2 670 504	260 381	9.8	559 888	68 800	12.3	746 518	282 012	37.8

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

Notes * Revised figures

Despite China's moderate growth in 2011 and the Eurozone financial crisis, total export value of South Africa's primary mineral exports sales increased by 25.4 percent from R224.9 billion in 2010 to R282.0 billion in 2011, accounting for 37.8 percent of the country's total exports value of goods, the highest in over a decade (Figure 4 and Table 3). The increase in export sales was boosted by higher commodity prices and new demand from some regions particularly India. The higher prices received for most commodities offset the impact of the strengthening rand (R7.31/\$ in 2010 to R7.25/\$ in 2011).

FIGURE 4: CONTRIBUTION OF PRIMARY MINERALS TO SOUTH AFRICA'S EXPORTS[#],
2002-2011



Sources: Department of Mineral Resources, Directorate Mineral Economics

Notes: + Includes gold

[#]Total exports of goods only, including gold

In 2011, South Africa exported primary minerals and processed minerals to 83 and 78 countries, respectively. Europe and Pacific Rim countries remained the important export destinations with Europe contributing 64.7 percent to the total export of primary minerals and 47.1 percent of the selected processed minerals (Table 4). When precious metals and minerals are excluded from primary mineral exports, Pacific Rim accounted for 58.0 percent and the European countries for 30.0 percent of the total export value of primary minerals in 2011. The export value of primary minerals to the Pacific Rim region increased by 42.4 percent in 2011, with exports to China and India increasing by 51.5 percent and 6.1 percent, respectively. Primary mineral exports to Japan increased significantly by 24.1 percent, due to its reconstruction efforts following the country's March 2011 earthquake which caused considerable damage to its infrastructure including nuclear power plants. However, total exports of processed minerals to Pacific Rim countries declined by 5.4 percent while exports to India, China and Japan rose by 28.2 percent, 11.2 percent and 6.5 percent, respectively.

TABLE 4: SOUTH AFRICA'S EXPORT VALUE OF PRIMARY AND SELECTED PROCESSED MINERAL PRODUCTS ACCORDING TO DESTINATION, 2011

REGION	PRIMARY				PROCESSED	
	Including precious metals/minerals		Excluding precious metals/minerals			
	%		%		%	
	2010	2011	2010	2011	2010	2011
Europe	68,3	64,7	32,0	30,0	33,9	47,1
Pacific Rim countries	26,4	29,2	56,1	58,0	43,7	38,0
Middle and Near East	0,8	1,5	1,8	3,1	0,9	1,2
North and Central America	0,6	0,5	1,4	1,0	17,6	11,2
South America	0,2	0,1	0,5	0,2	2,2	1,0
Africa	0,4	0,3	0,9	0,6	1,7	1,3
Other	3,3	3,6	7,2	7,1	N/A	0,2
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, which includes assessed tax, provisional tax and secondary tax increased by 8.5 percent from R20.0 billion in 2010 to R21.7 billion in 2011 (Table 5). Platinum and diamond sectors each contributed more than 20 percent to the total state revenue followed by chrome at 14 percent, with coal and gold and uranium each contributing 12 percent respectively.

TABLE 5: CONTRIBUTIONS OF MINING AND QUARRYING TO STATE REVENUE, 2002–2011

YEAR Ended 31 Mar	Mining Taxation	State Share of Profits and Diamond Exports		Total Revenue	As Percentage of Total State Revenue		State Aid [#]
		Duties					
		R' 000	R'000		R'000	%	
2002 ^c	8 885 713	169 313	9 055 026	0,3		28 914	
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	19 287 879*	674 856*	19 962 735*	0,1		18 000	
2011	20 922 308	755 302	21 677 610	0,1		18 000	

Sources: Department of Finance, South African Revenue Service

Department of Mineral Resource, Directorate Financial Planning and Management Accounting

Notes: # In respect of leased mines

¢ Aid to marginal mines, pumping assistance

* Revised figures

In 2011, the mining industry, excluding exploration, research and development organisations and head offices, employed 2.9 percent of South Africa's economically active population, or 3.2 percent of all workers in the non-agricultural formal sectors of the economy (Table 6). The average number of workers employed in the mining industry increased marginally by 3 percent or 14 305 workers from 498 908 in 2010 to 513 211 in 2011. Over the last ten year period, 2002-2011, a total of 97 223 jobs were created, highlighting the significance of mining to the South African economy. Wage income from mining amounted to R 87.08 billion in 2011 or 23.5 percent of total mining revenue (Table 6).

TABLE 6: EMPLOYMENT AND WAGES IN SOUTH AFRICA'S MINING INDUSTRY, 2002–2011

YEAR	EMPLOYMENT		Total		WAGES		As % of total mining revenue [#]
	Number employed	As % of total economically active population			Per worker per annum		
			Nominal	Real ⁺	Nominal	Real ⁺	
			R million		R	R	
2002	415 988*	2,6	26 228	28 339	63 335*	67 040*	19,3
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	513 211	2,9	87 018	87 018	169 556	169 556	23,5

Sources: Quarterly Labour Force Survey (Stats SA), May 2011

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

Provincial employment distribution was distinctly lopsided with five provinces (North West, Mpumalanga, Gauteng, Limpopo and the Free State) employing 90.0 percent of the mining workforce, which in turn earned 86.9 percent of the total remuneration (Table 7).

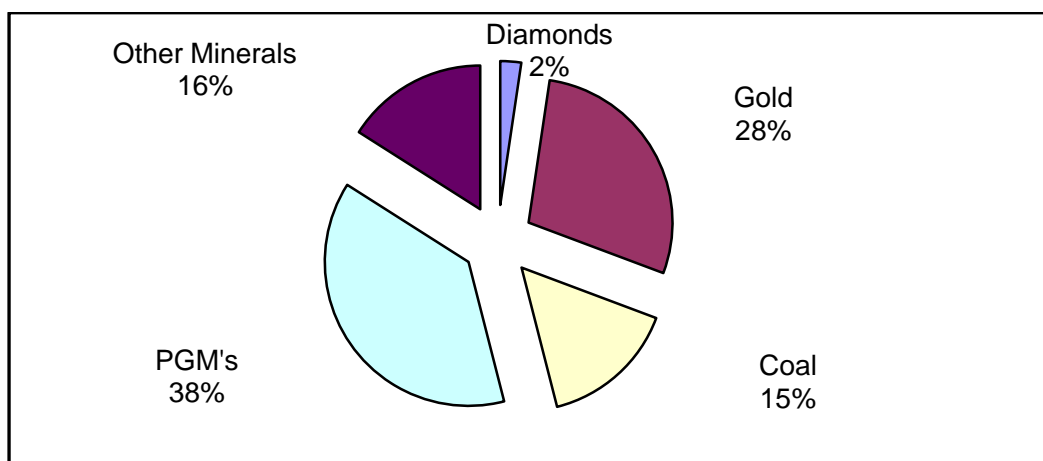
TABLE 7: EMPLOYMENT AND REMUNERATION BY PROVINCE, 2011

PROVINCE	EMPLOYEES		TOTAL REMUNERATION	
	Number	%	R million	%
North West	178 699	34.8	27 187	31.2
Mpumalanga	101 441	19.8	20 103	23.1
Gauteng	76 983	15.0	11 303	13.0
Limpopo	65 436	12.8	11 275	12.9
Free State	39 633	7.7	5 805	6.7
Northern Cape	35 571	6.9	8 314	9.5
KwaZulu-Natal	10 961	2.1	2 388	2,7
Western Cape	3 257	0.6	601	0,7
Eastern Cape	1 230	0,2	105	0.1
TOTAL	513 211	100,0	87 081	100,0

Source: Department of Mineral Resources, Directorate Mineral Economics

In 2011, PGMs remained the largest employer, contributing 38 percent to the total mining industry's labour force, recording an increase of 7 percent to 194 979 employees from 181 969 in 2010 (Figure 5), with coal and diamond sectors maintaining the same percentage contribution of 15 percent and 2 percent, respectively, to the industry's employment from 74 025 and 11 468 in 2010 to 78 580 and 12 030 in 2011. The increase in the respective sectors can be attributed to newly operating mines and expansions. However, the gold sector which is ranked the second largest contributor to total mining employment at 28 percent, continued its declining trend shedding 11 458 jobs which translates to a decrease of 7 percent from 157 019 in 2010 to 145 561 in 2011.

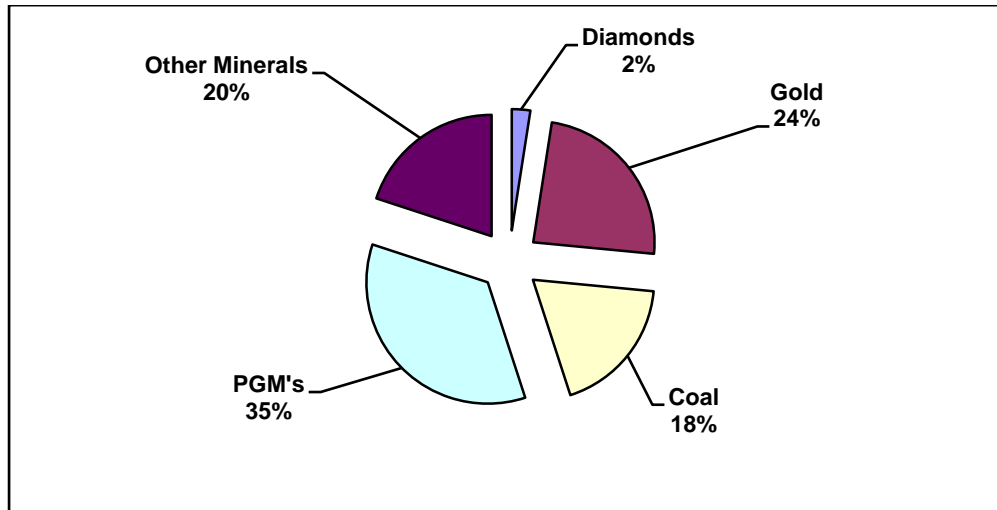
FIGURE 5: MINING INDUSTRY'S EMPLOYMENT BY SECTOR, 2011



Source: Department of Mineral Resources, Directorate Mineral Economics

South Africa's mining sector's remuneration increased significantly by 17 percent from R74.3 billion in 2010 to R87.1 billion in 2011. The PGMs industry accounted for 35 percent of the total remuneration, followed by gold, other minerals and the coal industry which accounted for 24 percent, 20 percent and 18 percent, respectively (Figure 6).

FIGURE 6: MINING INDUSTRY'S REMUNERATION BY SECTOR, 2011

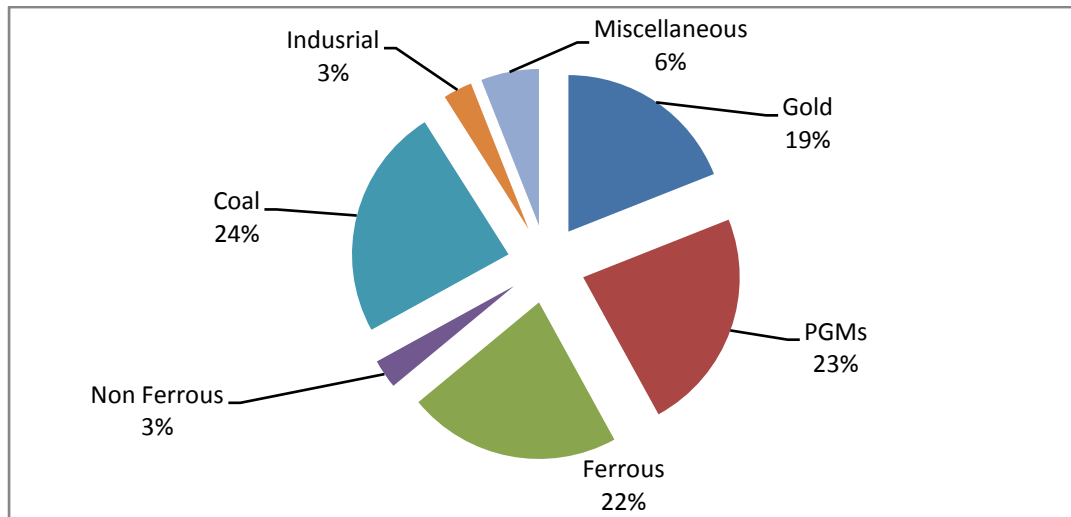


Source: Department of Mineral Resources, Directorate Mineral Economics

MINERAL PRODUCTION AND SALES IN 2011

In 2011, South Africa's total primary mineral sales value rose by 23.4 percent to R370.6 billion from R300.3 billion in 2010. The increase can be attributed to higher commodity prices and the world economic recovery which contributed to the improved demand for most mineral commodities. When the total and export mineral sales are expressed in US dollars, the annual increases were 26.7 percent (from \$30.7 billion to \$38.9 billion), and 24.4 percent (from \$41.0 billion to \$51.1 billion), respectively. The rise in the total mineral sales value was mainly driven by the coal sector which surpassed gold and PGMs sectors to become the highest total sales earner contributing R87.8 billion in 2011, an increase of 23 percent from R71.2 billion in 2010 equal to a share of 24 percent of total primary mineral sales. The increase in coal total sales revenue was due to increased local and global demand particularly from Asia augmented by the increased coal prices. During the same period, PGMs contributed 23 percent to primary total sales, followed by ferrous minerals and gold at 22 percent and 19 percent, with non ferrous and industrial contributing 4 and 3 percent (Figure 7). However, PGMs maintained its position as the highest export earner at 26 percent, followed by ferrous at 24.9 percent, gold 23.1 percent and coal 17.9 percent. The significant increase in the gold price boosted its export sales revenue, which increased by 28.1 percent from an annual average price of \$1 225/ozt in 2010 to \$1 569.07/ozt in 2011.

FIGURE 7: CONTRIBUTION OF PRIMARY MINERAL COMMODITIES TO TOTAL SALES REVENUE, 2011



Source: Department of Mineral Resources, Directorate Mineral Economics

TABLE 8: MINERAL PRODUCTION AND SALES, 2011

COMMODITY		PRODUCTION		LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
		Quantity		Quantity	Value (R)	Quantity	Value (R)	Quantity	Value (R)
1. Precious									
Diamonds	ct	7 046 644	**		**	**	**	**	**
Gold	kg	180 184	10 165		3 633 111 102	175 521	65 258 301 709	185 686	68 891 412 811
Platinum-group metals	kg	288 851	**		10 619 219 357	243 955	73 234 047 022	**	83 853 266 379
Silver	kg	73 180	9 971		80 001 009	71 250	531 932 210	81 221	611 933 219
2. Semi-precious stones			*		*	*	*	*	*
3. Ferrous [®]	t	77 430 099	*		10 915 287 586	60 663 322	70 251 220 517	*	81 166 508 103
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	252 756 845	177 705 290		37 285 726 061	68 807 069	50 548 677 636	246 512 359	87 834 403 697
Uranium oxide	kg	656 129	**		**	**	**	**	**
6. Industrial [®]					10 555 422 517		1 754 708 184		12 310 130 701
7. Miscellaneous					9 234 197 474		13 822 125 247		23 056 322 721
TOTAL#					88 626 845 601		282 012 934 106		370 639 779 707

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 17.7 percent to R88.6 billion in 2011 from R75.3 billion in 2010 (Table 10), surpassing the levels of the local sales revenue of R80.7 billion pre-global economic crisis in 2008. When expressed in dollar terms, the local sales value increased by 18.4 percent to \$12.2 billion in 2011 from \$10.3 billion in 2010. Coal remained the major local income earner for the year 2011 at 42.1 percent, followed by ferrous and PGMs both contributing 12 percent, industrial commodities at 11.8 percent, miscellaneous mineral commodities at 10.4 percent, non ferrous at 7.3 percent and gold accounted for 4.1 percent.

TABLE 9: SOUTH AFRICA'S PRIMARY MINERAL SALES BY PROVINCE, 2011

PROVINCE	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
Mpumalanga	33 730 932	38.1	62 829 635	22.3	96 560 568	26.0
North West	13 548 802	15.3	66 119 548	23.4	79 668 350	21.5
Northern Cape	8 218 850	9.3	65 802 016	23.3	74 020 866	20.0
Limpopo	16 224 947	18.3	30 794 499	10.9	47 019 446	12.7
Gauteng	4 514 230	5.0	34 035 625	12.1	38 549 855	10.4
Free State	3 669 910	4.1	13 253 719	4.7	16 923 630	4.6
KwaZulu-Natal	3 151 959	3.6	6 824 403	2.4	9 976 363	2.7
Western Cape [#]	5 047 790	5.7	2 353 485	0.8	7 401 275	2.0
Eastern Cape	519 422	0.6	0	0	519 422	0.1
TOTAL[#]	88 626 845	100,0	282 012 934	100,0	370 639 779	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 90.6 percent of the total primary mineral sales revenue (Table 11). Mpumalanga emerged as the leading contributor to both local and total sales revenue with 38.1 percent and 26 percent respectively, with North West province being the major contributor to export sales revenue with 23.4 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 increased by 5.7 percent from R61.6 billion in 2010 to R65.1 billion in 2011, 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 and a conglomerate of classified commodities both at 42 percent, followed by manganese alloy and vanadium at 12 percent and 4 percent respectively. The increase in the total processed minerals sales can be attributed

to strong growth in stainless steel production and increased commodity prices. The value of local sales of processed mineral products also increased by 6.0 percent from R11.2 billion in 2010 to R11.8 billion in 2011.

TABLE 10: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORT SALES OF SELECTED PROCESSED MINERAL PRODUCTS, 2011

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	3 425 911	451 457	3 430 563	3 047 759	23 793 441	3 499 217	27 224 005
Manganese alloys	1 064 111	54 109	483 050	854 262	7 409 502	908 372	7 892 552
Vanadium ⁺	14 353	1 790	266 968	17 917	2 288 001	19 655	2 558 139
Other: Classified ^x	3 563 085	357 564	7 668 879	2 228 883	19 803 758	2 586 448	27 472 637
TOTAL 2011		864 920	11 849 460	6 044 846	53 294 702	26 649 830	65 147 333
TOTAL 2010		1 101 679	11 176 401	6 713 597	50 462 850	7 815 275	61 639 252

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

During the period under review, KwaZulu-Natal (KZN) province remained the largest contributor to the total selected processed mineral sales accounting for 37.8 percent, followed by Mpumalanga and North West provinces at 33.5 percent and 16.4 percent respectively, (Table 11). In 2011, the three provinces, viz. KwaZulu-Natal, Mpumalanga and North West collectively accounted for 87.7 percent of the total processed minerals sales revenue. Titanium slag and aluminium dominated the KwaZulu-Natal contribution whilst more than three quarters or 81.4 percent of Mpumalanga's total sales revenue was derived from chromium alloys. North West's total processed mineral sales revenue was almost entirely derived from chromium and vanadium alloys, which contributed 83.8 and 16.2 percent respectively. These three provinces also dominated the export sales revenue, with a combined contribution of 88.8 percent. However, major contributors to local sales revenue were KwaZulu-Natal, Mpumalanga and Gauteng, together aggregating 93.7 percent.

TABLE 11: SOUTH AFRICA'S LOCAL AND EXPORT SALES OF SELECTED PROCESSED MINERAL PRODUCTS BY PROVINCE, 2011

PROVINCE	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
	R'000	%	R'000	%	R'000	%
KwaZulu-Natal	5 594 454	47.2	19 058 186	35.8	24 652 640	37.8
Mpumalanga	3 665 608	30.9	18 184 011	34.1	21 849 619	33.5
North West	596 746	5.0	10 066 484	18.9	10 663 230	16.4
Gauteng	1 848 398	15.6	3 967 836	7.4	5 816 234	8.9
Limpopo	84 392	0.7	1 073 668	2.0	1 158 060	1.8
Western Cape	63 033	0.5	944 518	1.8	1 007 551	1.5
TOTAL	11 852 631	100.0	53 294 703	100.0	65 147 334	100.0

Source: Department of Minerals Resources, Directorate Mineral Economics

SOUTH AFRICA'S IMPORTS OF SELECTED PRIMARY AND PROCESSED MINERAL PRODUCTS, 2011

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 2011 increased by 39.2 percent from R24.2 billion in 2010 to R35.7 billion in 2011 (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.

In 2011, the value of imports of diamonds and manufactured minerals increased by 11.4 percent and 10.2 percent respectively. Primary industrial minerals also registered an increase of 101.92 percent from R891.3 million in 2010 to R1.8 billion in 2011, while other precious and semi precious stones decreased by 36.6 percent.

TABLE 12: SOUTH AFRICA'S IMPORTS OF SELECTED PRIMARY AND PROCESSED MINERAL PRODUCTS, 2011

PRODUCT	VALUE (FOB)		
	2010 R'000	2011 R'000	Year on year % change
Precious			
Diamonds	4 323 106	4 813 982	11.4
Other precious and semi-precious stones *	475 834	301 689	-36.6
Precious metals +	775 234	1 709 135	120.5
<i>Ferrous</i> [@]			
Primary	460 068	740 891	61.0
Processed	717 165	687 826	-4.1
<i>Nonferrous</i> [@]			
Coking Coal	127 595	93 025	-27.1
	5 390 307	17 283 687	220.6
<i>Industrial</i> [@]			
Primary	1 089 970	1 866 151	71.2
Processed	5 718 854	534 080	-90.7
Manufactured	6 971 106	7 683 875	10.2
TOTAL #	21 383 005	35 714 341	76.4

Source: South African Revenue Service, 2011

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

In addition, crude oil to the value of (R102 billion) was imported during 2011.

REPORTED MINERAL-RELATED PROJECTS IN SOUTH AFRICA

Known and reported committed investment in mineral related projects in South Africa stood at R36.9 billion by August 2011, of which 98.3 percent is for primary minerals and 1.7 percent recorded for processed mineral products (Table 13). Platinum projects dominated the primary minerals, accounting for 84.3 percent followed by other minerals 12.9 percent and gold's 2.8 percent.

TABLE 13: NEWLY COMMITTED MINERAL-RELATED PROJECTS IN SOUTH AFRICA, 2011

SECTOR	COST R million	COST ⁺ \$ million	AS A PERCENTAGE OF PRIMARY MINERALS	AS A PERCENTAGE OF TOTAL MINERAL PRODUCTS
Primary	300 820	36 392	100	98.3
Gold	8 500	1 028	2.8	2.8
Platinum	253 570	36 676	84.3	82.8
Other	38 750	4 687	12.9	12.7
Processed minerals	5 240	6 33		1.7
TOTAL	306 060	37 025		100.0

Source: Department of Minerals Resources, Directorate Mineral Economics
Mining Weekly

Note: ⁺At a Rand/dollar exchange rate of R8, 2661, as at September 2012

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. The SADC region contributed 100 percent of Africa's platinum group metals and nickel production, 63.7 percent of lead production and 48.3 percent of gold in 2011.

During the period 2007 to 2011, a number of SADC countries attracted considerable investment in mineral projects, which has led to increased production in some commodities particularly cobalt, whose production increased significantly by 96 percent from 29.9 t in 2007 to 58.5 t in 2011, followed by chromite 12.6 percent, (Table 14). However, gold and nickel continued their declining trend registering the highest decline of 29.8 percent and 13.1 percent respectively, with copper registering the largest decline of 33.8 percent. Lead and platinum followed the same trend decreasing by 9.4 percent and 2.1 percent. The decrease in the platinum production can be attributed to the closure of a number of mining shafts in South Africa due to safety stoppages under Section 54 of the MPRDA.

TABLE 14: SADC MINE PRODUCTION OF SELECTED MAJOR MINERALS, 2007 – 2011

MINERAL	PRODUCTION						% of world production
	unit	2007	2008	2009	2010	2011	
Coal	t	251 980 000	253 870 000	255 863 000	260 448 000	256 755 000	3.3 %
Cobalt	t	29 860	40 044	27 738	56 840	58 540	59.7 %
Copper	t	808 200	958 600	1 046 900	1 254 400	1 371 500	8.4 %
Chromite	t	10 131 234	10 346 593	10 742 600	11 340 000	11 411 400	42.4 %
Diamonds	carats	63 330 000	88 431 401	57 807 117	69 574 658	67 551 925	52.2 %
Gold	kg	341 400	316 598	266 344	272 600	239 500	9.3 %
Platinum	kg	161 800	151 700	148 000	156 500	158 400	79.8 %
Nickel	t	79 300	81 900	80 530	71 700	68 900	3.8 %
Lead	t	69 000	46 440*	60 000	63 000	62 500	1.3 %
Zinc	t	219 000	316 000	233 000	241 000	238 200	1.9 %

Source: Department of Minerals Resources, Directorate Mineral Economics

World Bureau of Metal Statistics

*RSA Figure (other SADC countries figures not available)

MINERAL BENEFICIATION

South Africa's abundant mineral resources provide an opportunity to drive the country's developmental agenda forward. These minerals are critical inputs in a number of resource based manufacturing and green energy industries where they are beneficiated. The mineral beneficiation policy adopted by Cabinet in the last financial year is part of a broader strategy by Government to create a diversified and sustainable economy which is not overly reliant on the exploitation of our abundant but finite mineral resources but is manufacturing led and labour intensive to overcome the triple developmental challenges of unemployment, poverty and income inequality.

Following the adoption of mineral beneficiation as national policy, two implementation plans were developed and adopted by Cabinet for the iron and steel and energy commodities value chains. These plans form the nucleus of the broader implementation plan which is currently being developed and expected to be completed before the end of the 2012/13 financial year. This overarching plan will emphasise coordination of Government programmes to maximise the socio-economic development impact and includes comprehensive action plans for identified value chains.

ECONOMIC OUTLOOK FOR THE SOUTH AFRICAN MINERALS INDUSTRY 2011/2012

The global economic recovery has slowed, though moderate growth is still expected for period 2012 and beyond. The unresolved European debt crisis alongside pedestrian growth in the USA pose significant risks to the world economic outlook. While developing economies are expected to grow more rapidly than advanced economies, they are not immune to the effects of a slowdown in Europe or the USA. While there are signs of revival in the USA, much of Europe is expected to fall into recession during 2012. Emerging

markets however, continue to perform strongly, although growth in China and India is projected to moderate in the year ahead.

Growth in advanced economies is expected to slow down from an already meagre 1.6 percent in 2011 to 1.3 percent in 2012. For 2013-2016, the outlook suggests some recovery in advanced economies, bringing these countries back to the pre-recession growth trend of slightly more than 2 percent. In 2012 growth in emerging economies will slow by 0.7 percentage points on average, going from 6.3 percent in 2011 to 5.6 percent in 2012, partly as a result of slower export growth and partly because several of them have been growing above the long term trend. However, many emerging economies will begin to show signs of maturing, at which point the rapid catch-up growth abates. However, recent improvements in the global economy are very fragile. The world economy grew at 2.8 per cent in 2011 down from 4.0 per cent in 2010 and way below the International Monetary Fund (IFM) forecast of 4.5 per cent. The global growth is projected to grow at 3.5 percent in 2012, then accelerate somewhat to 3.6 percent from 2013-2016, and then show a further slowdown to 2.7 percent from 2017-2025. At 3 percent, on average, global growth will still be somewhat higher than the period 1980-1995 but between a half and a full percentage point below the growth rate from 1995-2008.

African economies rebounded quickly from the 2008 financial crisis as commodity prices rose and export revenues returned to pre-crisis levels, enabling them to finance the necessary investments. The pace of economic growth in Africa however weakened in 2011, reflecting the impact of political and social strife in some countries in the north of the continent. However, growth in the rest of Africa maintained strong momentum as several resource endowed countries benefited from increased export earnings and higher commodity prices. Africa's economy growth which fell from 4.6 per cent in 2010 to 2.7 per cent in 2011 is expected to grow by 5.1 per cent in 2012.

South Africa's economic growth increased marginally in 2011 and is projected to slow in 2012, mainly as a result of domestic structural weaknesses and the fragile global economic recovery. The economy which grew by 2.9 per cent in 2010 and 3.1 per cent in 2011 is expected to slow down to 2.8 per cent in 2012. However, as the world economy strengthens, the country's GDP is expected to accelerate to 3.6 per cent in 2013 and 4.2 per cent in 2014, led by robust household consumption and stronger public and private sector investment. South Africa however needs much faster growth, sustained over a decade or more to reduce poverty and unemployment in line with the objectives set out in the New Growth Path.

The shift in the composition of global trade, production and investment has been underway for some time. Emerging markets now account for more than 40 per cent of global imports, exports and industrial production. Last year, Brazil overtook the United Kingdom to become the sixth largest economy in the world. By 2016, the IFM predicts that BRICS (Brazil, Russia, India, China and South Africa) economies will account for 24 per cent of the global GDP, up from 7 per cent 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 will provide considerable opportunities for growth and employment in the South African economy. The South to South Cooperation has gained momentum in recent years. Some emerging countries, particularly Brazil, China, India and South Africa have begun playing an increasingly prominent role in global mining

investment, trade, finance and governance. The impact of this engagement on African economies depends on the extent to which they are able to capitalize on the opportunities and mitigate risks inherent in the relationship with emerging countries.

Overall, mining value added in South Africa grew by 14.7 percent to R260.4 billion in 2011 compared with R227.1 billion in 2010. Production of platinum group metals rose by a marginal 1 percent. In the year to August 2011, production of diamonds and gold decreased by 21 percent and 5 percent, respectively. Total mining production declined by 4 per cent despite an increase in primary commodity prices. Strikes and safety related stoppages disrupted production.

Commodity prices rebounded in the two and half years following the 2009 global recession and remain high but volatile. Since mid 2011, the easing of global demand and the prospects for further weakening has put pressure on commodity prices. However, their levels are still relatively high and have so far supported growth in exporting countries. Since its peak in August 2011, the price of gold has been volatile, increasing again in early 2012. The debt crisis in Europe and mounting inflation fears sustained demand for gold, commonly serving as a hedge against inflation. The platinum price has declined in recent months, but remains about \$500/t oz above the average price of the last ten years. Prices of other metals were also relatively high but have declined from their peaks in the first half of 2011. The price of copper declined significantly in late 2011 but increased again at the start of 2012, driven by additional demand from China. The price level movements in 2011 stem from both the demand and supply sides. The demand from emerging economies continued to provide strong support to high commodity prices. In 2012, world commodity prices are expected to moderate with a better supply–demand balance, mainly reflecting slower global economic activity.

The growing optimism in the mining industry and the demand fundamentals drove the industry back to boom times. Investment in new supply is increasingly focusing on emerging markets as companies and governments entered the industry with the primary goal of securing supply. To keep up with demand \$300 billion of capital programmes were announced, with over \$120 billion planned for 2011, more than double the total 2010 spend. The sheer size and volume of the announced capital projects demonstrated an industry where fulfilling seemingly insatiable demand is the top priority. Growing demand for its products, driven by emerging markets, highlights that sufficient supply will be the most significant challenge it will face.

TABLE 15: MINERALS AND METALS ANNUAL AVERAGE PRICES, 2006 - 2011

COMMODITY	UNIT						
		2006	2007	2008	2009	2010	2011
Aluminium High Grade, LME Cash	\$/t	2569.87	2638.59	2573.21	1664.36	2173.19	2383.20
Antimony, Metal Bulletin Free Market	\$/t	5171.99	5538.03	6108.16	5200.86	9020.27	14741.44
Coal ⁺ - Steam: Local FOR	R/t	85.17	100.00	141.53	162.75	177.50	196.14
Export FOB	R/t	310.42	359.50	711.99	515.58	551.42	727.85
Anthracite: Local FOR	R/t	477.17	485.50	602.42	690.33	778.25	898.90
Export FOB	R/t	415.58	480.75	598.43	889.75	780.75	864.65
Cobalt, Metal Bulletin Free Market	\$/lb,	16.48	29.33	38.64	17.35	20.57	17.58
Copper: Grade A, LME Cash	\$/t	6723.54	7118.72	6899.55	5112.77	7533.92	8832.89
Republic Copper Price	R/t	51185.49	56759.48	65381.67		62173.56	72610.50
Ferrochrome: Charge 52% Cr*	\$/lb, Cr	0.71	0.90	1.80	0.91	1.24	1.26
Ferromanganese: High Carbon 7,5% C*	€/t	584.69	895.87	1803.93	912.74	1091.52	993.14
Ferrovandium 70-80% V*	\$/kg V	38.49	37.13	61.34	25.01	29.99	28.76
Gold, London Price	\$/ozt	604.52	696.76	872.13	973.32	1225.05	1572.32
Ilmenite Concentrate 54% TiO ₂	A\$/t	80.00	80.00	102.71	86.05	74.31	128.38
Lead, LME Cash	\$/t	1289.77	2578.95	2090.78	1718.86	2144.44	2397.52
Manganese Ore: 48-50% Metalurgical*	\$/mtu	2.60	3.54	14.09	5.37	7.71	6.07
Nickel, LME Cash	\$/t	24246.16	37208.50	21100.92	14633.19	21803.81	22938.74
Palladium, London Price	\$/ozt	320.38	356.84	355.65	263.48	526.32	731.02
Platinum, London Price	\$/ozt	1141.70	1302.68	1574.87	1204.85	1610.89	1718.63
Rhodium, Johnson Matthey Base Price	\$/ozt	4547.54	6199.32	6584.88	1586.51	2458.43	2025.04
Rutile Concentrate 95% TiO ₂	A\$/t	630.00	647.31	709.32	741.76	756.68	1032.34
Silver, London Price	\$/ozt	11.57	13.43	15.01	14.66	20.16	35.34
Tantalum Ore: 30% Ta ₂ O ₅	\$/lb,	35.54	35.00	35.00	35.00	0.00	0.00
Tin, LME Cash	\$/t	8780.68	14538.60	19189.50	13563.83	20405.83	26181.78
Uranium Oxide, NUEXCO spot	\$/lb,	47.62	99.11	64.24	46.68	45.87	56.30
Vanadium Pentoxide*	\$/lb,	7.87	7.40	13.55	6.04	6.92	6.61
Zinc, Special High Grade	\$/t	3276.10	3242.50	1875.18	1653.77	2160.71	2194.36
Zircon: Foundry Grade, Bulk, FOB	A\$/t	745.00	772.74	762.50	854.68	839.35	1671.19

Source: Metal Bulletin

Note: N/A prices not available

PART TWO: REVIEW OF SELECTED COMMODITIES

PRECIOUS METALS AND MINERALS OVERVIEW

Lesego Malebo

INTRODUCTION

Precious metals and minerals industry include gold, platinum-group metals (PGMs), silver, and diamonds. South Africa is the world's largest producer of PGMs and is 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. Precious metals were produced from 94 mines, while diamonds were produced from 97 operations out of 396 licensees during 2011.

PRODUCTION AND SALES

The country's aggregated production of precious metals, excluding diamonds, declined by 2.3 percent to 542.3 t mainly as a result of a 4.5 percent drop in gold production (Table 16). Precious metals and minerals had a total revenue of R153.4 billion in 2011, an increase of 20.5 percent over the 2010 revenue. Despite a marginal decrease of 1.9 percent to 490.8 t in the precious metals export volume, revenue from such sales increased by 18.5 percent to R 139 billion, mainly due to the recovery in both the gold and PGM prices. Local sales increased by 43 percent from R9.98 billion in 2010 to R14.3 billion in 2011, partly due to a 23.6 percent increase in local sales volumes in 2011 compared with 2010.

TABLE 16: SOUTH AFRICA'S PRODUCTION AND SALES OF PRECIOUS METALS, 2010 AND 2011.

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		t	t	R million	t	R million	t	R million
GOLD	2011	180.2	10.2	3 633	175.5	65 258	185.7	68 891
	2010	188.7	7.2	2 056	176.8	51 037	184.0	53 093
PGMs	2011	288.9	36.8	10 619	244.0	73 234	280.8	83 853
	2010	287.3	31.1	7 892	244.0	65 894	275.5	73 786
SILVER	2011	73.2	10.0	80	71.3	532	81.2	612
	2010	79.3	7.8	36	78.9	350	86.7	386
TOTAL	2011	542.3	57.0	14 332	490.8	139 024	547.7	153 356
	2010	555.3	46.1	9 984	500.2	117 282	546.2	127 266

Source: DMR, Directorate Mineral Economics

South Africa's diamond production fell by 20.6 percent to 7.0 Mct in 2011, attributed to decreased production from major diamond operations. Both local and export sales mass decreased; however the respective values increased by 1.6 percent and 12.6 percent, due to improved prices. Diamonds produced in South Africa were valued at an average of \$247.14/ct in 2011, an increase of 22.3 percent over the 2010 figure.

EMPLOYMENT

Employment in the precious metals and mineral sector increased slightly by 0.7 percent to 352 570 (Table 17), with PGM and diamond sectors increasing employment by 7.1 percent and 7.8 percent, respectively. The gold sector's employment continued on its declining trend dropping by 7.3 percent. Total remuneration for the year increased by 10.8 percent to just over R53 billion, raising the average remuneration per employee by 10.1 percent to R152 068/employee.

TABLE 17: EMPLOYMENT AND REMUNERATION IN SOUTH AFRICA'S PRECIOUS METALS AND MINERALS (INCLUDING DIAMOND) MINES, 2005 – 2011.

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

Source: DMR, Directorate Mineral Economics

OUTLOOK

PGMs market was volatile in 2011, with demand starting off on a strong note as the economic recovery rolled over from 2010. However, the Japanese earthquake in the first half of 2011, coupled with the deteriorating economic outlook due to the debt crisis in Europe, which led to a decline in demand from the autocatalysts and jewellery sectors, resulting in an oversupply of platinum on global markets. This depressed prices which dropped from an average price of \$1,900/oz at the beginning of 2011 to an average price of \$1,400/oz towards the end of 2011 and declined further in the first half of 2012.

Global PGM supplies are expected to decline in 2012, mainly as a result of industrial strikes and safety stoppages on major South African mines. The industrial actions in South Africa brought a temporary relief to the market, by reducing stock and pushing the PGM prices up. The gradual resolution of the European debt crisis, together with a resurgence in global economic growth, is likely to boost prices again towards

the end of 2012 and going into 2013. With Europe witnessing the beginning of a technology shift aimed at reducing fleet-average carbon dioxide emissions, platinum demand is expected to increase.

As the global economy recovers and consumer confidence in developed economies returns, rough diamond demand is expected to pick up in 2012 going into 2013, and growth in consumption from emerging economies such as China and India will ensure that demand continues to increase.

Total world gold supply is expected to increase in 2012, from the anticipated increase in mine production as well as from recycling. Global demand for investment purposes is also forecast to grow in 2012, due to the potential inflationary pressures resulting from governments' and central banks' fiscal and monetary policies in many countries which are perceived to create unstable economic environments for alternative investment tools. Despite the expected increase in global production, South Africa's gold production which has been on a declining trend over a decade will remain virtually flat in 2012, albeit having the largest reserves in the world. To increase the country's gold output the industry must invest in new technology in order to tap into the reserves at depth.

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DIAMONDS

Donald O. Moumakwa

GLOBAL OUTPUT

The Kimberley Process Certification Scheme (KPCS) statistics reveal that global diamond carat output fell by 6.9 percent to 123.9 million carats (Mct) in 2011. This value, however, does not include production from the Ivory Coast, which is currently subject to United Nations sanctions and, therefore, does not trade in rough diamonds. The decreased output is mainly attributed to decreased production from countries where the De Beers Group and its joint venture partners operate, such as South Africa and Canada, as well as Australia. The value of global mine production increased by 20.1 percent to just over \$14.0 billion due to the soaring prices during the year.

TABLE 18: WORLD ROUGH DIAMOND PRODUCTION, 2011.

Countries	MASS		VALUE		\$ / cts
	Mct	%	US \$ million	%	
Angola	8.3	6.7	1 162	8.1	140
Australia	7.8	6.3	220	1.5	28
Botswana	22.9	18.5	3 902	27.1	170
Canada	10.8	8.7	2 550	17.7	236
DR of Congo	19.2	15.5	179	1.2	9
Lesotho	0.2	0.2	359	2.5	1 602
Namibia	1.2	1.0	872	6.1	727
Russian Federation	35.1	28.3	2 674	18.6	76
Sierra Leone	0.4	0.3	124	0.9	310
South Africa*	7.0	5.6	1 730	12.0	247
Zimbabwe	8.5	6.9	476	3.3	56
Other	2.5	2.0	159	1.1	64
Total : 2011	123.9		14 407		
2010	133.1		11 998		

Source: KPCS Statistics

DMR, Directorate Mineral Economics

The Russian Federation remained the world's largest rough diamond producer by volume and second by value, with a production of 35.1 Mct, valued at \$2.7 billion. By contrast, Botswana remained the largest producer by value and second by volume, with 22.9 Mct produced valued at \$3.9 billion. At \$2.5 billion, Canada ranked third in terms of value and fourth in terms of volume. The DRC remained the third largest producer by volume, but ninth in terms of value. Other top producers by value include Angola and South

Africa; the latter is now ranked eighth by volume, two places down from 2010 after being overtaken by Angola and Zimbabwe, but remains fourth by value.

Despite ranking only fourteenth and producing just over 200 000 cts, Lesotho produced the highest average value stones at just over \$1 600/ct. Diamonds produced in South Africa were valued at an average of \$247.14/ct, an increase of 22.3 percent over the 2010 figure, while the average value of stones from the DRC remained of low at an average of \$9.32/ct.

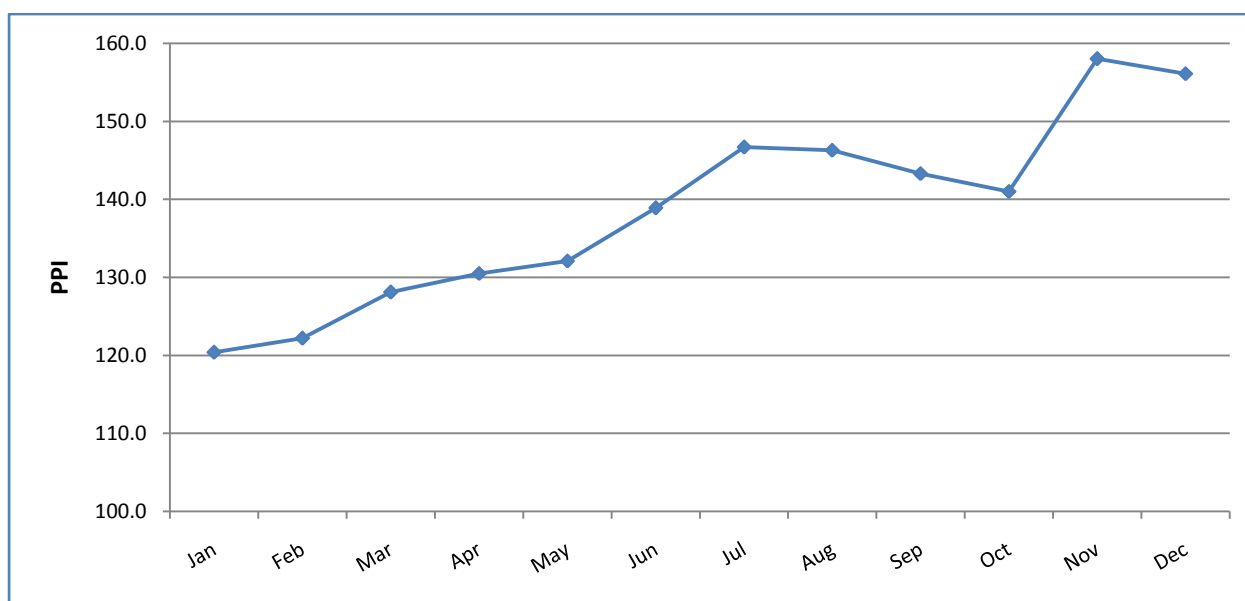
GLOBAL TRADE

Rough diamonds were exported to various cutting and polishing, as well as trading centres in various geographic regions, mainly Mumbai and Surat (India), Antwerp (Belgium) and Tel Aviv (Israel), while polished stones mainly found their way to New York (USA), Dubai (UAE) and Hong Kong. India, Belgium and Israel together imported a net of \$17.2 billion worth of rough diamonds and exported a net of \$14.8 billion worth of polished diamonds. Compared to 2010, exports of rough and polished stones declined in terms of volume but increased in terms of value, reflecting global trends: a small decline in production coinciding with a large increase in price. The US remained the major export market for polished diamonds from both Israel and Belgium, while the UAE emerged as the top export destination of polished stones from India. The US and Hong Kong combined imported a net of \$8 billion worth of polished diamonds. However, Hong Kong replaced the US as the largest polished diamond consumption market in 2011, with a net of \$4.1 billion.

POLISHED DIAMOND PRICES

The IDEX (International Diamond and Jewellery Exchange) online global polished diamond price index (PPI) indicates that average global polished diamond prices finally rose above pre-recession levels after two weak years, increasing by 17 percent to 135.8 during 2011. The market remained resilient throughout 2011 as the PPI increased by 29.6 percent between January 2011 and December 2011 (Figure 8). An increase of 1.4 percent in January 2011 when compared to December 2010 was the sharpest increase since early 2010. This was followed by a further six monthly increases, before relatively weakened demand due to the Eurozone crisis resulted in a progressive decrease for three months. However, it was not long before demand solidified again and prices recovered, with the PPI showing a 12.1 percent increase in November 2011 from its average October 2011 level.

FIGURE 8: THE IDEX ONLINE MONTHLY AVERAGE POLISHED DIAMOND PRICE INDEX, 2011.



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 fell by 20.6 percent to 7.0 Mct in 2011, attributable to decreased production from De Beers operations (Table 19). According to DMR statistics, a total of 97 licensees produced diamonds in 2011, of which 14 mined kimberlites, 14 exploited marine deposits and 69 recovered diamonds from alluvial environments. However, kimberlites were the source of 97 percent of all diamonds, while alluvial and marine diamonds made up the remaining 3 percent. Production from De Beers and Petra Diamonds accounted for 97 percent of total production, and despite dominating the marine sector, Trans-Hex and Alexkor each contributed less than one percent.

Both local and export sales mass decreased, but their values increased by 1.6 percent and 12.6 percent, respectively, due to improved prices.

TABLE 19: SOUTH AFRICA'S DIAMOND PRODUCTION AND SALES, 2011.

	Production	Local sales		Export sales		Total Sales	
<i>Kimberlites</i>	Mass (ct)	Mass (ct)	Value (R mil)	Mass (ct)	Value (R mil)	Mass (ct)	Value (R mil)
2011	6 817 742	1 566 242	2 581	4 923 966	4 763	6 490 208	7 344
2010	8 510 656	1 828 869	2 639	6 656 126	4 216	8 484 995	6 855
% Change	-19.9	-14.4	-2.2	-26.0	13.0	-23.5	7.1
<i>Alluvial</i>							
2011	197 590	206 927	1 818	53 461	4950	260 388	2 313
2010	292 606	241 085	1 679	156 692	440	397 777	2 119
% Change	-32.5	-14.2	8.3	-65.9	12.5	-34.5	9.2
<i>Marine</i>							
2011	31 312	32 589	182	8 963	93	41 552	275
2010	67 706	47 515	192	59 519	98	107 034	290
% Change	-53.8	-31.4	-5.2	-84.9	-5.1	-61.2	-5.2
<i>Total</i>							
2011	7 046 644	1 805 758	4 581	4 986 390	5 351	6 792 148	9 932
2010	8 870 968	2 117 469	4 510	6 872 337	4 754	8 989 806	9 264
% Change	-20.6	-14.7	1.6	-27.4	12.6	-24.4	7.2

Source: DMR, Directorate Mineral Economics

Employment

South Africa's diamond industry employed on average 12 030 people in 2011, a contribution of 2.3 percent to total mining employment (Table 20). Total remuneration continued its upward trend, increasing by 10.5 percent to R2.1 billion and bringing the average remuneration per employee to R178 135.

TABLE 20: EMPLOYMENT (INCLUDING CONTRACTORS) AND REMUNERATION IN SOUTH AFRICA'S DIAMOND MINING INDUSTRY, 2011.

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000)	AVERAGE REMUNERATION (R/employee)
2007	19 471	2 192 902	112 624
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

Source: DMR, Directorate Mineral Economics

Downstream Value Addition

According to the 2012 Annual Report of the South African Diamond and Precious Metals Regulator (SADPMR), only 230 000 carats (12.7 percent) of the 1 805 758 carats that were sold in SA in 2011 were cut and polished in SA. This means that more than 85 percent of diamonds sold locally directly from the mines are assumed to have been resold beyond SA borders.

Developments

African diamond mining and exploration company DiamondCorp stated in May 2012 that it expected its Lace mine, in the Free State, to reach production of 250 000 ct by 2014, over 400 000 ct by 2015 and over 500 000 ct by 2025. The company has earmarked R384 million for the expansion and has already agreed a R280 million loan with the Industrial Development Corporation. The workforce is expected to increase from the current 62 employees to more than 200 during underground development and the majority of these jobs created will exist for the life of the mine.

Rockwell Diamonds reported in March 2012 the successful completion of negotiations with black economic-empowerment (BEE) partner Africa Vanguard Resources (AVR) following a restructuring of the deal involving the purchase consideration for AVR's Jasper mine in the Northern Cape. The mine is adjacent to Rockwell's Saxendrift mine and was described as having the potential to extend the current three-year life of Saxendrift with limited exploration, development and investments, as it is a brownfield development. The Jasper mine has remaining diamond-bearing deposits that are easily accessible to the infrastructure at the Saxendrift mine.

In December 2011, Petra Diamonds sold a 4.8 carat blue diamond for \$1.45 million, equivalent to over \$300 000 per carat, a record per carat price for any diamond sold by the South African miner. Blue diamonds are exceptionally rare. The diamond was recovered at the Cullinan mine where Petra has found a number of blue diamonds in the past.

Diamond miner Rockwell Diamonds completed the acquisition of the Tirisano mine project, located near Wolmaranstad in the North West province, in October 2011. The quality and price per carat of the stones recovered at Tirisano during the commissioning and recovery testing phase were described as encouraging as they exceeded what was achieved by the mine's previous operators. Tirisano mining rights were previously owned by Blue Gum Diamonds of Canada and the operation has been on care and maintenance since June 2008.

In September 2011, Petra Diamonds officially took over Finsch mine after gaining approval from the SA government to buy the country's second largest diamond mine from De Beers for R1.4 billion. Finsch was expected to produce over 1.5 Mct per annum in its first full year of production under Petra, more than doubling the company's production. It is also expected to increase the company's production to approximately 4.0 Mct per annum by the 2014 financial year and to over 5.0 Mct per annum by 2019. Petra holds a 74.0 percent interest in Finsch via its subsidiary Afropean Diamonds (Pty) Limited. The

remaining 26.0 percent interest is held by its BEE partners Sedibeng Mining (Pty) Limited and Namoise Mining (Pty) Limited (commercial BEE partners), and the Petra Diamonds Employee Share Trust, a broad-based trust established for all Petra's South African employees.

OUTLOOK

As the global economy recovers and consumer confidence in developed economies returns, rough diamond supply is expected to remain tight in 2012, while growth in consumption from emerging economies such as China and India is expected to ensure that demand continues to increase. Having slipped 2 percent by June 2012, rough diamond prices were 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 diamonds remains positive as constrained output is expected to struggle to keep pace with growing demand.

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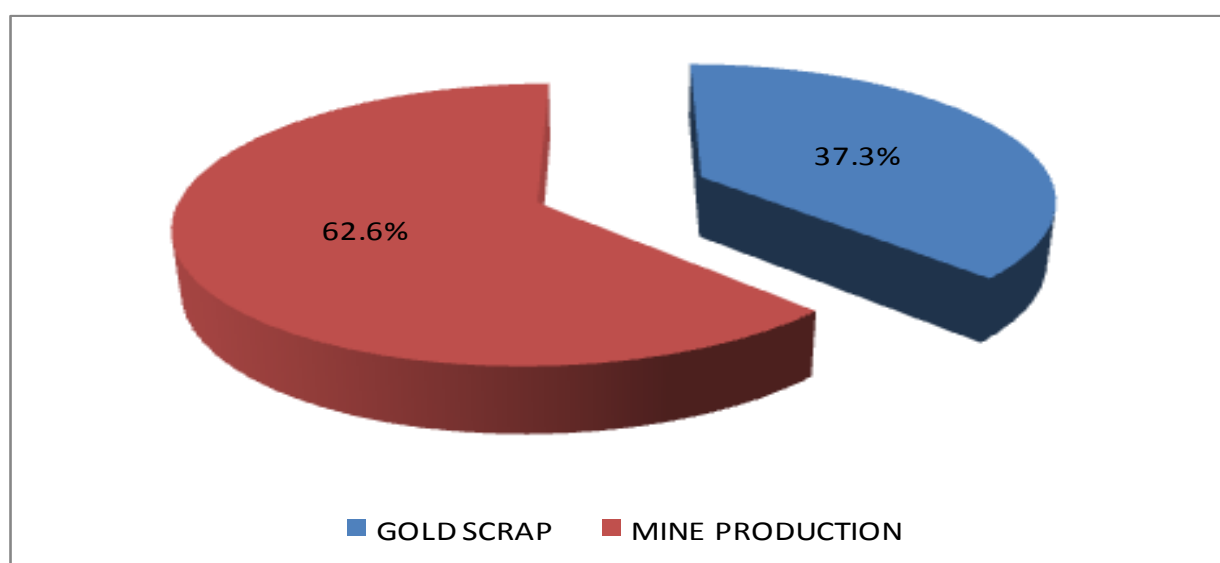
GOLD

Pieter J Perold

WORLD SUPPLY

Total world gold supply increased by 1.4 percent to 4 453.3 t in 2011, when compared with 2010, mainly due to an increase in global mine production, which accounted for 62.6 percent (2 786.3 t) of total supply, an increase of 4.2 percent (Figure 9). Gold scrap contributed 37.3 percent to global supply, a decrease of 3.4 percent from 2010 to 2011. The relative rankings of the five leading global gold producing companies remained unchanged in 2011, despite marginal annual declines in production recorded by each company. Top global gold producer, Barrick Gold (Canada) recorded an output of 238.7 t in 2011, followed closely by United States' Newmont mining with 161.3 t. AngloGold Ashanti (South Africa), Gold Fields (South Africa) and Goldcorp (Canada) retained their third, fourth and fifth positions with production of 134.7 t, 102.0 t and 78.2 t in 2011, respectively.

FIGURE 9: WORLD GOLD SUPPLY, 2011



Source: Klapwijk, et al, 2012, pp 8 – 9
DMR, Directorate Mineral Economics, 2012

According to the Gold Fields Mineral Services (GFMS), 2011, the African continent recorded its most significant increase in mine production, due to ongoing increases in Burkina Faso, Tanzania, and Cote d'Ivoire, as well as more recent increases in Sudan and Eritrea. China, Russia and Peru also recorded strong increases, with mine production increasing by 5.7 percent, 4.2 percent and 1.7 percent, respectively, compared with 2010. South Africa contributed 6.5 percent to total gold production in 2011 (Table 21), positioning the country as the sixth largest producer.

TABLE 21: WORLD GOLD RESERVES AND MINE PRODUCTION, 2011

COUNTRY	RESERVES			COUNTRY	PRODUCTION°		
	t	%	Rank		t	%	Rank
Australia	7 400	14.5	1	China	371.0	13.3	1
South Africa#	6 000	11.8	2	Australia	258.3	9.8	2
Russia	5 000	9.8	3	USA	232.8	8.4	3
Indonesia	3 000	5.9	5	Russia	211.9	7.6	4
USA	3 000	5.9	5	Peru	188.0	6.7	5
Peru	2 000	3.9	6	South Africa#	180.2*	6.5	6
China	1 900	3.7	7	Indonesia	111.0	4.0	7
Canada	920.0	1.8	8	Canada	107.7	3.9	8
Other	21 780	42.7	-	Other	1 125.4	40.4	-
TOTAL	47 000	100			2 674.20	100	

Resources not included in reserves figure (USGS)

Sources: USGS, 2012, pp 66-67

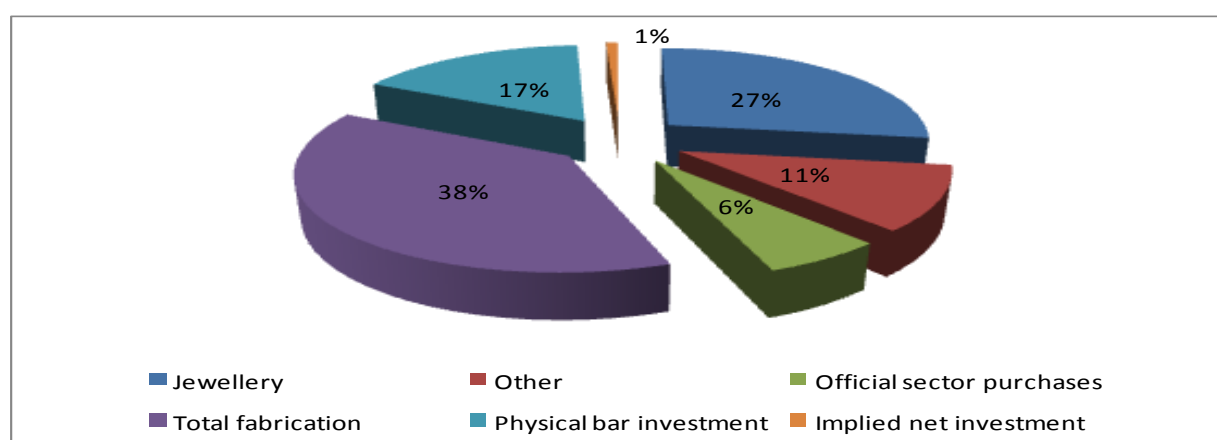
Klapwijk, et al, 2011, pp 40 – 41

DMR, Directorate Mineral Economics

WORLD DEMAND

In 2011, total world gold demand increased by 1.4 percent to 4 453.3 t, mainly as a result of net official sector purchases increasing by 20.4 percent from 378 t in 2010 to 455 t in 2011 (Figure 10). This increase outweighed the decreases in implied investment and total fabrication of 89.8 percent and 0.9 percent, respectively, in the absence of producer hedging in anticipation of a higher gold price. Demand for jewellery fabrication decreased by 2.2 percent to 1 973 t, while physical bar investment demand rose by 37.1 percent to 1 209 t.

FIGURE 10: WORLD GOLD DEMAND, 2011



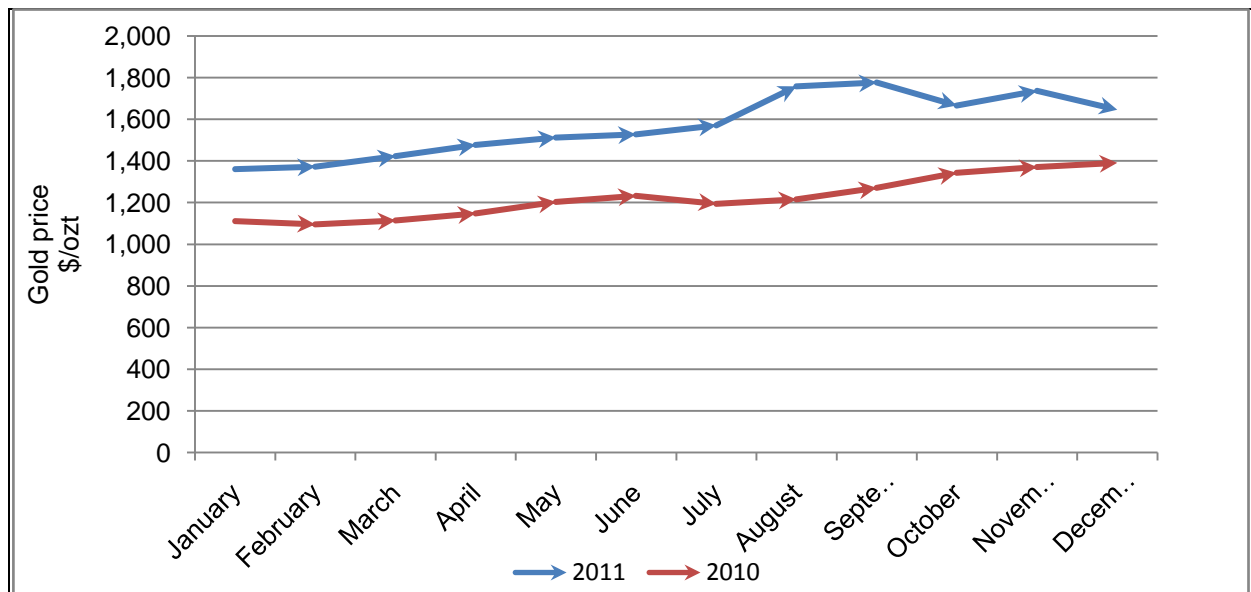
Source: Klapwijk, et al, 2012, pp 8 - 9

PRICES

The average dollar gold price for 2011, at \$1 569.17/ozt (Figure 11 and Table 22) was 28.2 percent higher than in 2010. In 2011, the gold price was driven by economic instability in Europe and persistently low interest rates in the USA amongst other factors that boosted gold investment. The gold price opened with an average price of \$1 360.79/oz and closed the year with an average price of \$1 646.17/oz in 2011, an increase of 21.0 percent.

FIGURE 11: GOLD PRICE MOVEMENTS, 2011

ere



Source: LBMA, 2010, 2011

TABLE 22: LONDON GOLD PRICE⁺, 2011

MONTH	AVERAGE [#]	AVERAGE [#]	HIGH [*]	LOW [*]
	\$/ozt	R/ozt	\$/ozt	\$/ozt
January	1 360.79	9 424.13	1 405.50	1 316.00
February	1 372.02	9 864.55	1 414.50	1 328.00
March	1 423.08	9 838.83	1 447.00	1 398.50
April	1 477.23	9 932.38	1 535.50	1 418.00
May	1 512.15	10 399.25	1 546.50	1 478.50
June	1 528.52	10 385.43	1 552.50	1 498.00
July	1 570.67	10 679.20	1 628.50	1 483.00
August	1 758.95	12 455.91	1 886.50	1 613.50
September	1 776.25	13 400.46	1 896.50	1 598.00
October	1 666.55	13 305.22	1 741.00	1 600.00
November	1 737.48	14 169.44	1 795.00	1 676.00
December	1 646.39	13 499.98	1 752.00	1 531.00
2011 average	1 569.17	11 446.23	1 633.42	1 494.88

Sources: [#] *South African Reserve Bank, 2011, 2012*

^{*} *London Bullion Market Association, 2012*

Note: ⁺ *London AM and PM fixings*

Gold's price action in 2011 was essentially in four phases. The first phase saw a period of modest decline in January as economic confidence briefly returned; the second phase was a price increase of 11.4 percent from 1 372.02/oz in February through to \$1 528.52 in June 2011, as renewed Eurozone tensions mounted. The third phase comprised a sharp bull run between the start of July and the first week of September, driven by growing expectations for the third quarter, and the fourth phase with wide price swings closed the year at \$1 569.17/oz.

SOUTH AFRICAN DEVELOPMENTS

Production and sales

South Africa's gold production which has been declining for close to a decade further decreased by 4.5 percent from 188.7 t in 2010 to 180.2 t in 2011 (Table 23), resulting in the country dropping from fifth to sixth in global production ranking. The decrease in production was mainly as a result of lower gold production from eight of the country's top ten gold mines, which account for over half of total local production. Total sales revenue increased by 29.8 percent to R68.9 billion, due to a 43.2 percent rise in the average rand price for the year. Export sales value increased by 27.9 percent in 2011, due to an increase in the average gold price for the year, despite a decrease of 0.8 percent in export sales volumes compared to 2010. Local sales volumes increased by 29.0 percent from 7.2 t in 2010 to 10.2 t in 2011, partly due to

increased local fabrication demand during 2011. The South African Reserve Bank held gold reserves of 125.0 t valued at R51.4 billion at the end of 2011.

TABLE 23: SOUTH AFRICA'S GOLD PRODUCTION, TOTAL SALES VALUE AND RESERVE BANK HOLDINGS, 2002 – 2011

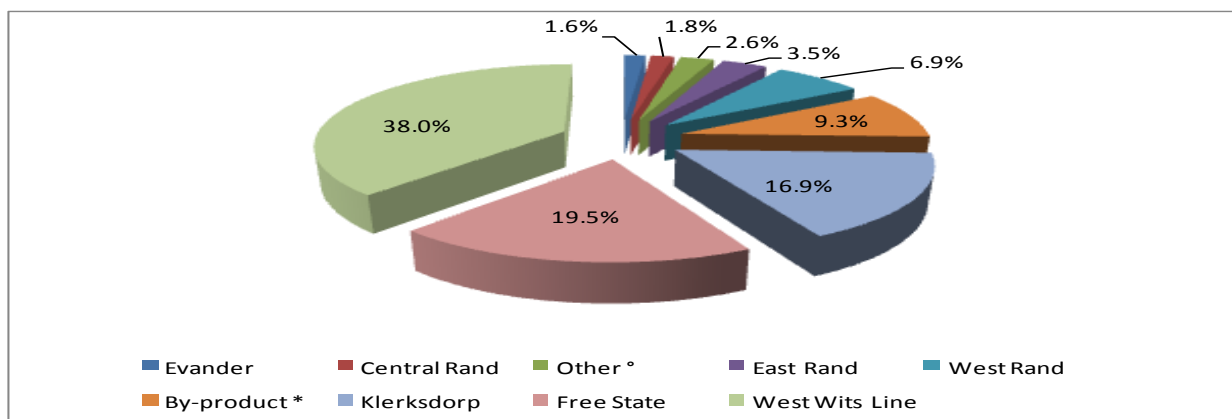
YEAR	PRODUCTION	TOTAL	RESERVE BANK HOLDINGS*	
		SALES VALUE		
	t	R ' 000	t	R ' 000
2002	398.5	41 222 165	173.6	14 989 624
2003	373.3	33 052 899	123.6	9 798 741
2004	337.2	29 329 871	123.9	8 886 591
2005	294.7	24 601 241	124.0	12 970 035
2006	272.1	37 443 092	124.1	17 634 409
2007	252.6	38 035 724	124.3	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	180.2	68 891 413	125.0	51 420 484

Sources: South African Reserve Bank, 2002 - 2012
DMR, Directorate Mineral Economics

Note: * Gold holdings at year-end

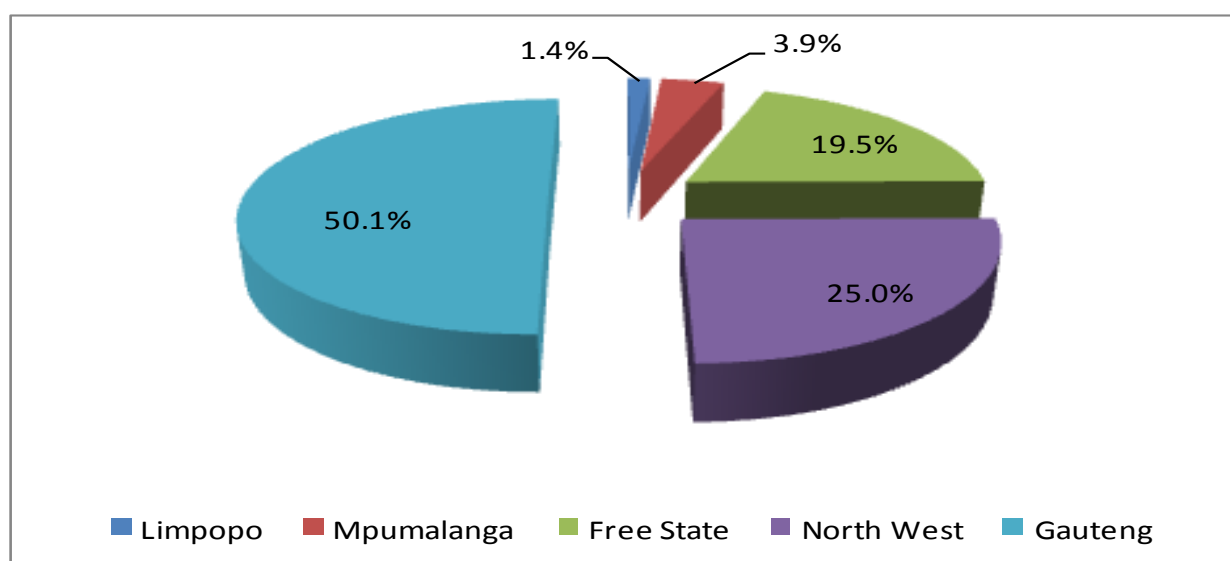
Figures 12 and 13 depict the breakdown of production by gold field and province, respectively. The latter illustrates that Gauteng was the largest gold producer at 90.4t, while the former illustrates that the West Wits Line yielded the largest gold production at 68.5t.

FIGURE 12: SOUTH AFRICA'S PRIMARY GOLD PRODUCTION AND CONTRIBUTION TO TOTAL PRODUCTION BY GOLD FIELD, 2011 (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, 2011 (t, %)



Source: DMR, Mineral Economics Directorate

Employment

Employment in the gold mining sector fell from 157 019 in 2010 to 145 516 in 2011, due to the issuing of retrenchment packages in the first and third quarters of 2011. Total remuneration increased by 5.6 percent in the same period (Table 24). Productivity per employee decreased by 3.1 percent to 0.001 tons in 2011.

TABLE 24: SOUTH AFRICA'S GOLD MINES, EMPLOYMENT AND REMUNERATION, 2007 – 2011

YEAR	NUMBER OF EMPLOYEES*			REMUNERATION		
	Total	Male	Female	Total	Male	Female
				R ' 000	R ' 000	R ' 000
2007	166 063	159 827	6 236	14 506 400	13 957 747	548 653
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	145 516	133 807	11 754	20 948 451	19 316 609	1 631 842

Source: DMR, Directorate Mineral Economics

Note: * Average number of employees in service, including contractors

Projects and other developments

On 30 January 2012, Pan African Resources (PAR) and Wits Gold entered into an agreement with Harmony to acquire 100 percent of Harmony's Evander 8 operation, which includes the Rolspruit, Poplar, Libra Development opportunities as well as the Kinross metallurgical processing plant. The Evander 8 mine currently has a 10 year life-of-mine and is producing between 85 000 ounce per year (oz/y) and 95 000 oz/y.

On 28 July 2011, Witwatersrand Consolidated Resources announced that Wits Gold's current exploration programme at its De Bron/Merriespruit mine was nearing completion. Wits Gold completed a scoping study, which envisaged the development of an underground mine to a depth of about 700 metres, capable of producing an average of 150 000 ounces of gold per year (oz/y) for the first 10 years.

Africa-focused precious metals producer Pan African Resources announced that Barberton Gold Tailings Retreatment Project (BTRP) would be the next growth project to be developed and once commissioned would increase its yearly gold production by 25 000 oz from August 2013 onwards.

Wits Gold announced that Turgis Consulting (Pty) Ltd (Turgis) had been appointed to complete a pre-feasibility study of its advanced De Bron-Merriespruit Project (DBM) in the southern Free State goldfield. This followed the announcement of positive scoping study results at the DBM Project on 23 June 2011.

On 24 May, 2011, Gold One International Limited announced that it had signed a sale-and-purchase agreement with Rand Uranium. The sales agreement reflected the terms and conditions for the previously-announced \$250-million deal for its shallow Cooke operations and was subject to certain conditions, including regulatory and shareholder approval.

On 19 May 2012, Central Rand Gold released an interim management statement revealing its intention to experiment with conventional mining operations after years of implementing a highly mechanised mining system on various old mine workings near Johannesburg. The objective of the trial is to determine whether conventional, handheld in-stope drilling can be undertaken safely, reducing dilution and improve grade sensitivity.

On 17 April 2012 Gold One International Limited (ASX and JSE:GDO), through its wholly owned subsidiary New Kleinfontein Goldmine Proprietary Limited (NGKM), and Goliath Gold Mining Limited (JSE:GGM) announced that it had entered into an acquisition agreement with the Joint Provisional Liquidators representing Pamodzi Gold East Rand Proprietary Limited and its subsidiaries.

Beneficiation

Gold beneficiation in South Africa is conducted mainly by the jewellery industry and to some extent by recycling companies. The Jewellery industry employs both skilled and unskilled labour. Recycling

companies also provide downstream employment in the South African gold industry. In 2011, 5.6 percent of total gold production was sold locally, amounting to over R3.6 billion.

OUTLOOK

Total world gold supply is expected to increase in 2012, from the anticipated increase in mine production as well as from recycling. Scrap supply is expected to increase following two years of moderate declines. Central Bank purchases are expected to increase again in 2012, but the bulk of fresh bullion demand will have to come from investors.

Global demand for investment is also forecast to grow in 2012, due to the potential inflationary pressures resulting from governments' and central banks' fiscal and monetary policies in many countries and, due to the safe haven status of gold as the economic environment remains unstable. The price in rand terms is forecast to increase by 20.4 percent to an average of R443 034/kg in 2012.

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PLATINUM-GROUP METALS (PGMs)

Donald O Moumakwa

GLOBAL SUPPLY

Global platinum supplies increased by 7 percent in 2011 to 183.7 metric tonnes (t) mainly due to supplies from South Africa (SA), which increased by 5 percent to 137.6 t (Table 25) as a result of the release of metal from in-process and refined inventories. Russia supplied 23.7 t of the metal, followed by North America and Zimbabwe with just under 10 t each.

TABLE 25: GLOBAL PGMs RESERVES AND SUPPLY, 2011.

COUNTRY	RESERVES*			SUPPLY (t)				
	t	%	Rank	Platinum	Palladium	Rhodium	Total	%
North America	1 210	1.8	2.0	9.9	25.5	0.6	36.0	8.7
Russia	1 100	1.7	3.0	23.7	98.6	2.0	124.3	30.0
South Africa	63 000	95.5	1.0	137.6	72.6	18.2	228.4	55.2
Zimbabwe	na	na	na	9.6	7.5	0.8	17.9	4.3
Others	690.0	1.0	-	2.9	4.4	0.1	7.4	1.8
TOTAL	66 000	100.0		183.7	208.6	21.7	414.0	100.0

Sources: Platinum 2012

*USGS, 2012

Supplies of palladium remained almost flat at 208.6 t as increased output from North America and Zimbabwe was largely offset by lower sales from Russian state inventories. However, Russia remained the leading supplier of palladium with 98.6 t, followed closely by South Africa with 72.6 t. Rhodium supplies increased by 4 percent to 21.7 t, mainly due to increased output from North America and Zimbabwe.

GLOBAL DEMAND

The platinum market was oversupplied by 12.2 t in 2011, despite gross demand rising by 2 percent to just under 230 t. There was demand growth in every sector apart from investment, but with a new high of 58.2 t, largely due to strong purchasing in the glass manufacturing sector, industrial demand was the main driver behind increased gross demand for platinum. Gross demand from autocatalysts increased by 1 percent, while jewellery demand increased by two percent to 70.3 t. Recycling in the autocatalyst,

electrical and jewellery sectors reached record high levels for platinum, largely contributing to oversupply of the metal in the market.

TABLE 26: PGMs DEMAND BY APPLICATION, 2011.

Tonnes (t)	Platinum	Palladium	Rhodium
Total Supplies	183.7	208.6	21.7
Gross Demand			
Autocatalysts	88.0	171.0	20.2
Chemical	13.3	12.6	2.0
Electrical	6.5	39.1	0.1
Investment	13.0	16.0	0.0
Jewellery	70.3	14.3	0.0
Other	38.3	18.6	3.3
Total Gross Demand	229.5	271.6	25.7
Recycling			
Autocatalysts	34.7	46.9	7.9
Electrical	0.3	13.6	0.0
Jewellery	23.0	6.0	0.0
Total Recycling	58.0	66.5	7.9
Total Net Demand (total gross demand – total recycling)	171.5	205.1	17.7
Oversupply (total supply – total net demand)	12.2	3.5	4.0

Source: Platinum 2012.

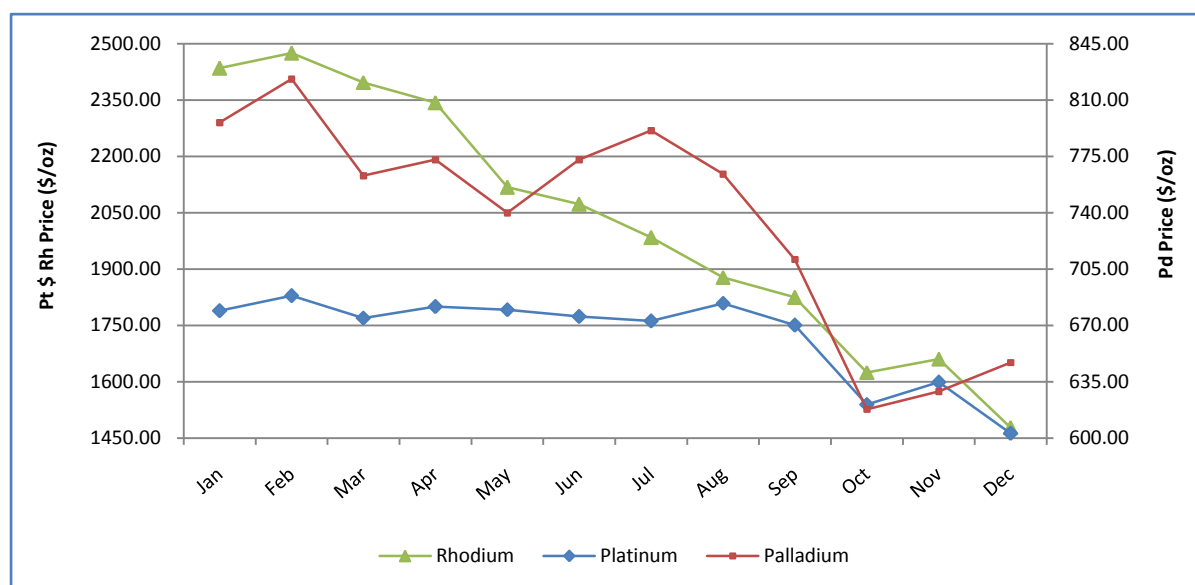
Gross demand for palladium in autocatalysts reached a new high of 171.0 t, mainly due to growth in vehicle output in all regions except Japan, and greater use of the metal in light duty diesel after-treatment systems. Total gross demand declined by 13 percent to 271.6 t, while further Russian stock sales and higher recycling helped swing the market into an oversupply of 3.5 t. The rhodium market also remained in a surplus of 4.0 t due to higher supplies and recycling. Demand for ruthenium and iridium fell due to lower demand from the electrical sector.

PRICES

Several factors impacted heavily on PGMs price movements during 2011: the dollar's fluctuating fortune, political tensions in the Middle East and North Africa, the severe earthquake and tsunami in Japan on 11 March 2011, industrial actions, safety stoppages as well as concerns over sovereign debt problems in the Eurozone. However, platinum traded between \$1 750 and \$1 900 per ounce during the first eight months of 2011 (Figure 14), mainly due to strong physical demand. The metal reached a three-year high in August, but suffered a severe decline from September onwards as a result of economic uncertainty. The

platinum price was eventually overtaken by the gold price and the status quo remained until the end of the year, with the former at a two-year low. Despite losing \$387 (22 percent) between the beginning and end of the year, the average platinum price increased by 7 percent to \$1 721/oz in 2011, compared with 2010.

FIGURE 14: PGM MONTHLY AVERAGE PRICES, 2011.



Source: Johnson Matthey

Due to the more industrial nature of the palladium market, investor confidence affected the metal to a greater extent than platinum, as evidenced in greater relative price declines in March and September. Japan typically accounts for just over 16 percent of global palladium demand but after the March disaster, the metal lost 6 percent of its value after key electronics and car manufacturing plants closed. Still, palladium traded at 10-year highs during the first eight months of the year, largely due to a positive outlook. There was a progressive decline in prices between August and October due to wavering confidence over the state of the world economy. Prices improved slightly in November and December on the back of the rising gold price and US car sales. By the end of the year, palladium had lost \$156 (20 percent) over the course of 2011, but at \$733, the average price was 39 percent higher than in 2010.

The biggest loser of all PGMs was rhodium, which lost \$1 025 (42 percent) during 2011. The metal reached a high of \$2 500 on the 31st January 2011, but was on a downward trend for much of the remainder of the year. The average monthly price decreased progressively between March and October following the Japanese earthquake and the resultant limited buying interest, as well as negative market sentiments, particularly during the last quarter of the year. By the end of the year, rhodium was trading at \$1 400, the lowest level since the middle of 2009. The average price for the year was \$2 022, 18 percent lower than in 2010. Ruthenium and iridium had contrasting fortunes during 2011; the former lost 39 percent of its value for an average of \$166, a decrease of 16 percent. Iridium, on the other hand, gained 39 percent to average \$1 036, an increase of 61 percent.

DEVELOPMENTS IN SOUTH AFRICA

Production and Sales

SA's PGMs production increased by a modest 0.6 percent to 288.9t in 2011, despite interruptions experienced by the sector such as safety stoppages, illegal strikes, unexpected geological difficulties and engineering issues (Table 27). The increase could be attributed to ramped up production from the expanded Mogalakwena mine, and the Everest mine, which was reopened in 2010. Despite increased demand from the automotive sector, export sales were nearly flat in 2011, perhaps a clear indication that more of the metals were made available for local sales, the mass of which increased by 18.3 percent. Increased sales values reflect a general increase in both prices and mass.

TABLE 27: SOUTH AFRICA'S PGMs PRODUCTION AND SALES, 2011 and 2010.

	Production	Local sales		Export sales		Total Sales	
<i>Platinum</i>	Mass (t)	Mass (t)	Value (R mil)	Mass (t)	Value (R mil)	Mass (t)	Value (R mil)
2011	148.0	17.2	6 887.0	133.9	52 121.0	151.1	59 008.0
2010	147.8	13.8	5 196.0	130.0	46 837.0	143.8	52 033.0
% Change	0.1	24.6	32.5	3.0	11.3	5.1	13.4
<i>Palladium</i>							
2011	82.7	18.0	3 045.0	63.7	10 383.0	81.7	13 428.0
2010	82.2	15.7	1 881.0	62.8	6 896.0	78.5	8 777.0
% Change	0.6	14.6	61.9	1.4	50.6	4.1	53.0
<i>Rhodium</i>							
2011	28.7	2.5	1 081.0	27.0	11 593.0	29.5	12 674.0
2010	20.0	1.4	812.0	18.3	9 932.0	19.7	10 744.0
% Change	43.5	78.6	33.1	47.5	16.7	49.7	18.0
<i>All PGMs</i>							
2011	288.9	36.8	10 619.0	244.0	73 234.0	280.8	83 853.0
2010	287.3	31.1	7 892.0	244.4	65 894.0	275.5	73 786.0
% Change	0.6	18.3	34.6	-0.2	11.1	1.9	13.6

Source: DMR, Directorate Mineral Economics

Rhodium was the best performer in terms of production, with an increase of 43.5 percent, while platinum and palladium recorded modest increases. Despite a decrease in rhodium prices, the metal also emerged as a standout performer in terms of sales revenue due to an increase in both local and export sales mass. While palladium recorded more than 50 percent increase in total sales value, rhodium recorded just under 50 percent increase in total sales mass. The best performance of platinum was in local sales, with increases of 24.6 percent and 32.5 percent in mass and value, respectively.

Employment

Average employment in South Africa's PGMs sector increased for the first time in 4 years, rising by 7.1 percent from 182 003 in 2010 to 194 979 in 2011 (Table 28). However, recent challenges could result in widespread job losses in 2012, particularly as smaller producers attempt to reduce their operating costs and maintain profitability. Total remuneration increased by 14.4 percent in 2011, resulting in a 6.8 percent increase in the average remuneration per employee. Average productivity per employee decreased by 5.7 percent to 1.48 kg.

TABLE 28: EMPLOYMENT (INCLUDING CONTRACTORS) AND REMUNERATION IN SOUTH AFRICA'S PGM MINES, 2011.

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000 000)	AVERAGE REMUNERATION (R/employee)
2007	186 411	18 341	98 390
2008	199 948	23 344	116 752
2009	184 163	24 879	135 093
2010	182 003	26 577	146 027
2011	194 979	30 413	155 980

Source: DMR, Directorate Mineral Economics

Downstream Value Addition

Total SA PGMs sales amounted to 280.8t in 2011, with local sales accounting for just 13.1 percent (36.8 t), an increase of 18.3 percent over 2010. Almost all the locally sold metals were consumed in the catalytic converters industry. A sizeable portion is expected to be consumed by the fuel cell industry in future as the country continues its research on alternative energy sources to fossil fuels. Already advanced progress has been made on both the global and local front to commercialize fuel cells and further develop their market. This could enable the country to reach its objective of ultimately supplying 25 percent of the future global fuel cell market with locally developed and fabricated platinum-group metal components by 2020, in line with the National Hydrogen and Fuel Cells Research, Development and Innovation Strategy.

Projects and Other Developments

In June 2012, Aquarius Platinum suspended operations at both Everest and Marikana mines due to weak platinum prices and high costs. Even though the latter still has 10 years life remaining at current production rates, it was already operating on a negative cash margin during the first quarter of 2012. The company, which now has three of its seven operations under care and maintenance, said it would restart mining once the platinum industry entered a better price environment and improved industrial relations. Meanwhile, Platinum Australia's Smokey Hills mine, is facing an uncertain future following the group's decision to place it under review, while Eastern Platinum suspended funding for its Mareesburg mine and

Kennedy's Vale concentrator plant due to the operating environment in the country and the global slowdown.

At a time when some South African platinum companies were curtailing output and cutting back on projects, amid high costs and low prices, Platinum Group Metals (PTM) announced its plans to finance and complete its 74%-owned Western Bushveld Joint Venture (WBJV) Project 1 platinum mine, an indication of the competitive nature of the project. The company was also looking at exploring and expanding its new Waterberg discovery in South Africa. According to the group, WBJV Project 1 mine is near surface and has excellent grades, while Waterberg consists of extraordinary grade thickness, located near surface and eight drill rigs continue to expand this new discovery. Project 1 platinum mine (in which Wesizwe Platinum has a 26% stake), is located north of Rustenburg in between Bafokeng Rasimone mine and Bakubung platinum mine (formerly known as the Fischgewaagd Ledig project), and is set to produce 275 000 oz of PGMs and gold annually, starting in the fourth quarter of 2013.

Nkwe Platinum confirmed in May 2012 that it had received the final definitive feasibility study for its much-contested Garatau project. The study was undergoing a final review before a sign off. In February 2012, Nkwe was awarded mining rights over three farms, including those making up the Garatau platinum project. However, diversified miner African Rainbow Minerals and its joint venture partner Anglo American Platinum had both indicated that they would oppose the issue of the mining right over the farms, arguing that they were the rightful owners of the properties.

Workers returned to work at Impala Platinum's Rustenburg mine after an illegal two-day strike in May 2012 cost the company 6 000oz of platinum worth about R72 million. Earlier in the year, the same mine was hit by a crippling illegal strike which cost 120 000 oz in lost PGMs production. Implats' full year production target for Rustenburg of 915 000 to 920 000 oz was revised downward following the industrial actions but the company said it was committed to trying to make up for at least some of the lost ounces.

Northam Platinum was in discussions to secure smelting services while it implemented plans to rebuild the smelter at its Zondereinde mine. The company suspended smelting operations following a run-out after a rebuild of the furnace wall-end in April 2012. The rebuild, which was initially scheduled for the next financial year, was expected to take up to four months to complete. Furthermore, Northam expected its revenue for the financial year ended 2012 June 30 to be R300-million lower than anticipated, as interruptions to metals processing in the last two months of the period impacted on sales volumes. Mining and concentrating activities continued uninterrupted at the Zondereinde mine.

Anglo American Platinum (Amplats) launched the first of five fuel cell-powered locomotive prototypes. The first locomotive was surface tested over the past few months at the company's Khomanani mine, in Rustenburg, to establish the viability of commercialisation. The company aimed to use the five fuel cell-powered locomotives for underground testing in one of its mines by the end of the year. Using the platinum-based hydrogen-powered fuel-cell locomotives would be more environment-friendly than traditional rail transport.

The wage dispute at the Modikwa platinum mine, a joint venture between African Rainbow Minerals (ARM) and Anglo American Platinum, was resolved in April 2012. ARM confirmed that Modikwa had signed a two-year wage agreement and that some 3 000 striking employees were expected to return to work and resume production. Production at the platinum mine, near Burgersfort, came to a standstill for more than three weeks when workers downed tools over wages and conditions of employment. The mine confirmed that it lost about 1 000 oz of platinum-group metals a day during the strike.

OUTLOOK

Global platinum supplies are expected to decline in 2012 due to decreased output from South Africa, largely as a result of industrial actions and safety stoppages, which have already interrupted output. From a market perspective, however, these are positive developments as decreased production would help to ease the expected market oversupply. A rebound in vehicle production in Japan following the 2011 earthquake is expected to be positive for platinum demand, but moderate purchasing in industrial applications is expected to result in a fall in gross demand for platinum in 2012. The expected oversupply is likely to result in prices averaging \$1 600/oz in the second half of 2012.

Unlike platinum, the palladium market is expected to swing back into deficit in 2012 due to lower shipments of Russian state stocks and increased demand. Supplies of the metal from SA could increase due to the availability of a reasonable level of stocks to draw upon. This is because sales of palladium from SA were below the level of mined production in 2011. Gross demand is expected to increase in 2012 due to stronger purchasing by the autocatalyst sector as global vehicle production accelerates later on in the year. As a result, prices are expected to reach an average of \$715/oz in the second half of 2012.

Low prices drove up purchasing of rhodium in late 2011 and this trend is expected to continue well into 2012. Despite increased demand, the rhodium market is expected to remain in surplus in 2012 due to increased supplies from SA, particularly above-ground stocks. However, the price for the metal is expected to average \$1 700 in the second half of 2012. Demand for ruthenium is expected to increase in 2012 due to higher purchasing by hard disk manufacturers, while demand for iridium is expected to fall as a result of lower purchases of crucibles for the manufacture of light-emitting diodes.

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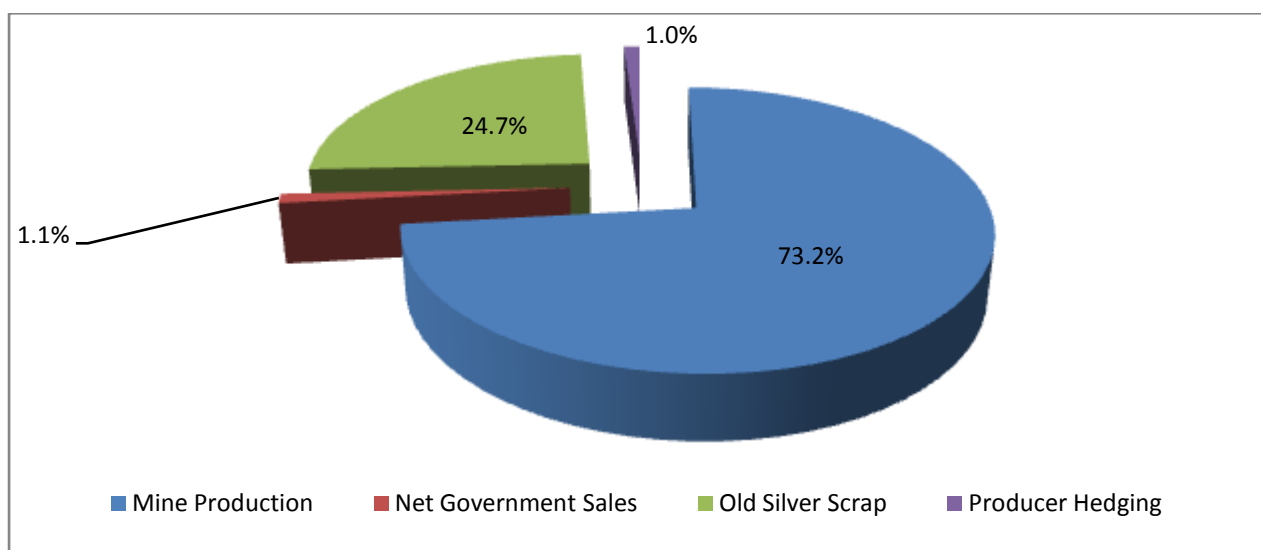
SILVER

Pieter J Perold

WORLD SUPPLY

Global silver supply decreased by 3.2 percent from 1 074.7 million ounces (Moz) in 2010 to 1 040.6 Moz in 2011, with mine production and secondary supply contributing 73.2 percent and 26.8 percent, respectively (Fig 15). The decrease in global silver supply was mainly driven by slumping production from primary silver mines as well as a decrease in both the net producer hedging and net government sales. According to the 2011 Silver Survey, lower production from primary silver mines was due to lower processed grades and once-off disruptions at several large operations, including the world's two largest primary mines, Australia's Cannington mine and Mexico's Fresnillo mine. Despite a notable decline in production at Mexico's Fresnillo mine, Mexico's total silver production increased by 8.0 percent in 2011, reinforcing the country's position as the world's largest silver producer. Peru remained the second largest global producer of silver, followed by China, Australia and Chile. South Africa, whose production accounted for 0.4 percent of total world production ranked 20th.

FIGURE 15: WORLD SILVER SUPPLY BY SOURCE, 2011.1:



Source: World Silver Survey, 2012

TABLE 29: WORLD SILVER RESERVES AND MINE PRODUCTION, 2011

COUNTRY	RESERVES			PRODUCTION°		
	Moz	%	Rank	Moz	%	Rank
Australia	2 218.4	13.2	4	55.2	7.3	4
Argentina	-	-	-	22.6	3.0	10
Bolivia	707.3	4.2	8	39.1	5.1	8
Chile	2 250.6	13.4	3	42.1	5.5	5
China	1 382.5	8.3	5	103.9	13.7	3
Mexico	1 189.6	7.1	6	152.8	20.1	1
Peru	3 858.1	23.1	1	109.8	14.4	2
Poland	2 732.9	16.3	2	40.8	5.4	6
Russia	-	-	-	40.1	5.3	7
South Africa+	-	-	-	2.4	0.3	20
USA	803.8	4.8	7	36.1	4.7	9
Others	1 608.0	9.6	-	116.5	15.3	-
TOTAL: 2011	16 751			761		
TOTAL: 2010	16 236	100		622	100	

Sources: *World Silver Survey, 2012.

+DMR, Directorate Mineral Economics, 2012 (Adjusted fig.)

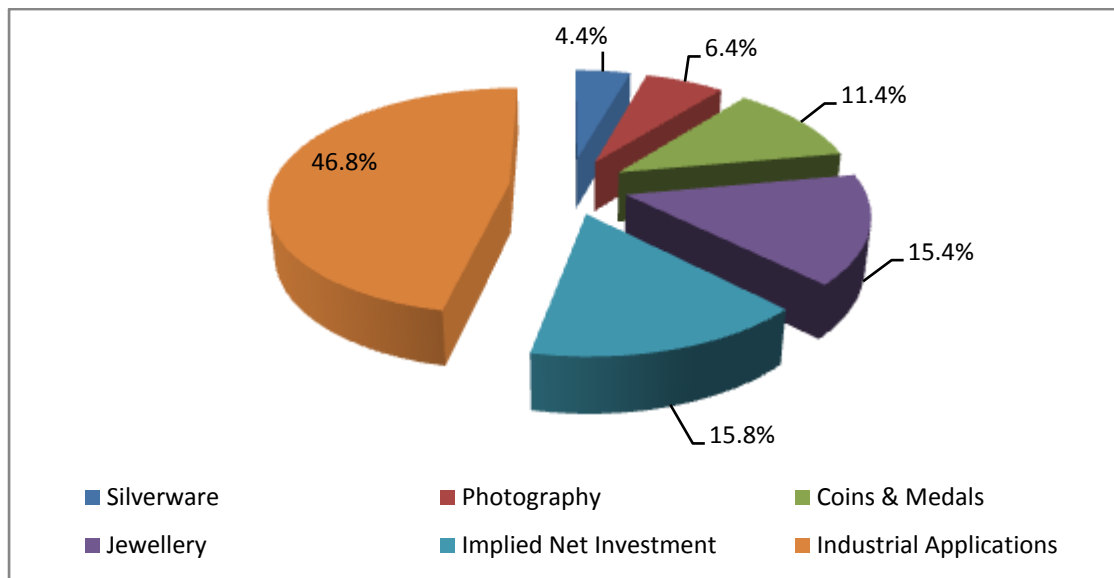
#USGS, Mineral Commodity Summaries, 2012.

Secondary supply, comprising net government sales, old silver scrap and producer hedging amounted to 278.9 Moz, a decrease of 4.19 percent. The decrease was driven mostly by the drop in government sales, which decreased by 74 percent, from 44.2 Moz in 2010 to 11.5 Moz in 2011. The massive decline in net government sales was entirely due to a collapse in sales from Russia. Silver scrap supply rose for the second successive year, increasing to an all time high of 256.7 Moz. According to the *Silver Survey*, producers added to the global hedge book in 2011, with the delta-adjusted position rising to 10.7 Moz. Silver by-product producers contributed as a hedge to silver output. Silvers delta-adjusted ratio was estimated by comparing the price to the corresponding price of other commodities, most notably gold.

WORLD DEMAND

World silver demand decreased by 3.2 percent to 1 040.6 Moz, with the fabrication sector contributing 84.2 percent to total demand. Total fabrication demand which include photography, silverware, jewellery, coins and medals as well as industrial applications fell by 1.5 percent to 876.6 Moz. Industrial applications demand which contributed 46.8 percent to total fabrication, fell by 2.7 percent to 486.5 Moz with implied net silver investment indicating a decrease of 1.2 percent to 164 Moz in 2011 (Fig 16).

FIGURE 16: WORLD SILVER CONSUMPTION (Moz) BY SECTOR, 2011



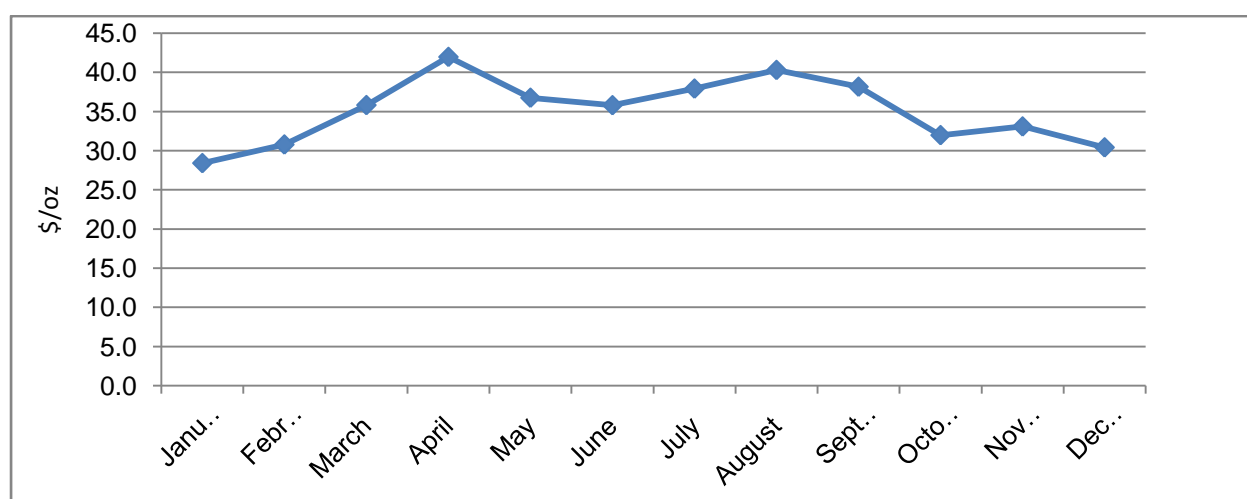
Source: World Silver Survey, 2012

Overall jewellery demand decreased by 4.5 percent to 159.8 Moz in 2011, mainly due to a drop in consumption and trade destocking in most western markets. Photographic demand decreased by 8.3 percent to 66.1 Moz in 2011. This was however the smallest loss seen since 2001, owing to a sluggish rate of conversion into digital systems by both medical centres and movie theatres, due to the weak macroeconomic backdrop. Coins and Medals fabrication demand rose by 18.9 percent to 118.2 Moz, driven by strong global demand.

PRICES

Physical investment demand, despite the sharp fall in the second quarter of 2011 resulted in the average silver price of 35.12/oz in 2011 (Fig 17). The average price was 74.0 percent higher than 2010's average of \$20.19/oz. Silver's price strength was primarily attributed to a boom in investment and to a lesser extent an increase in inflation in countries such as India, China, and other countries in the Far East.

FIGURE 17: MONTHLY AVERAGE SILVER PRICES, 2011.



Source: Silver fixings, LBMA, 2012

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 other minerals. South Africa's silver production declined by 4.0 percent to 2.4 Moz in 2011 (Table 30), in line with a decline in production of gold in the same period. Local sales volumes increased by 50 percent to 0.3 Moz, while export sales volume decreased by 8.0 percent from 2.5 Moz in 2010 to 2.3 Moz in 2011. Revenue from local sales improved by 124.5 percent to R80.0 million, with export sales increasing by 51.8 percent to R531.9 million in 2011, driven by investment demand and higher prices.

TABLE 30 SOUTH AFRICA'S SILVER PRODUCTION AND TOTAL SALES VALUE, 2002 – 2011

Year	Production Units	Local sales			Export sales			Total Sales	
		Mass	Value	Unit Value	Mass	Value	Unit value	Mass	Value
		MOZ	1000	R/kg	MOZ	1000	R/kg	MOZ	1000
2002	3.6	0.1	6 663	1 620	3.7	162 012	1 419	3.8	168 674
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	3.0	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

Source: DMR, Directorate Mineral Economics, 2011, 2012

OUTLOOK

Global silver supply is expected to increase in 2012, through an increase in mine production. The global market is expected to see another sizeable surplus in 2012, due to decreasing fabrication demand as a result of the ongoing Eurozone crisis. Scrap supply will continue to rise marginally in 2011, due to the ongoing decline in photographic applications being offset by a sharp rise in scrap-receipts from the industrial sector. Government sales are expected to increase on the back of stronger anticipated Russian sales.

In South Africa, silver output is expected to decrease marginally, mainly due to a production stoppage at a major gold producer. The average price is expected to stabilise at levels between \$30/oz to \$32/oz in 2012, owing to accumulated supplies of silver in the US combined with stagnant growth in the world's industrial utilization of silver (especially in computers, other electronics and photographic processing).

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ENERGY MINERALS OVERVIEW

K L 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 5th largest in the world whereas uranium production is ranked 11th. 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. Uranium is mainly produced as a by-product of gold and copper and the country has resources estimated at 295 kt, the largest resources in Africa.

The country hosts only very small deposits of oil and gas, but has potential to discover large quantities of shale gas in the Karoo basin. The country imports more than 60 percent of the feedstock required for liquid fuel production. The remainder of liquid fuel feedstock is derived from synthetic fuels which are produced domestically from coal and natural gas.

PRODUCTION AND SALES

In 2011, global primary energy consumption grew by 2.5 percent to 513.9 tera joules (TJ) from 501 TJ in 2010. All of the net growth took place in emerging economies, with China alone accounting for 71 percent of global energy consumption growth. Consumption in OECD countries fell by 0.8 percent, the third decline in the past four years. Japan registered the sharpest decline in the in the OECD countries. Non-OECD consumption grew by 5.3 percent.

Despite growing by less than 0.6 million barrels per day (mbpd) or 0.7 percent to reach 88 mbpd, oil remained the world's largest energy fuel at 33.1 percent of total global energy consumption. OECD consumption declined by 1.2 percent (600 000 barrels per day (bpd)), the fifth decrease in the past six years. Outside the OECD countries, oil consumption grew by 1.2 mbpd or 2.8 percent. China recorded the largest increment of 5.5 percent (505 000 bpd) to global consumption growth. Global oil production increased by 1.1 mbpd or 1.3 percent to 83 576 thousand barrels per day (tbpd) supported by OPEC's increase of 3 percent. OPEC's largest increases were Saudi Arabia's 1.2 mbpd followed distantly by United Arab Emirates and Kuwait with 456 tbpd and 348 tbpd respectively.

Oil prices averaged \$111.26 per barrel in 2011, an increase of 40 percent from 2010. The loss of Libyan supplies early in the year, combined with smaller disruptions in a number of countries, pushed prices higher despite a large increase in production among some OPEC members following the Libyan collapse and a release of strategic stocks from International Energy Agency (IEA) member countries.

World natural gas consumption grew by 2.2 percent to 3 223 billion cubic metres (bcm) in 2011. Consumption grew in all regions except Europe and Eurasia. The largest volumetric growths in consumption were in China with 25.1 percent followed by Saudi Arabia's 13.2 percent and Japan's 11.6 percent. Global natural gas production grew by 3.1 percent to 3276.2 bcm. The USA recorded the largest volumetric increase despite lower gas prices, and remained the world's largest producer. Output also grew in Qatar, Russia and Turkmenistan with increases of 25.8 percent, 3.1 percent and 40.6 percent respectively. Libya and the United Kingdom recorded the biggest declines in production of 75.6 percent and 20.8 percent respectively. The global annual average natural gas price decreased by 10.6 percent from \$158 per thousand cubic meters (tcm) in 2010 to \$144 /tcm. By September 2012 the price averaged \$91.4 /tcm.

Global coal consumption grew by 5.4 percent, pushing coal's share to 30.3 percent of global energy consumption in 2011, the highest share since 1969. Spain increased consumption by 52 percent, followed by Portugal and Chile with 36.9 percent and 25.9 percent respectively. The biggest drops were recorded by Belgium, Finland and France with 37.2 percent, 23 percent and 25.9 percent, respectively. Non-OECD consumption grew by 8.4 percent, led by China's 9.7 percent. OECD consumption slumped 1.1 percent with declines in the USA and Japan. Global coal production increased by 6.1 percent when compared with 2010 to 7 695 Mt. China, with 3 520 Mt, accounting for 69 percent of global growth, was the global leader followed distantly by the USA and India with 992.8 Mt and 588.5 Mt, respectively. South Africa produced 252.8 Mt of saleable coal in 2011. The average Richards Bay FOB price of South African coal increased by 29.3 percent compared with 2010 to \$117.34 /t. At the beginning of 2011 demand from Asia was strong resulting in the highest price of \$125.04/t in January. However, during the year demand from Asia gradually decreased leading to a corresponding decline in coal prices to reach \$104.23 /t by December 2011. The downward trend continued into 2012 and by June 2012 the RBCT monthly price had plummeted to \$86.36/t.

World uranium mine production decreased by 0.3 percent to 53.5 ktU (63.1 ktU₃O₈) in 2011 from 53.66 ktU in 2010. Kazakhstan remained the world's leading producer accounting for 36.6 percent, followed by Canada's 17.1 percent and Australia's 11.2 percent. These three countries collectively accounted for almost 65 percent of world total output. Average uranium prices increased by 22.7 percent in 2011 to \$56.2 /lb from \$45.9 /lb in 2010. By September 2012, a pound of uranium was trading at an average of \$50.8.

TABLE 31: SOUTH AFRICA'S PRODUCTION AND SALES OF ENERGY COMMODITIES, 2011

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		kt	kt	R'000	kt	R'000	kt	R'000
Coal	2010	257 206	186 366	33 702 229	66 770	37 477 184	253 136	71 179 413
	2011	252 757	177 705	37 285 726	68 807	50 548 678	246 512	87 834 404
Uranium Oxide	2010	0.68	*	*	*	*	*	*
	2011	0.66	*	*	*	*	*	*
Natural Gas	2010	1 222	1 222	2 012 516	-	-	1 222	2 012 516
	2011	1 078	1 078	2 249 668	-	-	1 078	2 249 668
Natural Gas Condensate	2010	140	140	916 225	-	-	140	916 225
	2011	102	102	913 467	-	-	102	913 467
Crude Oil	2010	185	166	690 714	-	-	166	690 714
	2011	81	115	520 001	-	-	115	520 001
Total**	2010	258 569	187 728	37 321 684	66 770	37 477 184	254 498	74 108 154
	2011	253 938	178 885	40 968 862	68 807	50 548 678	247 807	91 517 540

Source: DMR, Mineral Economics Directorate

* Information withheld. Coal export figures are under review and consolidation

South Africa's energy sector output decreased by 1.8 percent with declines in all energy commodities including coal, natural gas, crude oil and uranium. Total production in this sector declined to 254 Mt in 2011 from 259 Mt in 2010. Coal continued to be the leading source of energy in the country accounting for more than 99.5 percent of the country's energy sector output followed distantly by natural gas at 0.44 percent (Table 31).

EMPLOYMENT

Employment in the energy sector increased by 5 percent in 2011 to 78 761 from 75 021 in 2010 (Table 32). Over the same period, total remuneration increased by 13.2 percent to R 16.2 billion and the average annual earnings rose by 7.8 percent to R206 230 per employee.

TABLE 32: EMPLOYMENT AND GROSS REMUNERATION ON MINES AND PLANTS IN THE SOUTH AFRICAN ENERGY INDUSTRY, 2005 – 2011

YEAR	EMPLOYEE	REMUNERATION	
		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

Source: DMR, Mineral Economics Directorate

OUTLOOK

The drive for increased access to electricity, transportation and industrialization in developing economies will continue to support the growth in energy demand globally. Despite climate change concerns, coal will continue to be the leading primary energy source. World coal production is forecast to increase by about 4.1 percent to reach 8 122 Mt in 2012 supported by solid growth in demand in the developing world. South Africa's saleable coal production is expected to increase by 1.5 percent to exceed 258 Mt in 2012, whereas the country's RBCT FOB price is expected to average \$90 /t.

The International Energy Agency (IEA) forecast that world oil consumption will increase by 0.8 million barrels per day in 2012 and 0.9 million barrels per day in 2013 with China, the Middle East, and Central and South America accounting for essentially all consumption growth. The oil price is projected to average \$112 per barrel in 2012 and decline to \$103 per barrel in 2013 owing to an increase in non-OPEC supply. South Africa's oil and natural gas production will remain at 2011 levels with the country continuing to depend on imported crude oil and natural gas and local production of fuels based on coal-to-liquid and gas-to-liquid technologies for the most of its liquid fuels requirements.

Owing to the decrease in uranium prices since the Fukushima incident, most companies had put on hold new projects. However, nuclear remains a key aspect of energy policy for many countries including China, India, Russia and the USA. Japan has announced the restart of two of its 50 nuclear reactors this year with more restarts expected next year. Planned and proposed reactors include 171 in China, 56 in India, 41 in Russia, 30 in the USA and 13 in the Ukraine. Production is forecast to slightly exceed 54 000 tU in 2012, and prices are expected to stabilize at around \$45 /lb. South Africa's uranium production is expected to decrease due to declines in production from the country's gold mines.

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COAL

K L Revombo

WORLD SUPPLY

Global coal production increased by 6.1 percent from 7 254.6 Mt in 2010 to 7 695.4 Mt in 2011 (Table 33). China, at 3 520 Mt, was the leading producer, followed by USA's 992.8 Mt, India's 588.57 Mt and Australia's 415.5 Mt. China, which increased its production by 280 Mt, contributed significantly to this global increase. Other countries that contributed significantly to the global coal production increase included Indonesia, India and Russia, whose production increased by 19 Mt, 18.6 Mt and 16.6 Mt respectively.

TABLE 33: WORLD COAL RESERVES, PRODUCTION AND EXPORTS, 2011

	RESERVES ¹			PRODUCTION ¹			EXPORTS ²			CONSUMPTION ²		
COUNTRY	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank
Australia	76 400	8.9	4	415.5	5.4	4	284.5	24.9	2	119.7	1.6	7
Canada	6 582	0.8	10	68.2	0.9	12	33.7	3.0	8	42.7	0.6	11
China	114 500	13.3	3	3 520.0	45.7	1	13.5	1.2	9	3 648.1	48.0	1
Colombia	6 746	0.8	9	85.8	1.1	11	75.5	6.6	5	8.3	0.1	12
India	60 600	7.0	5	588.5	7.6	3	4.4	0.4	12	655.3	8.6	3
Indonesia	5 529	0.6	12	324.9	4.2	6	309.5	27.1	1	66.8	0.9	10
Kazakhstan	33 600	3.9	7	115.9	1.5	9	34	3.0	7	82.8	1.1	8
Poland	5 709	0.7	11	139.2	1.8	8	6.9	0.6	11	146.0	1.9	6
Russia	157 010	18.2	2	333.5	4.3	5	123.7	10.8	3	234.7	3.1	4
South Africa*	30 156	3.5	8	252.8	3.3	7	68.8	6.0	6	177.7	2.3	5
Ukraine	33 873	3.9	6	86.8	1.1	10	7.9	0.7	10	67.7	0.9	9
USA	237 295	27.6	1	992.8	12.9	2	97.3	8.5	4	925.3	12.2	2
Other	92 938	10.8	-	771.6	10.0	-	82.3	7.2	-	1 420.6	18.7	-
Total	860 938	100		7 695.4	100		1 142	100		7 595.9	100	

Source: ¹BP Statistical Review of World Energy, June 2012

²Coal Information 2012, 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 rose by 1.1 percent from 2 060.1 Mt in 2010 to 2 082.4 Mt in 2011; non-OECD countries which include China, Russia, Indonesia, Kazakhstan, India and Colombia saw a production rise of 8.1 percent to 5 613 Mt.

CONSUMPTION

Coal consumption grew by 8.4 percent from 7 010.2 Mt in 2010 to 7 595.9 Mt in 2011 (Table 1). China accounted for 48 percent of the world's coal consumption, followed distantly by the USA's 12.2 percent and India's 8.6 percent. These three countries together with Russia accounted for 71.9 percent of world coal consumption.

TRADE

Global export trade of all types of coal rose by 6 percent to 1 142 Mt in 2011 when compared with 2010. The export trade comprised 861.2 Mt of steam coal, 276 Mt of coking coal and 4.8 Mt of lignite coal. Indonesia with 309.5 Mt overtook Australia's 284.5 Mt to be the top exporter in 2011, with Russia coming third at 123.7 Mt. China, with 190.5 Mt was the leading importer, followed by Japan's 175.4 Mt and Korea's 129.2 Mt. The largest imports growths were recorded in China with 27.4 Mt, India 21.2 Mt and Korea 10.6 Mt.

SOUTH AFRICA

South Africa's total run-of-mine (ROM) production decreased by 0.43 percent from 317.5 Mt in 2010 to 316.2 Mt in 2011. Opencast mining accounted for 61.9 percent of ROM production, followed by bord and pillar's 33.9 percent, longwall's 2.1 percent and stoping at 2.1 percent. Production of saleable coal decreased by 1.7 percent to 252.8 Mt when compared with 2010 (Table 2). The six major producers: Anglo Coal, BHP Billiton Coal South Africa (BECSA), Exxaro Resources, Xstrata Coal South Africa (XCSA), Sasol Mining and Optimum Coal Holdings (OCH) accounted for 80.7 percent of the country's total production and junior coal producers accounted for the remaining 19.3 percent. The three largest Black Economic Empowerment (BEE) companies, namely, Exxaro Resources, OCH and Umcebo Mining, accounted for 26 percent of the country's total production. Overall, BEE companies and junior coal miners accounted for about 41 percent of the country's total production.

In terms of production by coalfields, Witbank dominated, accounting for 52.3 percent of the total production, followed distantly by the Highveld's 29.5 percent and Sasol-Vereeniging's 7.6 percent. The Mpumalanga Central basin, which comprises the Witbank, Highveld and Ermelo coalfields, accounted for 83.3 percent of the country's production.

Local coal sales volume decreased by 4.6 percent from 186.4 Mt in 2010 to 177.7 Mt in 2011 (Table 34). Electricity consumed 166.4 Mt (65.5 percent) of local sales, followed by the synthetic fuels sector (22.6 percent), industries (5.2 percent) and metallurgical (3.2 percent), (Fig 18). The country's coal exports increased by 3.1 percent to 68.8 Mt compared with 2010. Local sales value surged 10.6 percent from R33.7 billion to R37.3 billion due to higher unit values which increased by 16 percent from R181 /t in 2010 to R210 /t in 2011. Export sales revenue also recorded an increase of 34.9 percent to R50.5 billion in 2011 from R37.5 billion in 2010 due to a combination of higher unit values which increased by 31 percent to

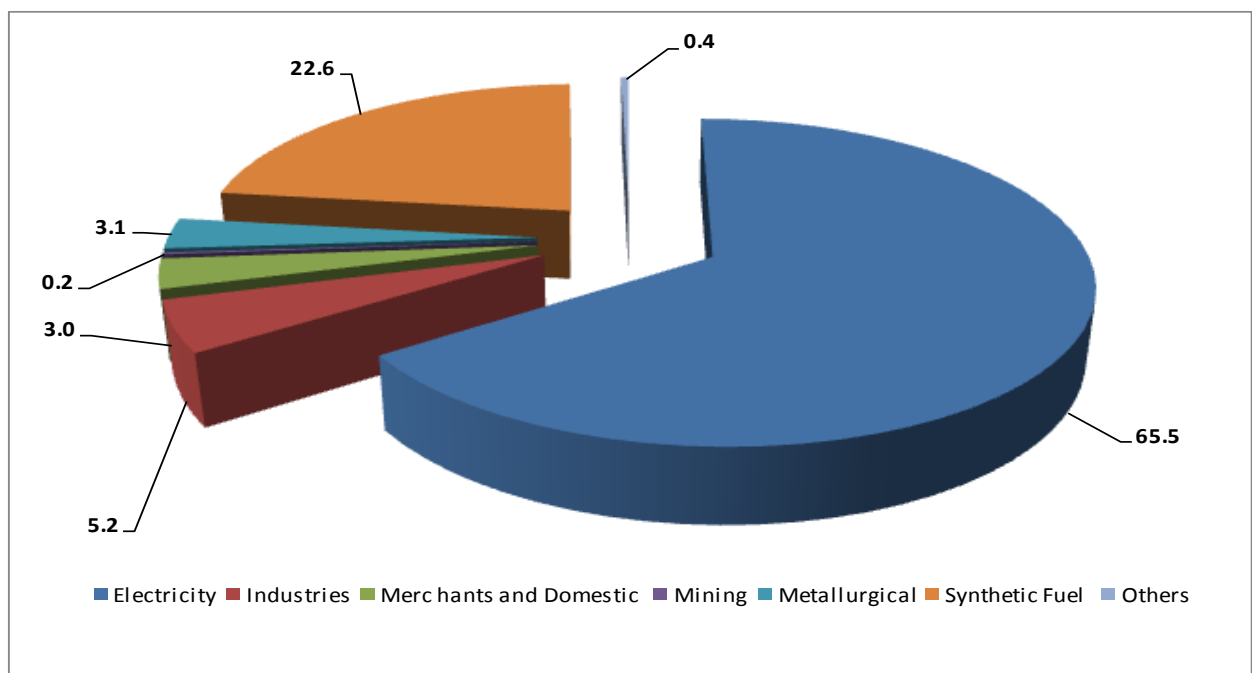
R735 /t and higher sales volumes. Overall, South Africa's total coal sales value increased by 23 percent to R87.8 billion in 2011.

TABLE 34: SOUTH AFRICA'S PRODUCTION AND SALES OF SALEABLE COAL, 2000 – 2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		MASS	VALUE (FOR)		MASS	VALUE (FOB)	
	Mt	Mt	R'000	R/t	Mt	R'000	R/t
2000	224.1	154.6	8 772 310	57	69.9	9 234 328	160
2001	223.5	152.2	9 564 521	63	69.2	11 185 460	245
2002	220.2	157.6	11 773 123	75	69.2	16 956 659	280
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	252.8	177.7	37 285 726	210	68.8	50 548 678	735

Source: Mineral Economics Directorate, DMR

FIGURE 18: COAL CONSUMPTION BY SECTOR, 2011



Source: DMR, Mineral Economics Directorate

The country's anthracite production, which represented one percent of the country's total production, surged by 23.1 percent to 2.6 Mt in 2011 compared with 2010 (Table 35), while local sales increased by 5 percent to 1.3 Mt due to increased demand from the metallurgical industry which is increasingly shifting away from using coking coal. Export sales mass increased by 12.5 to 983 kt. Accordingly, revenue from local and export sales increased by 20.8 percent and 24.4 percent respectively.

TABLE 35: SOUTH AFRICA'S PRODUCTION AND SALES OF ANTHRACITE, 2000 – 2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		MASS	VALUE (FOR)		MASS	VALUE (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2000	1 618	515	130 438	253	1 125	224 747	200
2001	1 607	470	150 797	320	970	283 805	292
2002	1305	392	148 953	379	759	286 970	378
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

Source: Mineral Economics Directorate, DMR

Bituminous coal which saw a decline of 1.9 percent to 250.2 Mt in 2011 accounted for 98.9 percent of South Africa's total saleable coal production (Table 36). Local sales volume decreased by 4.7 percent to 176.4 Mt, but local sales revenue increased by 10.3 percent to R36.1 billion due to higher unit value which increased by 15.8 percent to R205 /t in 2011. Export revenue of bituminous coal increased by 35.1 percent to R49.7 billion due to higher sales volumes which increased from 65.9 Mt in 2010 to 67.8 Mt in 2011 and higher unit value which increased from R558 /t in 2010 to R732 /t in 2011.

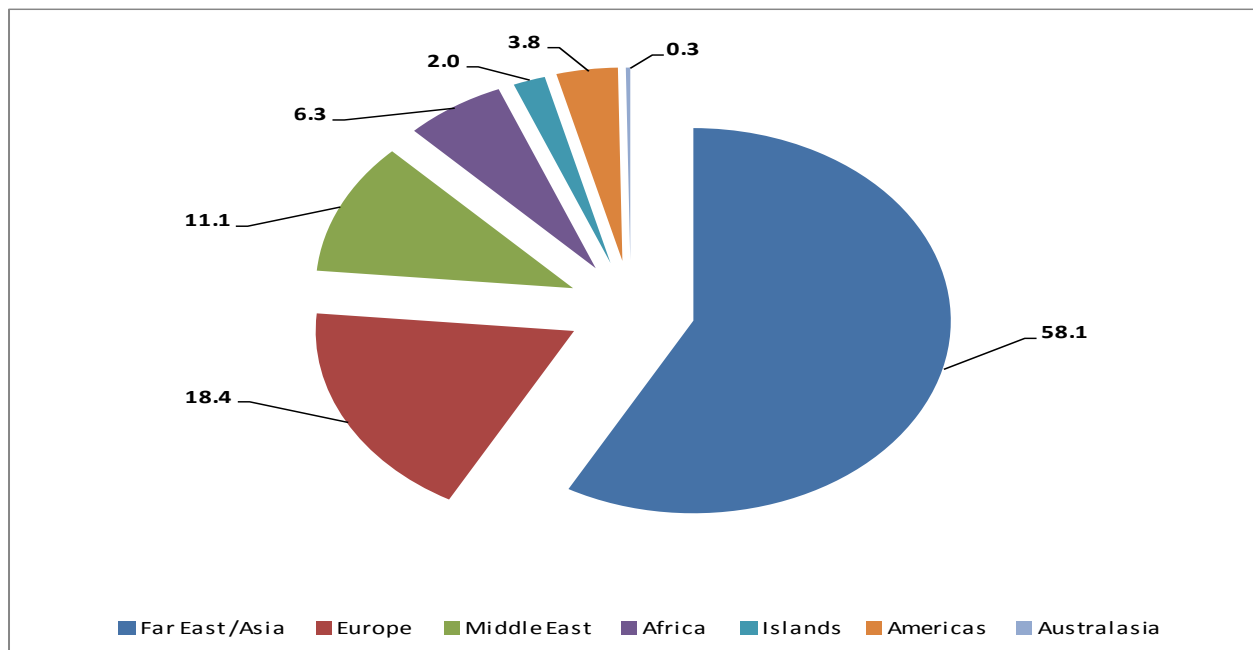
TABLE 36: SOUTH AFRICA'S BITUMINOUS COAL PRODUCTION AND SALES, 2000 – 2011

YEAR	PRODUCTION	LOCAL		EXPORT			
		SALES		SALES			
		MASS	VALUE	MASS	VALUE (FOB)		
	Mt		(FOR)		Mt	R'000	R/t
		Mt	R'000	R/t			
2000	222.5	154.1	8 319 975	56	68.8	10 960 713	160
2001	222.1	152.1	9 413 724	62	69.2	16 956 659	244
2002	218.9	157.2	11 624 170	74	69.2	19 080 028	279
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	250.2	176.4	36 158 051	205	67.8	49 656 540	732

Source: Mineral Economics Directorate, DMR

In 2011, over 58 percent of South Africa's coal exports went to Asia, 18.4 percent to Europe, 11.1 percent to the Middle East and 6.3 percent to Africa (Fig 19). Europe's coal imports from South Africa continued to decrease as European demand for thermal coal remained soft. The Middle East's import of South Africa's coal doubled in 2011 compared with 2010. India continued to be South Africa's leading customer, accounting for 25.2 percent of the country's coal export sales followed by China's 17.8 percent. In Africa, the largest importer of South Africa's coal was Mozambique which accounted for 5.3 percent of the country's coal exports.

FIGURE 19: SOUTH AFRICA'S EXPORT VOLUMES BY REGIONAL DESTINATION, 2011



Source: South African Revenue Services Customs

MAJOR DEVELOPMENTS IN 2011/2012

The structure of the South African coal industry is undergoing changes because of acquisitions, mergers and new coal mining projects.

In January 2012, Xstrata Coal South Africa finalised the sale of its Spitzkop and Tselentis collieries and supporting coal assets in Mpumalanga, to the black economically empowered Imbawula Group for an undisclosed sum. Imbawula, acquired Spitzkop and Tselentis opencast and underground mining operations, all supporting infrastructure, along with prospecting and mining rights in the area which support the long-term operation of the business. Xstrata employees will be absorbed by Imbawula after consultation with represented unions.

Glencore, in a consortium with Lexshell 849, acquired shares in Optimum Coal which increased the consortium's shareholding in Optimum to 66.8 percent. In turn Optimum Coal acquired BECSA's Remhoogte prospecting rights for R235 million, as well as completing the R422 million acquisition of the TNC prospecting rights from Umcebo Mining. Meanwhile, Glencore has acquired an effective 43.7 percent equity in Umcebo for about R900 million.

BECSA entered into an empowerment transaction in which a consortium led by the Pembani Group will acquire an 8 percent equity interest in the company. BECSA has also announced an employee share ownership plan (ESOP) that, together with other recent BEE transactions, will exceed the ownership requirements as stipulated in the Mining Charter. The ESOP will see participating employees holding a 2 percent equity interest in the company.

Anglo American Thermal Coal's (AATC) BEE partner Anglo American Inyosi Coal (AAIC) completed the construction of the Zibulo Colliery in the Witbank coalfield. Construction of this R4.2 billion project started in 2008, and the mine was officially launched in March 2012. The operation which has a life of mine of 20 years and a workforce of 1 483 employees including contractors, reached commercial production and is aiming to achieve full production (8 Mt/a) by the third quarter of 2012. AAIC is also carrying out feasibility assessments for another large scale project, named New Largo. This project has two main elements: a new opencast mine and a conveyor which will run from the existing Phola coal plant to Eskom's Kusile power station. The project which will cost \$1.7 billion, will produce 13 Mtpa. Development of the mine was scheduled to start in 2013 with full capacity expected in 2017, while construction of the conveyor was expected to start in the third quarter of 2012, with first coal deliveries to Kusile planned for October 2015. The conveyor project is awaiting environmental authorization and approval of its water use licence.

Forbes and Manhattan Coal has made its final payment of R140 million to acquire Slater Coal. The company now holds 100 percent interest in Slater Coal, which has a 70 percent interest in coal miner Zinoju, owners of the Magdalena bituminous mine and the Aviemore anthracite mine.

In another deal, Keaton Energy acquired 74 percent in Leeuw Mining and Exploration. In this deal Keaton bought out major shareholder Anglo Coal and the introduced a significant new shareholder, Swiss-based Gunvor International.

Another junior miner, Continental Coal signed a BEE deal with the Sishen Iron Ore Company Community Development Trust (SIOC-cdt). In terms of this agreement, SIOC-cdt has acquired a 26 percent interest in Continental Coal for an initial investment of R140 million. Continental has also acquired a 100 percent interest in the Wolvenfontein coal project from Universal Pulse Trading (Pty) Limited for R10.4 million, payable in equity.

Resource Generation (ResGen) has indicated that it will be divesting its Tasmanian coal tenements for \$1.5 million through the sale of all its shares in Energy Investments and Tiger Coal, enabling the company to focus on its main asset, the Boikarabelo project in the Waterberg coalfield. The company has also signed a A\$4 million agreement to acquire land adjacent to the Boikarabelo project. ResGen has an estimated indicated resource of 551.7 Mt and inferred resources of 1.5 Bt at Boikarabelo mine. The project which has a R4.5 billion capital expenditure budget, is expected to create 1 092 direct jobs. In August 2012 ResGen acquired new coal tenements adjacent to Boikarabelo mine from Exxaro Resources. These tenements will extend Boikarabelo mine's resources by 31 percent. The tenements are subjects to approval by the DMR under section 11 of the MPRDA and the process is expected to be completed before mid-2013. The Boikarabelo project is on track to start production in 2013.

Sable Mining Africa Limited completed the acquisition of a further 27.5 percent stake in Delta Mining Consolidated Limited (DMC), which was previously held by London Mining plc subsidiary Rannerdale Limited. Sable Mining now holds a 63.5 percent interest in DMC, which also has an interest in the Rietkuil project, the Springbok Flats project and the Limpopo project.

Coal developer, Firestone Energy sold a strategic stake to energy group Linc Energy Limited, raising about R13 million. Linc Energy Limited now has a 9.6 percent share in Firestone Energy.

In June 2011, state-owned African Exploration and Mining Finance Company (AEMFC) launched its first coal mine, Vlakfontein mine, in Mpumalanga. The mine has total reserves of 33 Mt, and produces about 800 000 tons per year of steam coal for Eskom. The mine currently has 223 employees including external contractors. AEMFC is now in the post-feasibility phase of its next project, the T-Project outside Bethal, which is envisaged to produce 4.6 million tons of coal per year for 33 years. The T-Project, identified by AEMFC as a possible coal-to-oil operation, will require R2 billion capex and production is possible by the third quarter of 2013.

Continental Coal's Penumbra thermal coal mine development is on track, with production expected to start in the fourth quarter of 2012 and ramp-up to full production is scheduled for June 2013. The development of the R329 million Penumbra project started in September 2011 and this project was envisaged to produce about 750 000 t/y run-of-mine coal and create 198 jobs.

Sasol Mining's new Thubelisha shaft at the Twistdraai colliery in Mpumalanga was officially opened by the Minister of Mineral Resources in May 2012. The underground mine will extend the life of the Twistdraai colliery beyond 2039 and will sustain 1 600 jobs at the Twistdraai colliery. The project had a capital expenditure of R3.39 billion and will have an annual output of 10.6 Mt to supply the export market and Sasol synfuels. Thubelisha is the first milestone of Sasol Mining's intense capital replacement programme which will replace 60 percent the operating capacity in Secunda in the next eight years. The other two projects planned are the R4.6-billion Impumelelo mine, which will replace the old Brandspruit mine in 2014, and the new R5.3-billion Shondoni project which will replace the old Middelbult operation in 2015. The three projects will add approximately 4 000 mining jobs and create about 5 000 jobs during the construction phase.

Xstrata Coal South Africa commissioned the Arthur Taylor Colliery Opencast Mine (Atcom) East in the third quarter of 2011. The mine which cost Xstrata R3.15 billion to develop, and is envisaged to produce about 5.7 Mt run-of-mine coal per year, was commissioned in August 2011.

Exxaro Resources' R9-billion Grootgeluk Medupi coal expansion project in the Waterberg coalfield started producing in May 2012. The mine, which created 5 000 jobs, will meet the full fuel demand of the 4 764 MW dry-cooled Medupi power station. Medupi will receive between 50 000 t and 55 000 t of coal a day on a conveyor belt from the mine.

Coal of Africa Limited (CoAL) has finally completed phase 1 of the Vele Coal project after several delays owing to environmental concerns which halted construction in August 2010. The mine produced its first coal in the first quarter of 2012. Phase 1 cost the company R350 million and is expected to produce 1 Mt/a of saleable coking coal. Phase 2 of the project, which will cost CoAL R2.65 billion will ramp up production to 5 Mt/a..

In another development, CoAL purchased Chapudi coal project in Limpopo from Rio Tinto and Kwezi Mining for \$75 million. The granting of the Section 11 consents of the MPRDA by the minister concluded the regulatory steps to complete the acquisition, strengthening Coal of Africa's position as one of the largest holders of prospecting and mining rights for coking coal in the Limpopo coalfields. Chapudi, located close to CoAL's Makhado Coking Coal Project, has around 1.04 Bt of JORC-compliant thermal and coking resources of which 90 Mt is measured, 220 Mt indicated and 730 Mt inferred. Rothe Investment Proprietary (RIP), a BEE group will own 26 percent of the Chapudi mine. The structure of the deal allows for RIP to take the stake in CoAL's subsidiary, Keynote Trading & Investment 108 Proprietary, which will house the Chapudi project and associated exploration properties.

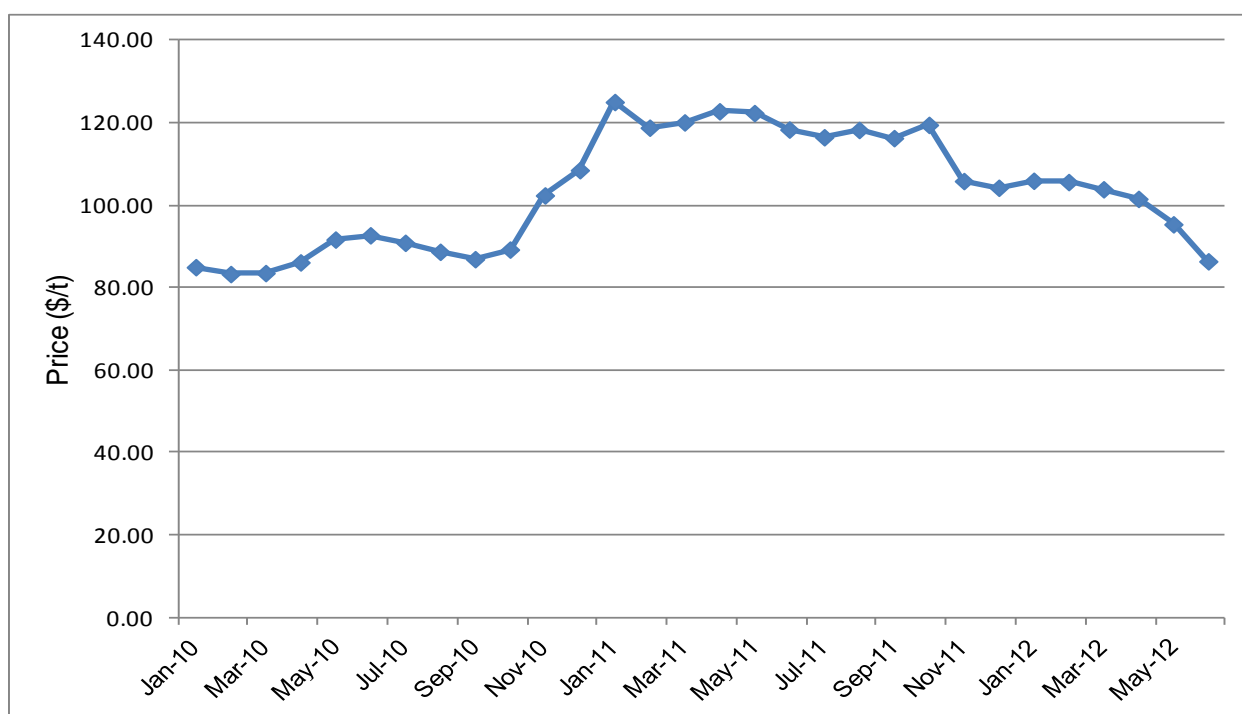
Meanwhile, CoAL completed a definitive feasibility study on its second project, Makhado coking coal project and a mining right application has been lodged with the DMR. The project will be developed in two phases. After completion, phase 1 will produce 1 Mt of saleable coal whereas phase 2 will ramp up the production to 5 Mt. The full-scale development will entail a capital expenditure of R2.7 billion including phase 1's R500 million. The project has the potential to create more than 1 000 direct jobs and multiples of indirect jobs over 17 years.

During the State of the Nation Address on 9 February 2012, the President of the Republic of South Africa, introduced the government's infrastructure plan that represents a bold, strategic and integrated platform to mobilise the state, private investor and the South African public behind a clearly articulated narrative of investment opportunities in South Africa. This infrastructure programme is complementary to the New Growth Path (NGP) and Industrial Policy Action Plan (IPAP2) which aim to address the challenge of high unemployment by developing local manufacturing capacity. The infrastructure programme is also intended to meet the New Growth Path objectives, which include skills development, youth employment and efficiency targets. The coal industry will benefit from this programme through the R300 billion Transnet Freight Rail (TFR) capital projects which will unlock the mineral potential and expand the Mpumalanga-Richards Bay rail coal line from 68 Mtpa to 97.5 Mtpa. Developing and integrating rail, roads and water infrastructure would be centered on Waterberg and Steelpoort in the Limpopo province which will support the development of the coal, PGMs, and chrome deposits found in these areas.

PRICES

In 2011, the average Richards Bay FOB price of South African coal increased by 29.3 percent to average \$117.34 /t compared with 2010. At the beginning of 2011 demand from Asia was strong resulting in highest price of \$125.04 /t in January (Fig 20). However, during the year demand from Asia gradually decreased leading to a corresponding decline in coal prices to reach \$104.23 /t by December 2011. The downward trend continued into 2012 and by June 2012 the RBCT monthly price plummeted to \$86.36/t.

FIGURE 20: RBCT MONTHLY COAL PRICES, 2010 – June 2012



Source: GlobalCoal website

OUTLOOK

In 2011, both coal production and consumption increased in all regions except North America. The *Industry Briefing* forecasts that in 2012, global coal consumption is expected to grow by 3.9 percent to 7 959 Mt. This growth will be lower than the 2011 growth because of the slowing global economy and the debt crisis in the Eurozone. Developing economies like China, India and most African countries will provide the largest boost to coal demand during the period 2012 -13 as a result of growth in electricity generation as most of the developing countries are still dependent on coal for their energy needs. *Industry Briefing* further predicts that global coal production growth will remain relatively strong, averaging 4.1 percent to reach 8 122 Mt in 2012 supported by solid growth in demand in the developing world.

South Africa's economic growth depends on coal because the country derives over 90 percent of its electricity from coal-fired power stations. Consequentially, a positive economic growth (GDP) will cause coal production to increase. Over the past 10 years South Africa's economic growth (GDP) averaged 3.7 percent. However, over this period, South Africa's coal production only achieved an average growth rate of 1.5 percent. In 2012, the country's economic growth is forecast at 3.2 percent. The large scale Grootegeluk Medupi coal mine expansion project and other several projects have become operational. Which suggests that the country's saleable coal production will increase by 1.5 percent to exceed 258 Mt in 2012. In 2012, demand for South African coal from Europe and Asia decreased because Indian buyers were affected by the weak Rupee while Chinese buyers have high coal stockpiles and the European market was flooded by the US coal. Consequently, South Africa's coal prices trended downwards since February 2012. By June 2012 RBCT export prices were \$86.38 /t and it is expected that coal prices will average \$90 /t in 2012.

South Africa's export volumes are expected to reach 70 Mt in 2012, a slight increase from 2011's 68.8 Mt owing to improved performance by Transnet Freight Rail (TFR).

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HYDROCARBON FUELS

Lerato Ramane

WORLD SUPPLY

World proven oil reserves amounted to 1 652.6 billion barrels in 2011 (Table 37), and the Organisation of Petroleum Exporting Countries (OPEC) accounted for 71.4 percent of the world's oil reserves, dominated by the Middle East at 48.1 percent followed by South and Central America's 19.7 percent and North America's 13.2 percent. Venezuela hosts the largest global oil reserves accounting for 17.9 percent of the global total, followed by Saudi Arabia's 16.1 percent.

TABLE 37: WORLD RESERVES AND PRODUCTION OF OIL AND NATURAL GAS, 2011

	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	2.2	1729	2.1	78.0	2.4
Indonesia	4.0	0.2	3.0	1.4	942	1.1	75.6	2.4
Iran	151.2	9.1	33.1	15.9	4321	5.2	151.8	4.8
Iraq	143.1	8.7	3.6	1.7	2798	3.3	1.9	0.1
Kuwait	101.5	6.1	1.8	0.9	2865	3.4	13.0	0.4
Libya	47.1	2.9	1.5	0.7	479	0.6	4.1	0.1
Nigeria	37.2	2.3	5.1	2.5	2457	2.9	39.9	1.2
Qatar	24.7	1.5	25.0	12.0	1723	2.1	146.8	4.6
Saudi Arabia	265.4	16.1	8.2	3.9	11161	13.4	99.2	3.1
UAE	97.8	5.9	6.1	2.9	3322	4.0	51.7	1.6
Venezuela	296.5	17.9	5.5	2.7	2720	3.3	31.2	1.0
Subtotal	1180.7	71.4	97.3	46.7	34516	41.3	693.2	21.7
OTHER SELECTED COUNTRIES								
Argentina	2.5	0.2	0.3	0.2	607	0.7	38.3	1.2
Australia	3.9	0.2	3.8	1.8	484	0.6	45.0	1.4
Brazil	15.1	0.9	0.5	0.2	2193	2.6	16.7	0.5
Brunei	1.1	0.1	0.3	0.1	166	0.2	12.8	0.4
Canada	175.2	10.6	2.0	1.0	3522	4.2	160.5	5.0
China	14.7	0.9	3.1	1.5	4090	4.9	102.5	3.2
Ecuador	6.2	0.4	-	0.0	509	0.6	-	0.0
Europe and Eurasia (EE)	141.1	8.5	78.7	37.8	17314	20.7	1036.4	32.5
India	5.7	0.3	1.2	0.6	858	1.0	46.1	1.4
Malaysia	5.9	0.4	2.4	1.2	573	0.7	61.8	1.9
Mexico	11.4	0.7	0.4	0.2	2938	3.5	52.5	1.6
Oman	5.5	0.3	0.9	0.5	891	1.1	26.5	0.8
USA	30.9	1.9	8.5	4.1	7841	9.4	651.3	20.4
Other	52.7	3.2	9.1	4.3	7074	8.5	249.7	7.8
Subtotal	471.9	28.6	111.1	53.3	49059	58.7	2500.1	78.3
TOTAL	1652.6	100	208.4	100	83576	100	3193.3	100

Source: BP Statistical Review of World Energy, June 2012

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

Global oil production increased by 1.3 percent to 83.6 million barrels per day (b/d) in 2011, as a result of a 1.7 percent increase from OPEC countries. The Middle East at 32.6 percent was the world's largest producer, followed by Europe and Eurasia's 21 percent and North America's 16.8 percent. Africa recorded the largest drop in oil production due to the political unrest in Libya. The world's largest oil production increase by country was recorded by Colombia where output increased by 16.3 percent, followed by Kuwait at 14.1 percent and Iraq at 12.8 percent.

The world's proven gas reserves increased by 6.3 percent to 208.4 trillion m³ in 2011 compared with 2010. The Middle East, Europe and Eurasia accounted for 76.2 percent of the total reserves. Global gas production increased by 3.1 percent to 3 276.2 billion m³ in 2011 compared with 3 178.2 in 2010. Europe and Eurasia accounted for 31.6 percent of the global production, followed by North America and Middle East at 26.5 percent and 16 percent. The largest increases were recorded in Peru (56.9 percent), Yemen (51.3 percent) followed by Iraq and Turkmenistan at 42 and 40.6 percent.

WORLD DEMAND

Global primary energy consumption increased by 2.5 percent in 2011. Consumption increased in all regions except Europe and Eurasia where it declined by 0.5 percent. At 21.3 percent, China was the largest consumer of energy followed by the US at 18.5 percent. Oil and natural gas contribute more than half of the fuels required for energy production.

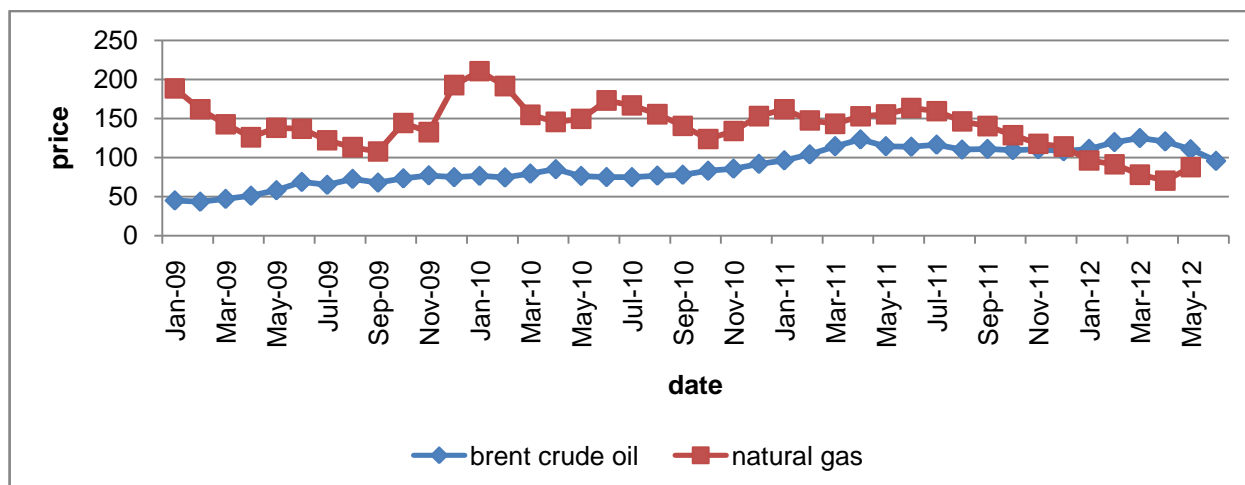
Global oil consumption increased by 0.7 percent to 88.03 million b/d in 2011, driven by the continued demand for energy. South and Central America recorded the highest increases at 2.9 percent, followed by Asia and the Middle East at 2.7 and 1.8 percent. The US was the largest consumer at 20.6 percent followed by Azerbaijan's 11.9 percent and China's 11.4 percent.

Global natural gas consumption grew by 2.2 percent to 3 222.9 billion m³ in 2011. Europe and Eurasia was the only region that recorded a decline of 2.1 percent in consumption, while the US was the largest consumer of natural gas accounting for 21.5 percent. Greece recorded the highest increase in consumption of 24.3 percent, followed by China's 21.5 percent and Turkey's 17.3 percent.

CRUDE OIL PRICES

In 2011, the annual average Brent crude oil price rose to \$110.95/bbl compared to \$79.6/bbl the previous year. Prices started the year at \$96.3/bbl and peaked at \$123.15/bbl in April, as the markets reacted to the political unrest in Libya and other major oil producing countries the Middle East (Fig.21). In May prices started falling reaching \$107.97/bbl in December. In 2012, prices continued to decline reaching \$95.59/bbl in June.

FIGURE 21: MONTHLY AVERAGE BRENT CRUDE AND NATURAL GAS PRICES, JANUARY 2009 – JUNE 2011



Source: indexmundi (www.indexmundi.com)

Natural gas prices have been under pressure over the last couple of years, as new drilling techniques (“fracking”) have unlocked vast new stores of natural gas from shale formations and other so-called unconventional reservoirs. Prices fell to by 8.88 percent to \$143.98/1000m³ in 2011, compared with \$158.01/1000m³ in 2010 (Fig.1). Prices peaked in June 2010 reaching \$172.85/1000m³ and fell to \$123.62/1000m³. In 2011, prices began at \$161.71/1000m³ in January, reaching \$163.32/1000m³ in June. Subsequently, prices declined for the rest of the year and into 2012 reaching \$70.31/1000m³ in April 2012, as a result of natural gas production exceeding demand. Prices began to recover slightly in May reaching \$87.56/1000m³.

SOUTH AFRICA’S HYDROCARBON FUELS INDUSTRY

South Africa had proven crude oil reserves of 15 million barrels in 2011; all of the proven 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; most of it is imported, but the country did produce slightly over 180 000 barrels per day (bbl/d) of non-conventional, synthetic liquid fuels processed from coal and natural gas.

According to South African Petroleum Industry Association (SAPIA) South Africa has the second largest refining capacity in Africa at 703 000 bbl/d, surpassed only by Egypt at 726 250 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. In addition, the country has two synfuels facilities (Sasol and PetroSA) that have a combined capacity to produce 195 000 bbl/d of liquid fuels from coal and gas.

In 2011 South Africa’s crude petroleum production plummeted by 56.5 percent to 590 818 barrels compared with 1 357 531 barrels in 2010, due to a halt in production at PetroSA’s Oribi oilfield. PetroSA is also developing a new 200 000 bbl/d to 300 000 bbl/d refinery in the Eastern Cape to meet rapidly growing

product demand and reduced imports of refined fuels. The new refinery will be designed to process heavy, sour crudes.

South African oil consumption is estimated to be slightly over 550 000 bbl/d, of which, approximately 370 000 bbl/d is imported (67 percent of consumption). The country imports crude oil and refined fuels but is planning to increase domestic refining capacity. South Africa is promoting further exploration in the petroleum sector in an effort to discover new resources.

The country's natural gas production amounted to 1.08 Mt in 2011, while natural gas condensate output amounted to 102 kt.

DEVELOPMENTS

The South African crude oil refineries are in line for modifications in anticipation of the country's move towards cleaner fuels. The government wants to implement clean fuel standards with effect from July 2017. The clean fuels programme which was implemented in 2006, with the banning of lead from petrol and reduction of sulphur in diesel, is intended to further reduce sulphur, benzene and aromatics in liquid fuels. The decision was motivated by a drive for better environmental health and air quality, and this will require companies to modify their processing facilities in order to comply with the requirements.

Sapref will be carrying out modifications to several existing units and will build two new process units. Detailed engineering work is expected to take place in 2013. Construction is planned to start in 2014 and should be completed in mid-2017. The design phase still has to be completed and at this stage budgets are still being finalized.

As a result of the clean fuels programme, Sasol Mining, the majority owner of the Natref refinery could invest about R5 billion between 2014 and 2017. Certain infrastructure changes would be required to further reduce the level of sulphur in petrol and diesel, and to reduce levels of benzene in petrol. Natref is a joint venture between Sasol Mining and Total South Africa.

South Africa holds an estimated 485 trillion cubic feet (tcf) of shale gas reserves, placing it fifth in the world according to the US International Energy Agency (IEA). A report by Econometrix stated that the potential economic benefits resulting from the exploitation of shale gas in South Africa would be enormous. If 10 percent of the Karoo's shale gas reserve (50 tcf) were to be exploited, it could contribute up to R200 billion to the country's Gross Domestic Product (GDP) and create over 700 000 jobs upstream and downstream over 25 years. This would be instrumental in attracting skills and investments to the country as well as resolving the energy deficit and resulting in infrastructure development. Three foreign-owned companies - Royal Dutch Shell, Falcon Oil & Gas from America, and Sunset Energy from Australia - have been granted permission to explore for shale gas in the Karoo. The first stage of such exploration was desktop research. Although hydraulic fracturing is still not allowed, after the moratorium on exploration had been lifted by cabinet, normal exploration and surveying may be carried out. However, South Africa's shale gas plans could clash with plans for the Square Kilometre Array (SKA) project, for which the bulk of the rights for the

SKA were awarded to the country in May 2012. The SKA will be the largest and most capable radio telescope ever constructed. During its lifetime, it will increase understanding of the universe and drive technological development worldwide.

The National Development Report, released by South Africa's National Planning Commission (NPC) in November 2011, identified five possible options to meet the growing shortfall in the country's liquid fuels supply: building a new oil-to-liquid refinery in South Africa; building a new Coal To Liquid (CTL) refinery in South Africa; upgrading the country's existing refineries to allow for significant capacity expansion; importing increasing quantities of refined fuel; and partnering in the building of a new refinery in Africa, elsewhere such as in Angola or Nigeria, and buying a share of the product of that refinery. The Department of Energy is undertaking an audit of South Africa's refineries to determine the most suitable option. That audit will inform a 20-year liquid fuel infrastructure roadmap that is expected to be completed before the end of 2012.

OUTLOOK

Global demand for oil is expected to continue to slow down in 2013 reflecting Europe debt worries, a faltering US 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.

An increase in the crude oil price is anticipated despite the weak global growth environment in 2012. Political instability in Libya and the Middle East has led to supply disruptions and geopolitical tensions have added a risk premium. The price of Brent crude oil is expected to average \$108 per barrel in 2012 and \$100 per barrel in 2013.

Natural gas is expected to be the fastest growing fossil fuel globally at 2.1 percent per annum to 2030. The non-OECD countries will account for 80 percent of global gas demand growth, averaging at 2.9 percent a year growth to 2030. 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. Prices of natural gas are expected to increase slightly in the short term, due to increased demand during the winter season. However over the longer term prices will remain depressed in anticipation of a supply/demand balance in the market.

In South Africa, synthetic oil production adds nearly 200 000 b/d to the country's output and this figure is expected to exceed 300 000b/d by 2021, as a result of the implementation of one of the five options provided by the NPC.

Demand for crude oil in South Africa is anticipated to reach 600 000 b/d by 2021. Consumption is expected to rise steadily over this period mainly in line with economic growth. Shale gas could generate significant investment in new infrastructure, help meet South Africa's carbon reduction goals and create many new jobs. Exploitation of shale gas could contribute significantly to South Africa's growing economy as well as reduce the high levels of unemployment.

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URANIUM

Lerato Ramane

WORLD RESOURCES

Global uranium resources were estimated at 5.4 MtU in 2011. Australia has the world's largest known recoverable uranium resources accounting for 31 percent, followed by Kazakhstan's 12 percent and Canada's and Russia's 9 percent (Table 38). South Africa, at 5.5 percent is ranked 5th in the world and hosts Africa's largest resources followed by Namibia and Niger.

TABLE 38: WORLD URANIUM RESOURCES AND PRODUCTION, 2011

COUNTRY	URANIUM RESOURCES*			PRODUCTION*			
	RAR#		Rank	2010	2011		
	(ktU)	%			(t U)	%	Rank
Australia	1 673	31.0	1	5 900	5 983	11.5	3
Brazil	279	5.2	7	148	265	0.5	13
Canada	485	9.0	3	9 783	9 145	17.5	2
China ^e	171	3.2	9	827	885	1.7	10
India ^e	80	1.5	12	400	400	0.8	12
Namibia	284	5.3	6	4 496	3 258	6.2	5
Niger	272	5.0	7	4 198	4 351	8.3	4
Kazakhstan	651	12.0	2	17 803	19 451	37.2	1
Russia	480	8.9	4	3 562	2 993	5.7	6
South Africa	295	5.5	5	655	582	1.1	11
Ukraine ^e	105	1.9	11	850	890	1.7	9
USA	207	3.8	8	850	1 537	2.9	8
Uzbekistan	111	2.1	10	2 400	2 500	4.8	7
SUBTOTAL	5 093	-	-	51 872	52 240	-	-
Others	311	5.8		1 791	1 254		
World Total	5 404	100		53 663	53 494	100	

Sources: *OECD's NEA & IAEA, *Uranium 2010: 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

WORLD SUPPLY

World uranium mine production decreased marginally by 0.3 percent in 2011 to 53.5 ktU from 53.66 ktU in 2010 (Table 38). Kazakhstan remained the world's leading producer accounting for 36.6 percent, followed by Canada's 17.1 percent and Australia's 11.2 percent. These three countries collectively accounted for 64.9 percent of world total output. Brazil's output rose by 79 percent to 265 ktU, followed by Kazakhstan and China whose production increased by 9 and 7 percent, respectively. Namibia's and Russia's production dropped by 28 and 16 percent respectively, mainly due to the deterioration of the uranium ore grade. Niger was the largest producer in Africa accounting for 8.3 percent of world production, followed by Namibia at 6.2 percent, and South Africa at 1.1 percent.

Though South Africa has the largest uranium resources in Africa, the mineral is produced as a by-product from gold mines, and exported by the Nuclear Fuel Corporation (Nufcor) as uranium oxide (U_3O_8). In 2011, uranium was produced by in situ leaching (45.2 percent), underground (30 percent), by-product (7.5 percent) and open pit (17.3 percent) globally.

WORLD DEMAND

Global uranium demand is mainly driven by nuclear power generation, which accounted for 13.5 percent of world electricity generation in 2011 (Table 39). This nuclear power was generated from 441 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 (51 reactors). The USA derived 19.2 percent of its electricity from nuclear energy, while France and Japan drew 77.7 percent and 18.1 percent respectively. South Africa generates 5.2 percent of its electricity from two nuclear reactors. Uranium consumed in nuclear energy reactors was 69 kt in 2011 globally.

TABLE 39: WORLD NUCLEAR POWER REACTORS AND URANIUM REQUIREMENTS, 2011-2012

COUNTRY	NUCLEAR ELECTRICITY GENERATION 2011		REACTORS OPERABLE 2011		URANIUM REQUIRED 2011	REACTORS OPERABLE 2012		URANIUM REQUIRED 2012
	billion kWh	% of elec	No	MWe	(t U)	No	MWe	(t U)
USA	790.4	19.2	104	101 229	19 427	104	101 607	19 724
France	423.5	77.7	58	63 130	9 221	58	63 130	9 254
Japan	156.2	18.1	51	44 642	8 195	50	44 396	4 636
Germany	102.3	17.8	17	20 339	3 453	9	12 003	1 934
Korea (South)	147.8	34.6	21	18 716	3 586	23	20 787	3 967
Russia	162	17.6	32	23 084	3 757	33	24 164	5 488
UK	62.7	17.8	19	10 942	2 235	16	10 038	2 096
China	82.6	1.8	14	11 271	4 402	15	11 881	6 550
Spain	55.1	19.5	8	7 448	1 458	8	7 448	1 355
Canada*	88.3	15.3	18	12 679	1 884	17	12 044	1 694
Sweden	58.1	39.6	10	9 399	1 537	10	9 399	1 394
Ukraine	84.9	47.2	15	13 168	2 037	15	13 168	2 348
Belgium	45.9	54	7	5 943	1 052	7	5 943	995
South Africa	12.9	5.2	2	1 800	321	2	1 800	304
SUBTOTAL	2 272.7		376	343 790	62 565	367	337 808	61 739
Others	245.3		65	32 657	6 406	66	33 614	6 251
World	2 518	13.5	441	376 447	68 971	433	371 422	67 990

Notes:

% of elec:

percent contribution to national electricity production

MWe:

Megawatt net (electrical as distinct from thermal)

kWh:

kilowatt-hour

*

estimate

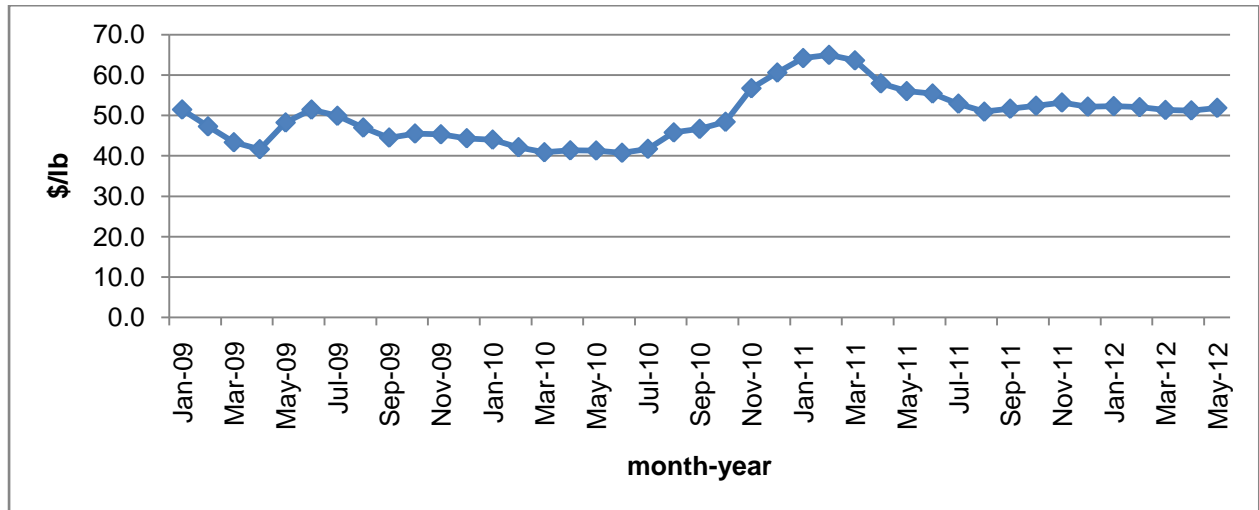
Sources:

World Nuclear Association, 2011-12

PRICES

Uranium prices recovered well in 2010 and 2011 reaching a high of \$65/lb in February 2011 before dropping and settling at \$51.9/lb in May 2012. The drop in price followed the earthquake that damaged the Fukushima nuclear power plant in March 2011. However, the price has since stabilized at around \$51.8/lb in 2012 (Fig.22).

FIGURE 22: NUEXCO SPOT URANIUM PRICE, 2009-2012 (MONTHLY AVERAGES)



Source: Metal Bulletin

DEVELOPMENTS IN AFRICA

GoviEx Uranium, a Niger based uranium junior mining company has concluded a \$40 million strategic financing and offtake agreement with Japanese nuclear firm Toshiba to advance its Madaouela project. Toshiba acquired a 14-year right and commitment to buy up to 600 000 lb of uranium a year. The Madaouela project prefeasibility study was expected to be complete by the end of 2012, while production is anticipated to start before 2018, reaching full production by 2020.

The Letlhake uranium project, located in Botswana is one of the world's largest undeveloped uranium deposits. The project has a JORC compliant global resource of 216 M lb of uranium oxide with additional resource growth expected on further exploration. The shallow flat lying deposits will make it easy and cost effective to mine. A-Cap Resources is a company in Botswana which is listed both on the Australian Securities Exchange and the Botswana Stock Exchange, it owns 100 percent of the Letlhake uranium project and is committed to concluding the feasibility study in 2014 and developing the first uranium mine in Botswana by 2015.

SOUTH AFRICA

The Toronto-based First Uranium has agreed to sell its Mine Waste Solutions (MWS) tailings recovery project to AngloGold Ashanti for \$335 million and its Ezulwini gold and uranium mine to Gold One for \$70 million. Both these companies already own operations close to their new acquisitions and plan to take advantage of new synergies.

AngloGold Ashanti is planning to purchase First Uranium's wholly owned subsidiary First Uranium (Pty) Ltd (South Africa), which owns the MWS tailing retreatment operation in the Vaal River region. The MWS project is a gold and uranium recovery operation, with an estimated 24 ktU of uranium reserves. AngloGold plans to complete the installation and commissioning of a new uranium circuit in 2014, allowing it to increase its long term uranium production to a maximum of 1 731 tU per year. The operation is expected to have a life in excess of 30 years through the processing of tailings from Vaal River and MWS, both owned by AngloGold Ashanti.

Gold One is in the process of buying the Ezulwini gold and uranium mine and related assets through the acquisition of another First Uranium subsidiary, First Uranium Limited for \$70 million. First Uranium produced its first yellowcake at Ezulwini in 2009 with plans for a seven-year gradual ramp-up to 150 tU per year by 2013, although progress has been taking longer than expected.

In March 2011, South Africa's Cabinet approved the integrated resource plan for electricity 2010 (IRP2010) for promulgation by the Department of Energy. The plan includes a significant nuclear component, which will account for 22 percent of new power generation capacity by 2030. As a result, R586 million has been allocated to the Nuclear Energy Corporation of South Africa (NECSA) to continue with nuclear energy research, development and innovation.

Subsequent to government's decision to stop funding the Pebble Bed Modular Reactor (PBMR) Company (Pty) Limited in 2010, the project was placed under care and maintenance and a final decision is expected in 2013. The current priority is to capture and store intellectual property. A skills audit has also been conducted to establish how current expertise could best be used in future nuclear projects.

OUTLOOK

The underlying investment trends for the 2011 uranium market were directly affected by the nuclear tragedy at Fukushima in March. However, the history of the past 30 years in the uranium industry has demonstrated following previous incidents that base demand did not fall, as existing reactors in use worldwide continued to operate. Uranium production is expected to continue to increase as a result of rising demand for nuclear power.

There are 489 nuclear energy reactors proposed globally, seven more prior to Fukushima, as a result demand for uranium is forecast to increase from approximately 166 million lb a year to 226 million lb a year by 2020, despite the abandonment of nuclear energy by certain countries. This is expected to lead to a

significant increase in uranium demand in the mid to long term. In the near future, demand for uranium is anticipated to remain finely balanced, as Japan plans to restart two of its 50 reactors and more restarts are expected.

However, the mounting demand for nuclear power generation is likely to put uranium supplies under pressure, which could boost uranium prices. Prices could reach up to \$81/lb by 2016 due to a massive surge in demand, as a growing number of countries adopt nuclear as an integral part of their energy mix.

New planned projects and the expansion of existing uranium mines are projected to drive up production throughout Asia Pacific with Australia, India, Kazakhstan and China all expected to increase regional uranium production. However, strong market conditions will be required to bring these reserves to the market although this would require considerable investment. The continuing effects of the global economic crisis and the Eurozone debt crisis are likely to constrict new proposed development. Supplies are likely to remain prone to disruption until capacity is increased or diversified. Secondary uranium supplies, therefore, will continue to be needed to plug the supply demand gap in the short to medium term.

The Integrated Resource Plan (IRP) 2010 for South Africa has committed to a full nuclear fleet of 9 600 MW by 2030, which will account for 23 percent of additional power generation capacity. This will increase nuclear energy's contribution to the country's energy mix from 5 to 20 percent. This is likely to contribute significantly to the country's efforts to stabilize the energy supply demand situation and ensure security of supplies. Use of additional nuclear capacity resulting from the implementation of the IRP 2010, is likely to raise the level of local uranium demand. Consequently, local uranium exploitation activity is likely to intensify as local producers or new entrants attempt to position themselves to exploit the anticipated higher demand.

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NON-FERROUS METALS AND MINERALS OVERVIEW

Linda Maphango

INTRODUCTION

South Africa is well endowed with deposits of non-ferrous minerals. It ranks second in the world in the production of titanium and zircon minerals and has substantial reserves and is an important producer of copper, cobalt, nickel, lead, zinc and antimony. The country's titanium and zirconium resources are principally located in heavy mineral sands in Kwa-Zulu Natal, Eastern Cape and Western Cape. Most of the copper is mined in the Palabora Complex in the Limpopo Province with zirconium being produced as a by-product of copper mining. Lead and zinc deposits associated with copper are mined near Aggeneys, Northern Cape. Nickel deposits are mined in the Uitkomst Complex near Badplaas in the Mpumalanga Province. Antimony deposits are mined in the Limpopo Province. Cobalt, copper and nickel are produced as by-products of platinum mining in the Bushveld Complex.

PRODUCTION AND SALES

South Africa's production of primary non-ferrous metals and minerals, excluding titanium and zircon, increased by 6.2 percent to 227.7 kt in 2011 compared with 214.4 kt in 2010 (Table 40). Total sales volume rose by 3.3 percent to 219.5 kt. Local sales volumes decreased by 3.1 percent to 92.0 kt, while export sales volumes increased by 8.4 percent to 127.5 kt. Total sales revenue amounted to R13.3 billion, representing an increase of 14.7 percent, due mainly to higher domestic prices of non-ferrous commodities. Local sales revenue climbed by 42.3 percent to R6.4 billion, while export revenue fell by 2.9 percent to R6.9 billion owing to lower average export prices.

In 2011, South Africa's total production of non-ferrous metals and minerals (primary and processed), excluding titanium minerals, zircon minerals and aluminium metal decreased by 0.2 percent to 1.1 Mt when compared with 2010. Total sales revenue rose by 12.7 percent to R14.8 billion. Local sales revenue increased by 30.9 percent to R7.9 billion, while export sales declined by 2.9 percent to R6.9 billion. Exxaro's Zincor refinery, which had been supplying the local galvanising sector with zinc metal, was closed down in December 2011. South Africa is now sourcing zinc metal from the international markets. More than two-thirds of South Africa's copper production is consumed locally in the electrical, construction, transport and industrial machinery sectors.

TABLE 40: SOUTH AFRICAN PRODUCTION AND SALES OF NON-FERROUS METALS AND MINERALS, 2010 AND 2011

COMMODITY	PRODUCTION		LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
	Year	(t)	(t)	R'000	(t)	R'000	(t)	R'000
Antimony (mic)	2011	3 175	10	964	2 699	212 294	2 709	213 258
	2010	3 239	9	575	2 460	101 992	2 469	102 567
Cobalt	2011	862	43	10 789	451	114 457	493	125 245
	2010	840	58	16 110	493	135 424	551	151 534
Copper	2011	89 298	60 425	3 937 749	25 522	1 495 100	85 946	5 432 849
	2010	83 640	56 682	3 160 029	24 822	1 209 297	81 504	4 369 326
Lead	2011	54 460	0	0	52 368	762 929	52 368	762 929
	2010	50 625	0	0	53 094	696 738	53 094	696 738
Nickel	2011	43 321	14 457	2 326 440	26 645	4 075 750	41 102	6 402 191
	2010	39 960	7 293	1 073 291	33 069	4 911 462	40 362	5 984 753
Titanium minerals	2011	***	***	***	***	***	***	***
	2010	***	***	***	***	***	***	***
Zinc (mic)	2011	36 629	17 083	169 416	19 800	233 150	36 883	402 566
	2010	36 142	30 905	279 821	3 649	43 393	34 554	323 214
Zirconium minerals	2011	***	***	***	***	***	***	***
	2010	***	***	***	***	***	***	***
Primary subtotals	2011	227 745	92 018	6 445 358	127 485	6 893 680	219 501	13 339 038
	2010	214 446	94 947	4 529 826	117 587	7 098 306	212 534	11 628 132
Aluminium metal	2011	809 773	***	***	***	***	***	***
	2010	811 483	***	***	***	***	***	***
Titanium slag	2011	***	***	***	***	***	***	***
	2010	***	***	***	***	***	***	***
Zinc metal	2011	72 020	85 467	1 457 613	0	0	85 467	1 457 613
	2010	85 512	89 094	1 505 861	0	0	89 094	1 505 861
Processed subtotals	2011	881 793	85 467	1 457 613	0	0	85 467	1 457 613
	2010	896 995	89 094	1 505 861	0	0	89 094	1 505 861
Non-Ferrous Totals	2011	1 109 538	177 485	7 902 971	127 485	6 893 680	304 968	14 796 651
	2010	1 111 441	184 041	6 035 687	117 587	7 098 306	301 628	13 133 993

Source: DMR, Directorate Mineral Economics

*** Withheld

PRICES

In 2011, most base metals performed better than in 2010 in response to a robust market in the first half of the year due to rising demand in the aftermath of the global recession. In the second half of 2011, most base metals traded lower as investors avoided risk in the midst of a global economic downturn. Base

metals inventories remained high in 2011, which led to a declining trend on the back of weak global demand for base metals, emanating from the persisting Eurozone debt crisis, slowing growth in China and low economic activity in the US. The average annual cobalt price fell by 14.5 percent to \$17/lb when compared with 2010. The average annual zinc price declined by 7.7 percent to \$2 194/t, while lead increased by 8.9 percent to \$2 165/t. Copper went up by 17.2 percent to \$8 834/t, nickel was higher by 5.2 percent to \$22 938/t and aluminium rose by 9.6 percent to \$2 381/t.

EMPLOYMENT

In 2011, employment in South Africa's non-ferrous metals and minerals sector increased slightly by 1.4 percent to 16 027 employees compared with 15 805 employees in 2010 (Table 41). Additional employment was mainly as a result of job increases in the aluminium smelters. Total remuneration rose by 20.4 percent to R4.3 billion due to an increase in employment and average remuneration per person. Average remuneration per person climbed by 18.8 percent to R268 549. A rough measure of average productivity per employee in terms of turnover reached R2.4 million in 2011, an increase of 17.8 percent when compared with 2010.

TABLE 41: SOUTH AFRICA'S NON-FERROUS METALS AND MINERALS: EMPLOYMENT AND GROSS REMUNERATION, 2007-2011

YEAR	EMPLOYEES	REMUNERATION	
	Number	R'000	R/employee
2007	17 165	2 003 290	116 707
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

Source: DMR, Directorate Mineral Economics

OUTLOOK

The International Monetary Fund (IMF) predicts global economic growth at 3.3 percent and 3.6 percent in 2012 and 2013, respectively, down from 3.8 percent in 2011. According to the IMF, growth is forecast to remain weak in developed economies, but relatively strong in many emerging markets and developing economies. Despite positive developments in the financial markets in response to policy actions, risks to global financial stability have mounted since the second quarter of 2012, due to waning confidence in the global financial system. Hence, the global financial landscape is expected to remain fragile for the foreseeable future.

The sluggish global economy, fuelled by the protracted Eurozone debt crisis, slowing growth from emerging economies and the bleak U.S economy, is expected to strain the base metal and minerals'

market. The downside risks to the global economy are envisaged to continue to soften the demand for base metals and minerals in 2012 and 2013, thus, lower prices are expected to prevail during this period.

Aluminium prices are projected to decline by 15 percent from \$2 383/t in 2011 to \$2 025/t in 2012 and by a further 3 percent to \$1 968/t in 2013. Copper prices are forecast to dip by 10 percent to \$7 950/t in 2012. However, prices are expected to increase to \$8 533/t in 2013 due to an anticipated supply shortfall. Cobalt prices are envisaged to average at \$14.00/lb in 2012, representing a decline of 20 percent, due to oversupply of metal in the cobalt market. Cobalt prices are forecast to further drop to \$13/lb in 2013. Nickel prices are anticipated to plummet by 23 percent to \$17 670/t in 2012. Lead prices are projected to decrease by 15 percent to \$2 030/t and zinc prices are expected to decline by 12 percent to \$1 940/t in 2012.

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ALUMINIUM

Chili Thomas

WORLD SUPPLY

World refined aluminium production rose by 6.3 percent to 44.6 Mt in 2011 compared with 2010 (Table 42), due to capacity expansion in the Middle East and Asia. Major producers were China (18.1 Mt), Russia (3.9 Mt) and Canada (2.9 Mt), which collectively accounted for 56.1 percent. South Africa contributed 1.8 percent and was ranked 10th.

TABLE 42: WORLD ALUMINIUM SMELTER CAPACITY, PRODUCTION AND EXPORTS, 2011

COUNTRY	SMELTER	PRODUCTION			EXPORTS		
	CAPACITY						
	kt	kt	%	Rank	kt	%	Rank
Australia	2 050	1 945	4.4	5	1 680	7.9	3
Bahrain	880	881	2.0	9	409	1.9	9
Brazil	1 700	1 440	3.2	7	524	2.5	7
Canada	3 020	2 983	6.7	3	2 486	11.6	2
China	18 400	18 062	40.5	1	766	3.6	5
India	2 310	1 660	3.7	6	271	1.3	10
Norway	1 230	1 202	2.7	8	1 429	6.7	4
Russia	4 440	3 992	8.9	2	5 583	26.7	1
South Africa*	900	810	1.8	10	592	2.8	6
USA	320	1 984	4.4	4	509	2.4	8
Other	20 650	9 665	21.7	-	7 112	33.3	
TOTAL 2011	55 900	44 624	100.0		21 361	100.0	
2010	53 500	41 991			20 875		

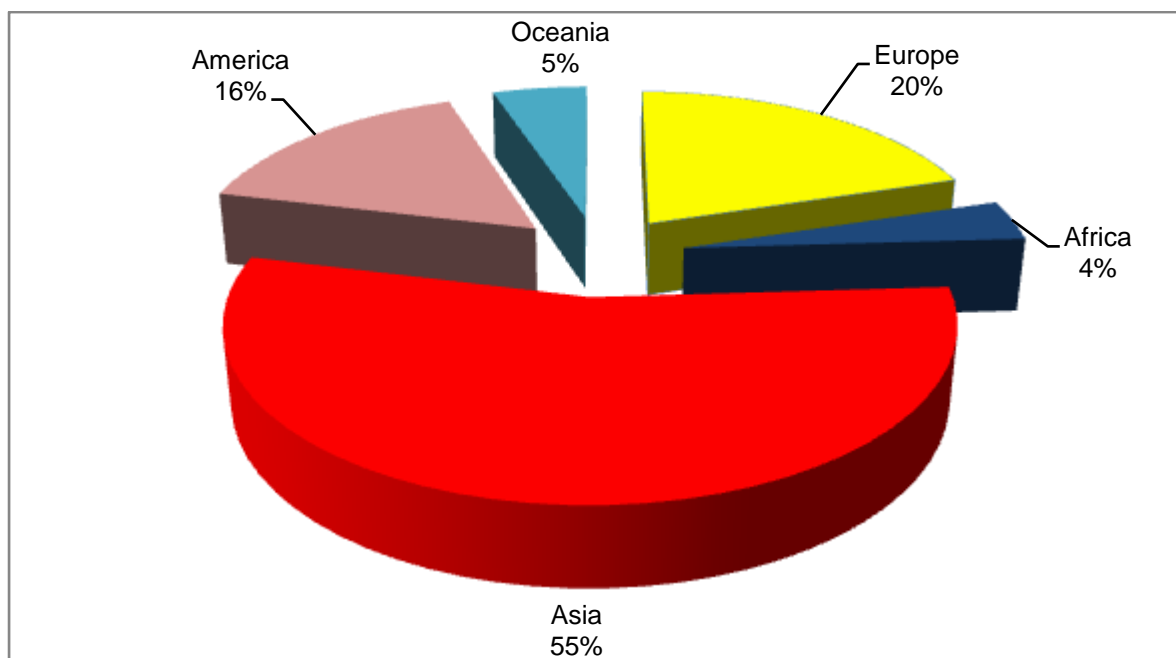
Sources: United States Geological Survey, 2012, p 17

World Bureau of Metal Statistics (WBMS), 2012

*Department of Mineral Resources (DMR), Directorate Mineral Economics

Refined aluminium output rose in all regions. Asia's output climbed by 10.4 percent followed by Europe's 2.5 percent, Oceania's 1.3 percent and Africa's 0.5 percent. Asia, at 24.1 Mt continued to dominate world refined aluminium output, contributing 55 percent to total world production followed by Europe's 20 percent and America's 16 percent (Fig.23).

FIGURE 23: WORLD PRIMARY ALUMINIUM PRODUCTION BY REGION, 2011

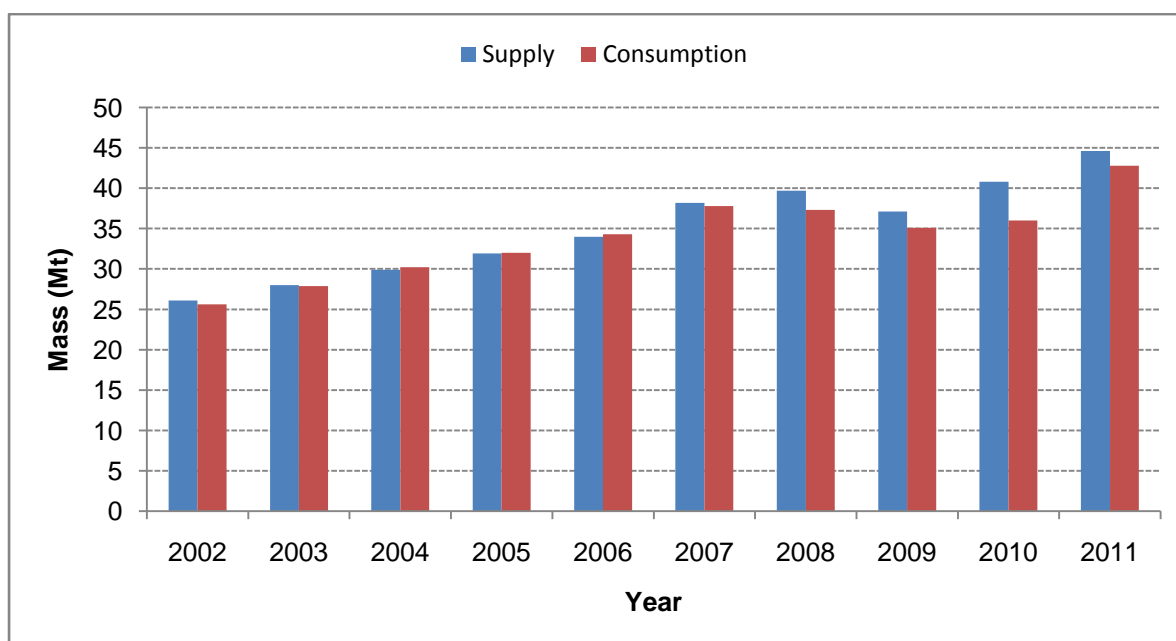


Source: World Bureau of Metal Statistics (WBMS), 2012

CONSUMPTION

Global demand for the light metal increased by 5.5 percent to 42.4 Mt in 2011 (Fig. 24) compared with 40.2 Mt in 2010, fuelled by Chinese demand for automobiles. Growth in the automobile industry is also driven by the EU's requirements for lighter vehicles in a bid to curb carbon dioxide emissions.

FIGURE 24: WORLD ALUMINIUM SUPPLY AND DEMAND 2002-2011

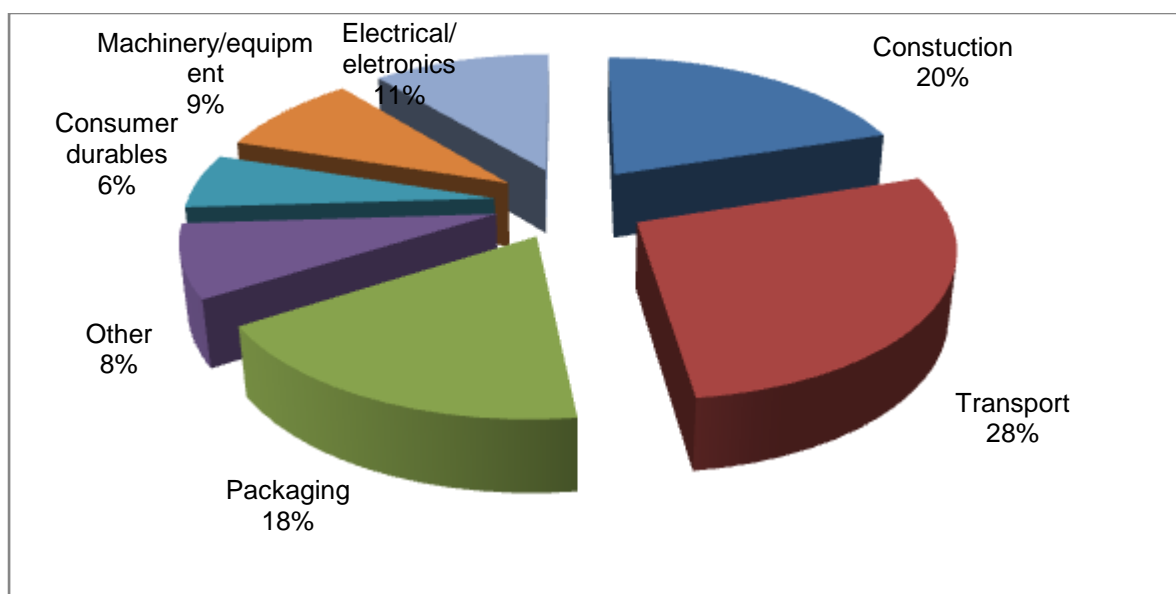


Source: World Bureau of Metal Statistics, 2012

In 2011, Asia, at 62 percent, was the largest consumer of aluminium followed by Europe's 20 percent and the Americas' 15 percent. The balance went to Africa and Oceania.

Demand for refined aluminium was driven by the transport sector, which accounted for 28 percent followed by construction (20 percent) and the packaging sector (18 percent),(Fig. 25). Electrical applications and machinery consumed 11 percent and 9 percent, respectively.

FIGURE 25: INDUSTRIAL DEMAND FOR HIGH GRADE PRIMARY ALUMINIUM, 2011



Source: Metal Bulletin Focus, 2012

WORLD TRADE

In 2011, world primary aluminium exports rose by 2.4 percent to 21.4 Mt compared with 2010. Exports from Russia, the world's largest exporter of aluminium, rose by 20.4 percent, which offset the declines from all the other major exporters. Canada's exports declined by 0.4 percent followed by declines from Netherlands and Australia of 7.6 percent and 0.9, respectively. South Africa's primary aluminium exports rose by 7.7 percent to 591.2 t in 2011.

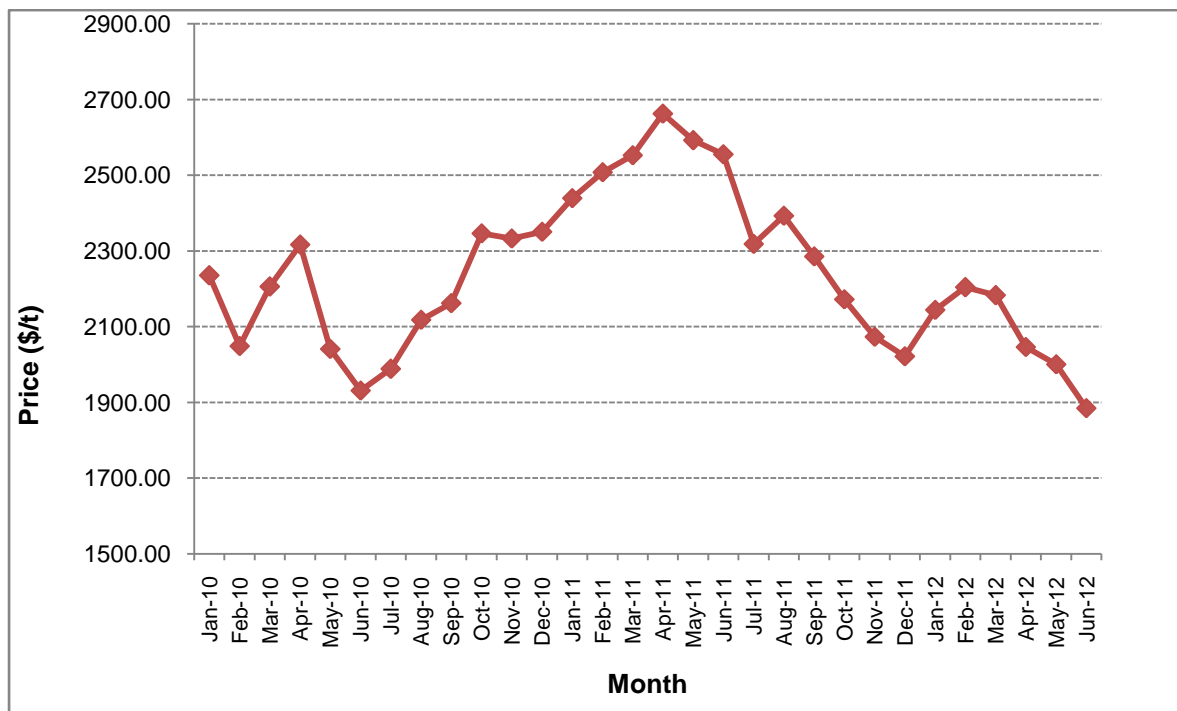
World aluminium imports were 1.5 percent lower in 2011 when compared with 2010. USA and Japan dominated the world aluminium imports accounting for 13.0 percent each.

PRICES

In 2011, the London Metal Exchange (LME) cash settlement prices increased by 9.6 percent to an average of \$2 383.20/t compared with 2010 (Fig. 26). But aluminium prices plummeted by 20.8 percent from a monthly average of \$2 552.61/t in March 2011 to \$2 021.78/t in December 2011 due to deteriorating

aluminium market fundamentals. The declining trend in 2011 resulted from an excess in aluminium supply owing to the European debt crisis and high levels of inventories.

FIGURE 26: LONDON METAL EXCHANGE CASH SETTLEMENT PRICE (MONTHLY AVERAGES), 2010 – 2012



Sources: *Metal Bulletin*, 2010-2011

GLOBAL DEVELOPMENTS

Production continues to rise in China as greenfield projects in Xinjiang province ramp up. However, some greenfield smelters that were originally earmarked for commissioning in 2012 have been postponed, amid the weak aluminium price. These smelters include Qinghai Xinheng Hydro and Shandong Huimin.

Also in China, annualised production rates increased as a result of production growth from greenfield expansions in Xinjiang, where annualised production increased from 690 kt in January 2012 to 1.25 Mt in September 2012. Restarts of idle capacity in Guizhou, Guangxi and Henan provinces, due to power tariff discounts, further lifted production rates. The southern province of Yunnan has launched a subsidy programme, which enables metal producers to pledge metal up to 200 kt as collateral in return for subsidised loans. The programme seeks to alleviate financing constraints faced by producers because of tight credit.

The European Commission has allowed Alcoa's Portovesme smelter in Sardinia to continue using special contracts to purchase electricity at lower prices until 2015 and also helped to ease margin constraints for the beleaguered smelter. Elsewhere, negotiations for lower power tariffs are also taking place in New Zealand (between Tiwai Point and Meridien Energy) and in the USA (between Century Aluminum and

Appalachian Power). Lower power tariffs will help boost producer margins and alleviate high smelters' costs. Should the aluminium price sustain its current level, it would reduce the pressure on production curtailments in the near future.

In India, new projects to be commissioned during 2012 will contribute to higher production. These include Vedanta Resources' Jharsuguda II smelter (capacity of 1.25 Mt/a), BALCO's Korba smelter (325 kt/a), Hindalco and Aditya's Orissa smelter (359 kt/a), and Hindalco's Mahan MP smelter (359 kt/a). In the Middle East, new capacity, including Norsk Hydro and Qatar Aluminium's Qatalum smelter (585 kt) and DUBAL and Mubadala's EMAL smelter (750 kt/a) are expected to reach full capacity by 2012. The US is set to restart production at five smelters viz, Century's Hawesville smelter (52 kt/a), Ormet's Hannibal smelter's two potlines with a combined capacity of 80 kt/a, and Alcoa's Massena East, Ferndale and Wenatchee Works smelters with a combined capacity of 200 kt/a.

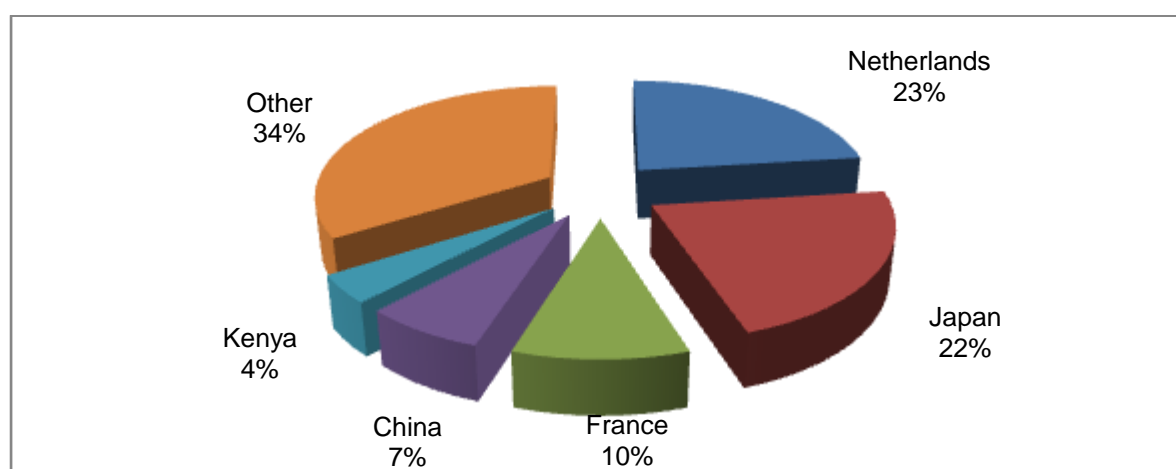
DEVELOPMENTS IN AFRICA

The Guinean government is set to reach an agreement with the Guinean state-owned company and Chinese Power Investment to develop a bauxite mine and construct an alumina refinery, deep water port and a power plant. The project will be located in Boffa about 120 km west of the capital Conakry and is expected to commence in late 2012 with an estimated investment of \$5.8 billion with the production capacity estimated at 4 Mt/a. Also, the government in that country has reached an agreement with Rio Tinto to secure Simandou bauxite resources and will form a joint venture with the Aluminium Corporation of China (Chalco) produce alumina. The government is expected to own 35 percent of the company.

SOUTH AFRICA

South Africa's primary aluminium production was stable at 810 kt in 2011 compared with 811 kt in 2010. The stagnant growth reflected the impact of the Eurozone debt crisis and electricity challenges.

FIGURE 27: SOUTH AFRICA'S PRIMARY ALUMINIUM EXPORTS BY DESTINATION, 2011



Source: DMR, Directorate Mineral Economics, 2012

In 2011, South Africa's export pattern changed due to the effects of the Eurozone debt crisis. Of the total output of aluminium produced in South Africa, 23 percent was shipped to the Netherlands followed by Japan at 22 percent while 10 percent and 7 percent went to France and China, respectively (Fig. 27).

OUTLOOK

World aluminium production is expected to increase by 7 percent to 45.0 Mt in 2012 and is expected to increase by a further 6 percent to 45.3 Mt in 2013. This growth is expected to be driven by smelter restarts and the commissioning of new capacity in China, India, the Middle East and the United States.

World aluminium consumption is projected to increase by 8 percent to 42.7 Mt in 2012 and by a further 8 percent to 46.4 Mt in 2013. Consumption growth is expected to remain strong, particularly in the transport sector, where aluminium is increasingly used in the manufacture of automobiles in order to meet lighter vehicles requirements to reduce carbon dioxide emissions. The OECD aluminium consumption is forecast to increase by 7 percent in 2012 and by a further 8 percent in 2013 supported by growth in semi-finished products.

LME aluminium cash settlement prices are forecast to fall by 15.0 percent to \$2 025.72/t in 2012 as a result of the simmering Eurozone sovereign debt crisis and decline by a further 3 percent to an average of \$1 968.00/t in 2013.

South Africa's automobile industry is expected to grow and increase exports, which may raise demand for the light metal. Consequently, local aluminium production is expected to grow by marginally to 813 kt in 2013.

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ANTIMONY

Linda Maphango

WORLD SUPPLY

Global antimony reserves amounted to approximately 1.8 Mt in 2011. At 0.95 Mt, China hosts 51.9 percent of the world's reserves, followed by Russia's 19.1 percent, Bolivia's 16.9 percent, Tajikistan's 2.7 percent and South Africa's 1.2 percent (Table 43). In 2011, world mine production of antimony increased slightly by 1.2 percent to 169.2 kt compared with 2010, due to increases in Bolivia, Russia and Tajikistan in response to stronger demand. China continued its dominance of global output contributing 150 kt, equivalent to 88.7 percent of world total. Second and third place in terms of production were Bolivia (2.9 percent) and South Africa (1.9 percent).

TABLE 43: WORLD RESERVES AND PRODUCTION OF ANTIMONY CONCENTRATES, 2011

COUNTRY	RESERVE			PRODUCTION		
	kt	%	Rank	kt	%	Rank
Bolivia	310	16.9	3	5	2.9	2
China	950	51.9	1	150	88.7	1
Russia	350	19.1	2	3	1.8	4
South Africa	21	1.2	5	*3.2	1.9	3
Tajikistan	50	2.7	4	2	1.2	5
Other	150	8.2	-	6	3.5	-
Total	2011	1 831	100.0	169.2	100.0	
	2010	1 831		167.2		

Source: USGS, *Mineral Commodity Summaries*, January 2012

**DMR Mineral Economics Directorate*

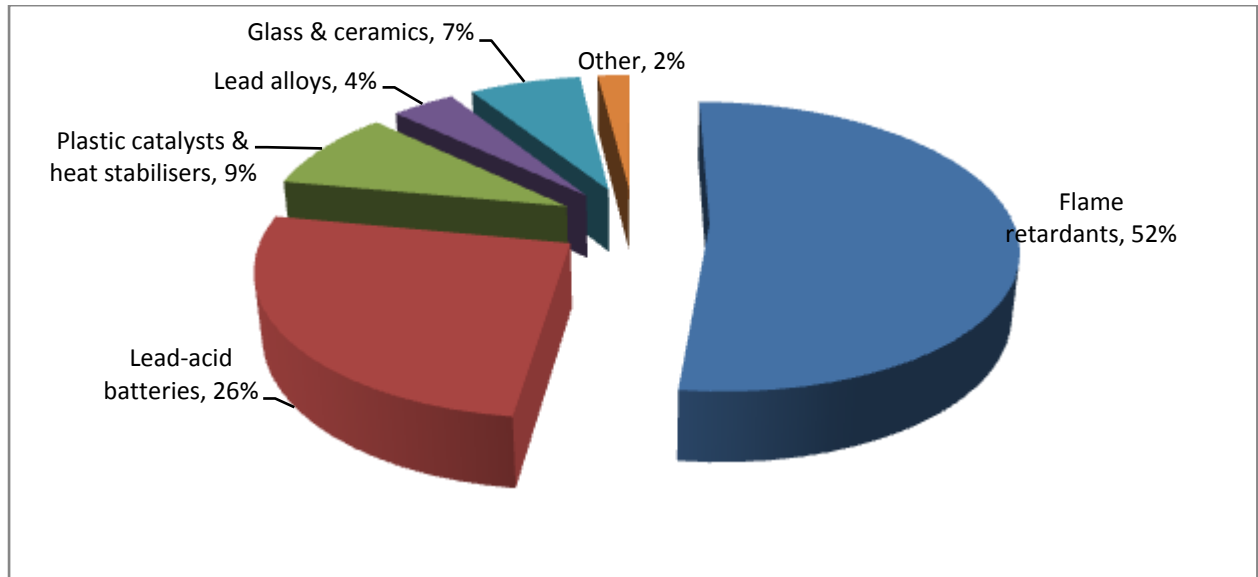
In 2011 the government of China continued to shut down antimony mines and smelters to curb pollution and smuggling. Over the past couple of years the local government in Lengshuijiang, Hunan Province, which contributes about 60 percent of the global antimony production, closed down nearly all of its mines and smelters. However, China's production remained the same at 150 kt in 2011, signaling sporadic production increases from some of the mines which made up for the loss of production as a result of mine and smelter closures.

WORLD DEMAND

Antimony is used principally in flame retardants as antimony trioxide. Antimony trioxide acts as a synergist to improve the performance of primary flame retardants. Flame retardants consume about 52 percent of primary antimony production, followed by lead-acid-batteries (26 percent), plastic catalysts & heat

stabilisers (9 percent), glass and ceramics (7 percent), and lead alloys (4 percent) (Fig. 28). The buoyant antimony market in 2011 was fuelled by continued growth in demand for antimony in flame retardants as well as in lead-acid-batteries. At 58 percent, Asia was the largest consuming region in 2011, with China alone accounting for about 50 percent of world demand.

FIGURE 28: GLOBAL ANTIMONY CONSUMPTION BY SECTOR, 2011



Estimates from various sources

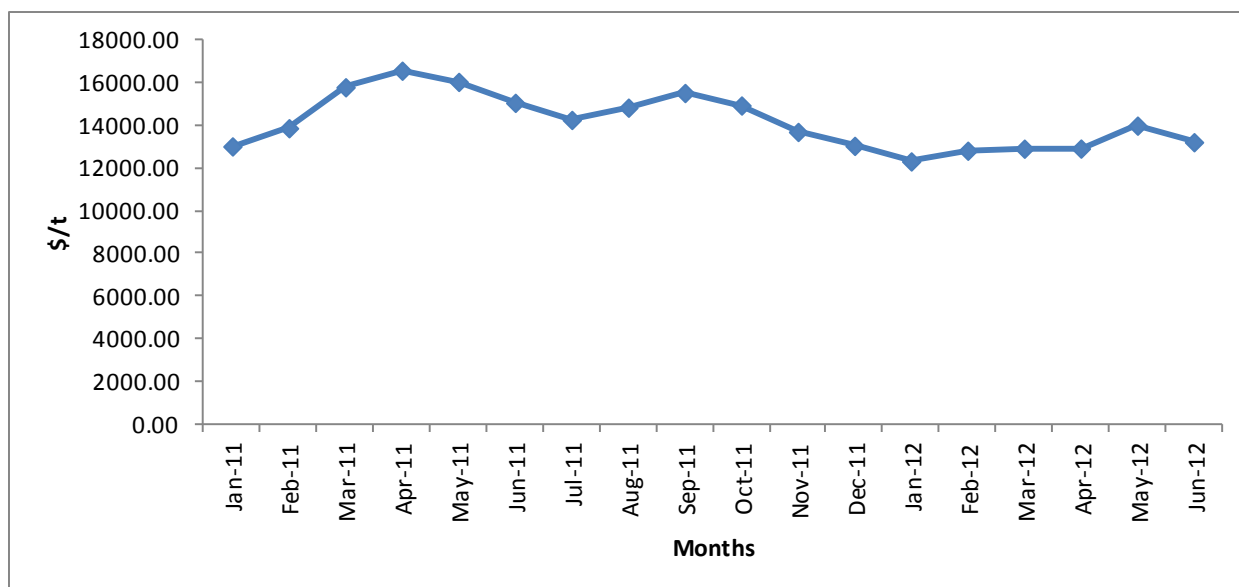
The strong global market for antimony was mainly driven by the following:

- Supply restrictions in China due to intermittent production interruptions stemming from the clamp downs on mines and smelters in a bid to control environmental and safety problems.
- Tighter fire regulations and building codes for improving safety; and
- Increasing use of plastic products instead of less flammable material.

PRICES

In early 2011, prices of antimony continued the upward trend seen for most of the previous year, due to supply constraints in China (Fig. 29). The annual average price of antimony increased by 63.3 percent to \$14 729/t in 2011 compared with 2010. Prices of antimony climbed by 27.3 percent from a monthly average of \$13 025/t in January 2011 to \$16 578/t in April 2011. This increase is equivalent to a growth rate of 8.3 percent compounded monthly.

FIGURE 29: ANTIMONY METAL BULLETIN, FREE MARKET PRICES, 2011 – 2012



Source: Metal Bulletin Free Market, 2011 - 2012

In May 2011, prices fell by 3.2 percent to \$16 052 compared with the previous month. Prices decreased by 13.9 percent to \$14 268/t in July compared with April, representing a compounded monthly negative growth rate of 4.9 percent. Prices declined after the Chinese government had approved mine smelters to resume operations in April 2012. The smelters had been shut down during environmental inspections carried out by the authorities from September 2010 to April 2011. The fall in prices was further exacerbated by waning demand from Europe and Asia, particularly, Japan in the aftermath of the earthquake and tsunami in March 2011.

Prices rose by 4.0 percent and 4.6 percent in August and September to \$14 843/t and \$15 532/t, due to improving demand. Prices went down by 20.7 percent to \$12 321/t in January 2012 compared with September 2011, equating to a compounded monthly negative growth rate of 7.4 percent, owing to rising inventory levels in China. In February 2012, prices 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. Prices remained stable until April. Prices ascended to \$14 000/t in May, on the back of stronger demand, before dropping to \$13 223/t in June due to high inventories and lower domestic consumption in China.

DEVELOPMENTS IN SOUTH AFRICA

South Africa's production of antimony concentrate decreased by 2.0 percent to 3 175 t in 2011 compared with the previous year. The slump in production was mainly as a result of a loss of 17 shifts at Cons Murch mine, the only producer of antimony in South Africa, due to labour related disruptions.

The introduction of trackless machinery and better antimony feed grades and improved plant recoveries since the second half of 2011 assisted in reducing major production losses. South Africa's total sales

volume of antimony concentrate increased by 9.7 percent to 2 709 t in 2011 compared with 2010, due to stronger global demand in the first half of 2011. Total sales revenue more than doubled from R102 million in 2010 to R213 million in 2011, as a result of firm global antimony prices.

On 7 March 2011, Village Main assumed full control of Cons Murch mine after the conclusion of the sale contract with the Point Growth Specialist (TTP). Cons Murch mine has mobilised resources with the primary aim of improving ore body flexibility and ramping up underground development. The mine is also planning to replace underground equipment and infrastructure. These interventions are expected to result in higher production to a planned steady-state level of 27 000 t per month milled. The mine is currently deepening two of its three shafts using trackless mechanised equipment in a bid to boost production and efficiencies. Also, the process of upgrading the plant to improve recoveries and operating efficiencies is under way. Furthermore, the mine is currently exploring for antimony on the surrounding property where it holds a prospecting right.

DEVELOPMENTS OUTSIDE SOUTH AFRICA

United States Antimony Corporation (USAC), a vertically integrated producer of antimony in the US, has fast-tracked the development of its antimony, silver and gold property at Los Juarez in Mexico. The company has begun to examine and develop various zones at the property in order to evaluate the grades. USAC plans to undertake exploration and processing activities at the deposit, such as core drilling, underground mining sampling and flotation of mill feeds during the second half of 2012.

USAC also completed its Corral Blance flotation mill project in Guanjuanita, Mexico, at the end of 2011. The mill has the capacity to produce 150 t per day of 50 – 60 percent-purity antimony concentrate. Silver and gold will be produced as by-products. USAC's nearby Los Juarez antimony, silver and gold mine together with other sources will provide the feed for the mill. The mill will supply concentrate feed to Modero sulphide and oxide smelter in Coahuila state, northern Mexico, for the production of antimony trioxide.

Tri-Star Resources, a UK based company, is currently developing its Goynuk antimony exploration project in north-west Turkey. The project has the potential to produce 350 kt of antimony, from grades of between 1 and 3 percent. The company could start with a comprehensive mine-scoping study, provided the project is found to have a significant mineral resource. The company has secured an environmental permit for its 14 kt per annum processing facility to treat the existing stockpile at Goynuk.

OUTLOOK

Antimony supply is expected to increase in Bolivia, South Africa, and Tajikistan and could go a long way in replacing declining production in China. South Africa's production is forecast to increase in 2012 due to higher ore grades and improved plant recoveries and the use of trackless machinery. Potential additional sources of antimony concentrates are anticipated to come from Australia, Canada, Mexico and Russia in the next two years. The closure of smaller and polluting smelter operations as well as clamp downs on illegal mines in China could contribute to fluctuating production in 2012. Moreover, diminishing high-grade reserves in China could further restrict the supply of antimony.

Flame retardants are expected to continue to be the main engine of growth in the consumption of antimony in the foreseeable future. According to Roskill, global demand for antimony in flame retardants is projected to grow at about 3 percent per annum from 2012 to 2016. The biggest growth in this sector is expected to be driven by increasing demand in Asia, Middle East, Africa and South America. The increasing use of automobiles in the emerging markets such as Brazil, Russia, India and China could raise consumption of antimony in lead-acid-batteries, the second major consuming sector. Growth in demand is expected to continue in 2012 and production is expected to increase moderately in 2012.

In 2012, prices of antimony are forecast to decrease slightly, but are expected to remain at higher levels over the longer term supported by the Chinese government's ongoing measures to curtail production and protect the environment. Industry analysts believe that the antimony deficit in the market will increase fuelled by the increase in global demand for fire retardants and the decline in supplies from China.

The strong fundamentals in the global antimony industry augur well for South Africa, taking into account the fluctuating feed grades at Cons Murch mine. The mine is currently in the process of improving mine and plant operational efficiencies with the aim of boosting South Africa's antimony concentrate production in 2012 and beyond.

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COBALT

Chili Thomas

SUPPLY

According to the United States Geological Survey (USGS), world cobalt reserves were estimated at 7.5 Mt in 2011, reflecting an increase of 2.7 percent when compared with 2010 (Table 44). At 45.3 percent, the Democratic Republic of Congo (DRC) has the world's largest of cobalt reserves followed by Australia (18.7 percent) and Cuba (6.7 percent). South Africa accounted for 0.2 percent of the world reserves and was ranked 11th in the world. Fifty seven percent of global cobalt production is derived from nickel mining while 37 percent is sourced from copper mining and the balance comes from primary cobalt operations.

TABLE 44: WORLD RESERVES AND MINE PRODUCTION OF COBALT, 2011

COUNTRY	RESERVES			MINE PRODUCTION		
	kt	Percent	Rank	t	Percent	Rank
Australia	1 400	18.7	2	4 000	4.1	6
Brazil	87	1.2	8	1 700	1.7	10
Canada	130	1.7	7	7 200	7.3	3
China	80	1.1	9	6 500	6.6	4
Cuba	500	6.7	3	3 600	3.7	7
DR Congo	3 400	45.3	1	52 000	53.1	1
Morocco	20	0.3	10	2 500	2.6	9
New Caledonia	370	4.9	4	2 000	2.0	8
Russia	250	3.3	6	6 300	6.4	5
South Africa [±]	13	0.2	11	840	0.9	11
Zambia	270	3.6	5	5 700	12.5	2
Other	980	13		5 660	5.8	
TOTAL 2011	7 500	100		98 000	100	
2010	7 300			88 300		

Sources: USGS, January 2012, (for Reserves and Mine Production)

[±]DMR, Mineral Economics Directorate (mine production)

^eEstimate

World cobalt mine production rose by 11.0 percent to 98.0 kt in 2011, compared with 88.3 kt in 2010 (Table 45). The DRC was the world's largest producer of cobalt accounting for 53.1 percent followed by Zambia (12.5 percent). Canada relegated China to fourth place accounting for 7.3 percent and 6.6 percent, respectively. South Africa contributed 0.9 percent to global cobalt mine output, derived mainly as a by-product from Platinum Group Metals (PGMs) mines.

In 2011, world refined cobalt production increased marginally by 3.8 percent to 82.2 kt, when compared with 2010 (Table 45). Despite Chinese refined cobalt's 2.7 percent decline, it remained the largest producer accounting for 42.5 percent of global refined cobalt output followed by Finland (12.7 percent) and Zambia (7.2 percent). South Africa contributed 1.0 percent of global output and ranked 12th.

TABLE 45: REFINED COBALT PRODUCTION BY COUNTRY, 2010 AND 2011

COUNTRY	2010		2011		RANK
	t	%	t	%	
Australia	4 117	5.2	4 722	5.7	5
Belgium	2 600	3.3	3 187	3.9	6
Canada	4 646	5.9	5 923	7.2	4
China	3 5929	45.3	34 969	42.5	1
D R of Congo	4 182	5.3	3 083	3.7	7
Finland	9 299	11.7	10 441	12.7	2
Japan	1 935	2.4	2 007	2.4	10
Morocco	1 545	1.9	1 788	2.2	11
Norway	3 208	4.0	3 067	3.7	8
Russia	2 460	3.1	2 337	2.8	9
South Africa*	840	1.1	862	1	12
Zambia	5 034	4.4	5 956	7.2	3
Other	3 475	100	3905	4.7	
TOTAL	79 270		82 247		

Source: World Bureau of Metal Statistics Year Book 2012

*DMR, Mineral Economics Directorate

The Cobalt Development Institute (CDI) members' cobalt production rose by 14.9 percent to 35.5 kt in 2011 (Table 46). The increase resulted from a rise in all CDI members' production except Gécamines in DRC, which fell by 12.8 percent in 2011 due to delays in a production revamp.

TABLE 46: CDI MEMBER COMPANIES' REFINED COBALT PRODUCTION, 2010 AND 2011

COMPANY	COUNTRY	2010	2011	RANK
		t	t	
CDI MEMBERS				
BHPB/QNPL	Australia	2 141	2 631	5
Chambishi	Zambia	3 934	4 856	2
CTT	Morocco	1 545	1 788	8
CVRD / Vale Inco	Canada	940	2 070	6
Eramet	France	302	354	11
Gécamines	DRC	745	650	9
ICCI	Canada	3 706	3 853	3
OMG	Finland	9 299	10 441	1
Sumitomo	Japan	1 935	2 007	7
Rubamin ^u	India	517	579	10
Umicore	Belgium*			
Xstrata	Norway ⁺	3 208	3 067	4
TOTAL		30 872	35 483	

Source: ^u Rubamin joined CDI in 2010

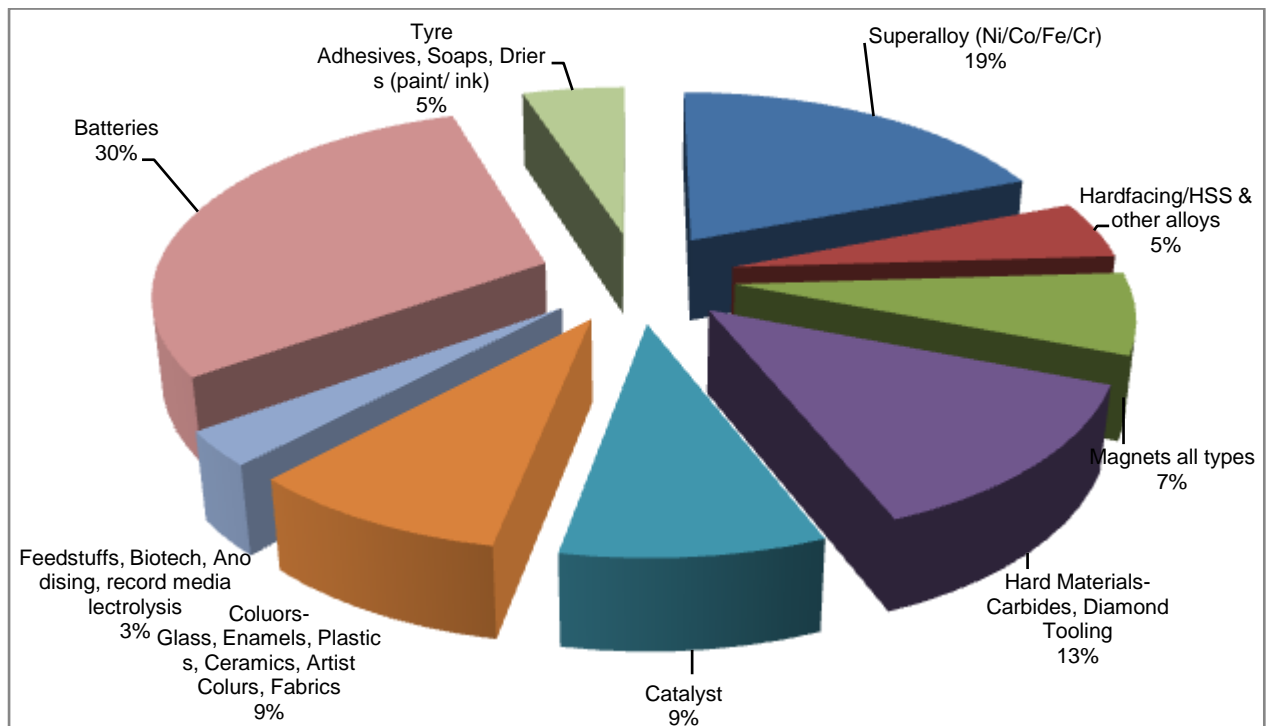
*Estimates

□ Chinese production excludes that produced by Umicore in China, Cobalt News, April, 2012, Cobalt Supply and Demand 2010 (Cobalt Facts, 2011, CDI)

DEMAND

According to CDI, global cobalt demand increased by 15 percent to 75 kt in 2011 when compared with 2010. The demand for cobalt was tied to its main drivers' batteries, particular by portable devices and the new generation of Hybrid Electric Vehicles (HEV) and all Electric Vehicles (EV), which consumed 30 percent of cobalt consumption (Fig. 30). Superalloys (Ni/Co/Fe/Cr) accounted for 19 percent of consumption, hard material-carbides and diamond tooling (13 percent) while catalysts and ceramics accounted for 9 percent each.

FIGURE 30: COBALT CONSUMPTION BY SECTOR, 2012

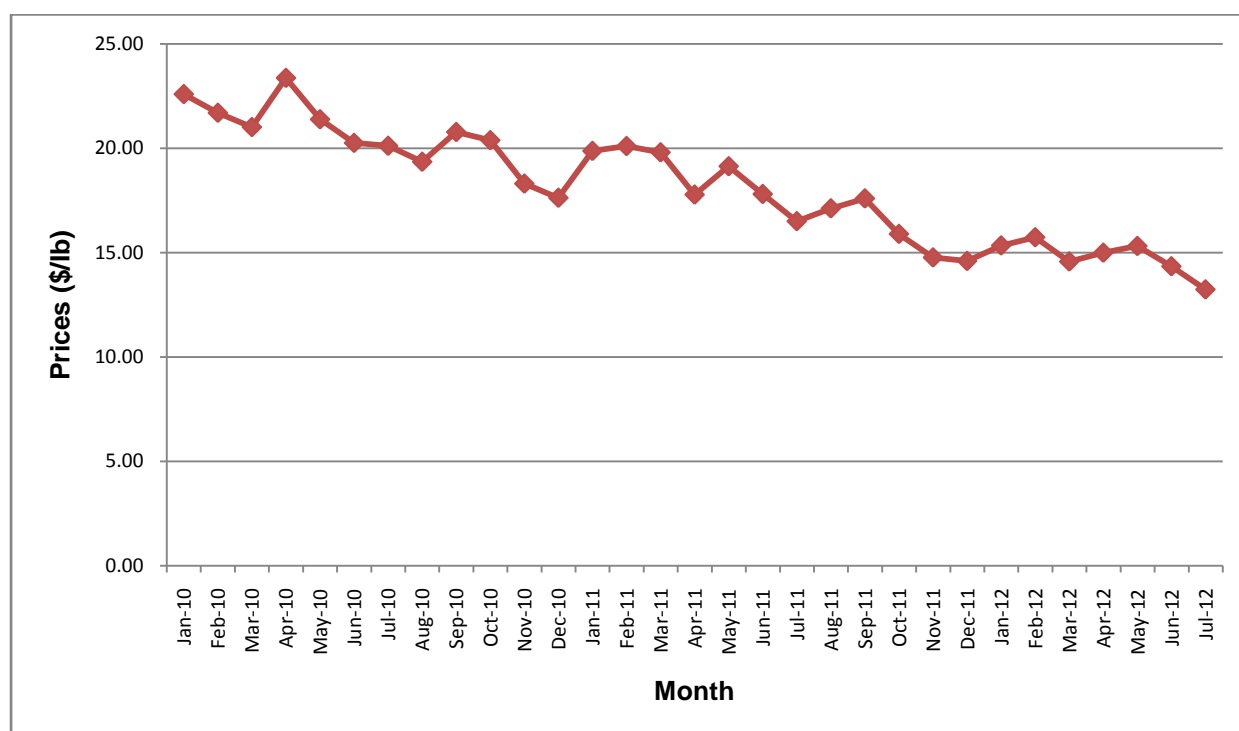


Source: Cobalt Facts, Supply and Demand, 2012 (The CDI)

PRICES

In 2011, the European debt crisis flared and the Chinese economy experienced a slowdown, which affected the cobalt market adversely. Cobalt prices commenced at \$19.87/lb in January 2011 and traded in a narrow band until September 2011 (Fig.31). At the end of 2011, the price of cobalt metal dropped to a low level average of \$14.00/lb. In 2011, the cobalt market was heavily oversupplied, profit margins continued to erode, particular in the Chinese market, thus resulting in a decrease of 14.5 percent in the annual average cobalt price to \$17.58/lb compared with 2010. In the first half of 2012, the cobalt market was still oversupplied; as a result cobalt prices plummeted further by 6.4 percent to reach \$15.05/lb when compared with the second half of 2011, affected by the European debt crisis.

FIGURE 31: COBALT PRICE, 2010 – 2012



Sources: Metal Bulletin, 2012

SOUTH AFRICA

South Africa's cobalt is derived as a by-product of platinum-group metals (PGMs) and nickel mining. Cobalt mine production increased by 2.6 percent to 862.2 t in 2011 when compared with 2010, as a result of several mining operations reaching mature production stages. Local sales volumes declined by 26 percent due to weaker demand, impacting on revenues, which dropped by 26 percent to R42.9 million. The effects of the Eurozone debt crisis and global economic slowdown also had the negative impact on exports, which decreased by 9.6 percent while the export revenues declined by 15.5 percent to R114.5 million.

TABLE 47: SOUTH AFRICA'S LOCAL AND EXPORT SALES OF COBALT, 2001 – 2011

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

Source: Department of Minerals, Directorate Mineral Economics

GLOBAL AND AFRICAN DEVELOPMENTS

The emergence of China as a major refined cobalt producer and consumer since 2007 has changed the pattern of demand for cobalt, particularly from Africa and Australasia. Chinese companies are becoming increasingly involved in copper and cobalt exploration and mining in the DRC and Zambia as well as in nickel and copper, mining in Australia and the South Pacific.

Madagascar's Ambatovy cobalt and nickel mine has started production and has signed a contract with a UK firm that will market its cobalt in 2011. Ambatovy is a partnership between four companies: Sherritt International (TSX:S8) (40 percent), C-Lavalin Group (TSX:SNC9) (5 percent), Japan's Sumitomo (TSE:805310) (27.5 percent) and Korea Resources Investment & Development (27.5 percent). The mine is forecast to produce about 60 kt of refined nickel, and 5,6 kt of refined cobalt per annum. An investment of over \$100 million is expected to be committed per annum and additional amount of \$25 million will be paid to government duties, tax and royalties.

In South Africa, Platinum Australia's Smokey Hills mine, is facing an uncertain future following the group's decision to place it under review, while Eastern Platinum suspended funding for its Mareesburg open pit mine and Kennedy's Vale concentrator projects due to the operating environment in the country and the global economic slowdown.

In June 2012, Aquarius Platinum suspended operations at both its Everest and Marikana mines in South Africa, due to weak platinum prices and high costs. The company, which now has three of its seven operations under care and maintenance, is expected to restart mining once platinum prices and industrial relations have improved.

Some South African platinum companies were curtailing output and cutting back on projects, amid high costs and low prices. However, Platinum Group Metals announced its plans to finance and complete its 74 percent owned by Western Bushveld Joint Venture (WBJV) Project 1. The company was also looking at exploring and expanding its new Waterberg discovery in South Africa.

In May 2012, Nkwe Platinum confirmed that it had received the final definitive feasibility study for the Garatau project.

OUTLOOK

With the continued ramp-up of new mines in the Democratic Republic of Congo (DRC), and the start-up of greenfields projects, the supply is expected to rise. New cobalt capacity is expected to add 20 kt in the DRC and supply is expected to reach 95 kt in 2013 and 2014. The projects are expected in Madagascar from mine to add 45 percent. Production at Ambatovy is expected to commence in early 2013. Japanese to add 55 percent.

In 2011, plans were announced for new mines with a cumulative capacity of more than 100 kt per year of cobalt. This additional planned capacity corresponds to 175 percent of the 2008 global refinery production level. About 45 percent of this cobalt would be from primary nickel deposits, about 32 percent from primary copper deposits, and about 21 percent from primary cobalt deposits. By 2013, about 40 percent of new capacity is expected to come from the African Copperbelt; 38 percent from Australia and the Asian and the South Pacific countries of Philippines, Indonesia, New Caledonia, and Papua New Guinea; 11 percent from other African countries; 5 percent from North America; and 6 percent, from other areas.

Global demand for cobalt is anticipated to increase by 11.5 percent in 2012 and 8.9 percent in 2013. The projected increase will be fuelled by demand from superalloys used in aircraft jet engines, rechargeable batteries for hybrid and electric vehicles and gas-to-liquid facilities set to come on stream in 2013. The market growth is expected to be supported by a rebound in vehicle production of a new generation of Hybrid Electric Vehicles (HEV) and all Electric Vehicles (EV), which consumed 30 percent of cobalt consumption in 2012.

In South Africa, the production of cobalt is expected to rise, in-line with the increase in nickel production, which is expected nickel is expected to increase from 8.6 kt in 2012 to 10.5 kt by 2013 when the Nkomati Expansion Project reaches its full capacity. The country's cobalt production, which is predominantly produced as a by-product from PGMs mines is not likely to be affected by labour disruptions, which have already affected PGMs output as is normally stockpiled.

According to CRU, cobalt prices are expected to average \$14.00/lb in 2012 due to a surplus of refined cobalt along with high levels of inventories of raw materials in China. It is anticipated that prices could drop further to \$12.80/lb in 2013, before increasing to \$17.00/lb in 2017, when the refined market revert back to a state of equilibrium.

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COPPER

Chili Thomas

WORLD SUPPLY

According to the World Bureau of Metal Statistics (WBMS), global copper mine production increased marginally by 0.7 percent to 16.2 Mt in 2011 when compared with 16.1 Mt in 2010 (Table 48). Chile continued to be the world's largest copper mine producer, contributing 5.26 Mt followed by Peru's 1.24 Mt and China's 1.27 Mt. In Africa, Zambia, Democratic Republic of Congo and South Africa are the largest producers of copper collectively contributing 1.31 Mt to the global copper mine output. Production declined in Chile, the United States, Australia and Indonesia due to operational failures, labour unrest and lower ore grades. Production in China, currently the second leading copper mine producer, increased by 9.6 percent to 1.27 Mt in 2011 resulting from new production start-ups.

TABLE 48: WORLD RESERVES, MINE PRODUCTION AND EXPORTS, 2011

COUNTRY	RESERVES			PRODUCTION			EXPORTS		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
Australia	86	12.5	3	957	5.9	5	376	4.5	5
Canada	7	1.0	10	566	3.5	7	139	1.7	7
Chile	190	27.5	1	5 263	32.4	1	2981	35.7	1
China	30	4.3	5	1 267	7.8	2	157	1.9	10
DRC	20	2.9	8	440	2.3	11	n/a	n/a	n/a
Indonesia	28	4.1	7	526	3.2	6	132	1.6	8
Kazakhstan	7	1.0	9	435	2.7	8	298	3.6	6
Peru	90	13.0	2	1 235	7.6	3	345	4.1	4
Poland	26	3.8	7	426	2.6	9	328	3.9	5
Russia	30	4.3	6	725	4.5	5	325	3.9	3
South Africa*	11	1.6	9	89	0.5	10	26	0.3	11
USA	35	5.1	4	1138	7.0	4	43	0.5	9
Zambia	20	2.9	8	784	4.8	6	635	7.7	2
Other	110	15.9	-	2 831	17.4	-	2 563	30.7	
TOTAL 2011	690	100.0		16 242	100.0		8 352	100.0	
2010	630			16 135			8 362		

Sources: USGS, 2012, p45
WBMS

Notes: □ □ Department of Mineral Resources (DMR), Directorate Mineral Economics: Copper concentrates, blister anode, and refined copper

Regional copper mine production in Africa increased by 8.7 percent, the Americas by 0.8 percent, Europe by 1.6 percent, and Oceania by 5.6 percent, and declined by 4.6 percent in Asia

In 2011, world refined copper production increased by 3.1 percent to 19.8 Mt compared with 2010. The higher production was attributed mainly to an increase in output in China of 14.5 percent, Australia 12.5

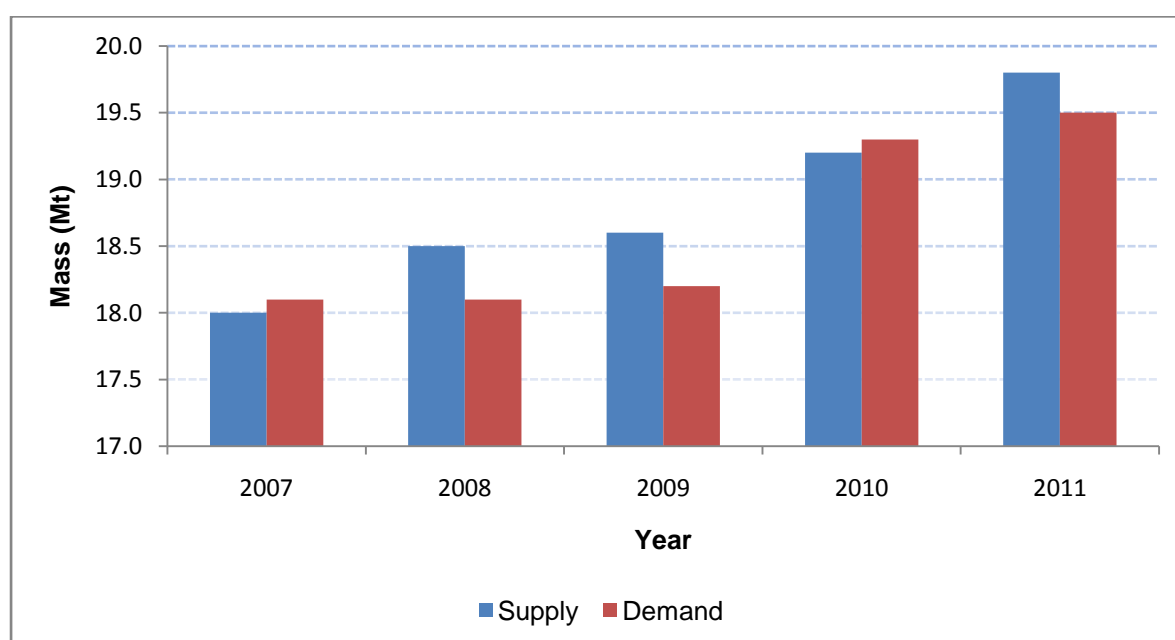
percent, and the Democratic Republic of Congo (DRC) 17.6 percent, which offset the declines in Japan of 14.2 percent, Chile 4.7 percent and the United States 1.4 percent. Regionally, refined copper production increased by 12.8 percent in Australia followed by Asia's 7.6 percent, 4.8 percent in Africa and Europe's 2.7 percent.

CONSUMPTION

In 2011, world refined copper consumption grew by 1.0 percent to 19.5 Mt, fuelled by growth from the construction sector in China. Russia's copper consumption grew by 44.8 percent to 676 kt while Chinese demand rose by 6.8 percent to 7.9 Mt. The large increase in Russian copper consumption was attributed to growth in the wire copper rod sector. Usage in the United States recorded a modest increase of 0.3 percent as the year progressed, while the European Union (EU) declined by 3.5 percent. Japanese usage, was down by 5.0 percent in 2011 following the earthquake/tsunami.

Regional refined copper usage increased by 21.0 percent in Africa due to infrastructural development, particular by the electrical sector where copper is used extensively while consumption in Asia and in Europe went up by 1.6 percent and 2.5 percent, respectively. Usage decreased by 6.7 percent and 14.6 percent in the Americas and Oceania, respectively. The refined copper market was slightly oversupplied by 0.3 Mt in 2011 (Fig.32).

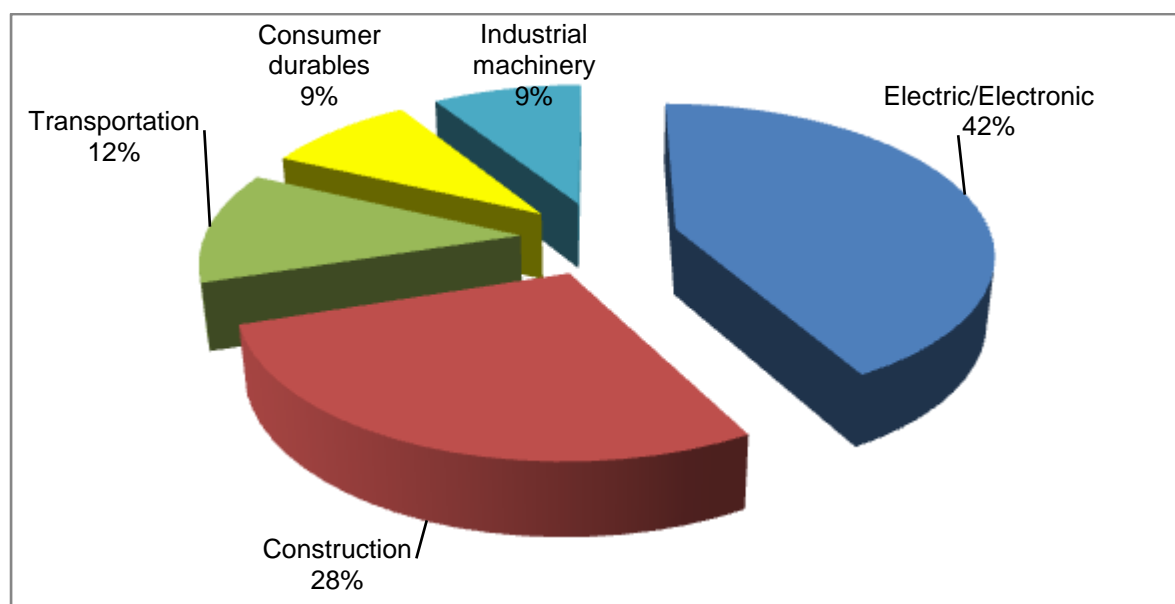
FIGURE 32: GLOBAL REFINED COPPER PRODUCTION AND CONSUMPTION, 2007-2011



Source: World Bureau of Metal Statistics 2012

Demand for refined copper was tied to its main driver, electrical/ electronics, which accounted for 42 percent, followed by construction and transportation at 28 percent and 12 percent, respectively (Fig.33). The balance of demand was from consumer durables and industrial machinery, which accounted for 9 percent each.

FIGURE 33: WORLD INDUSTRIAL REFINED COPPER DEMAND BY SECTOR, 2011

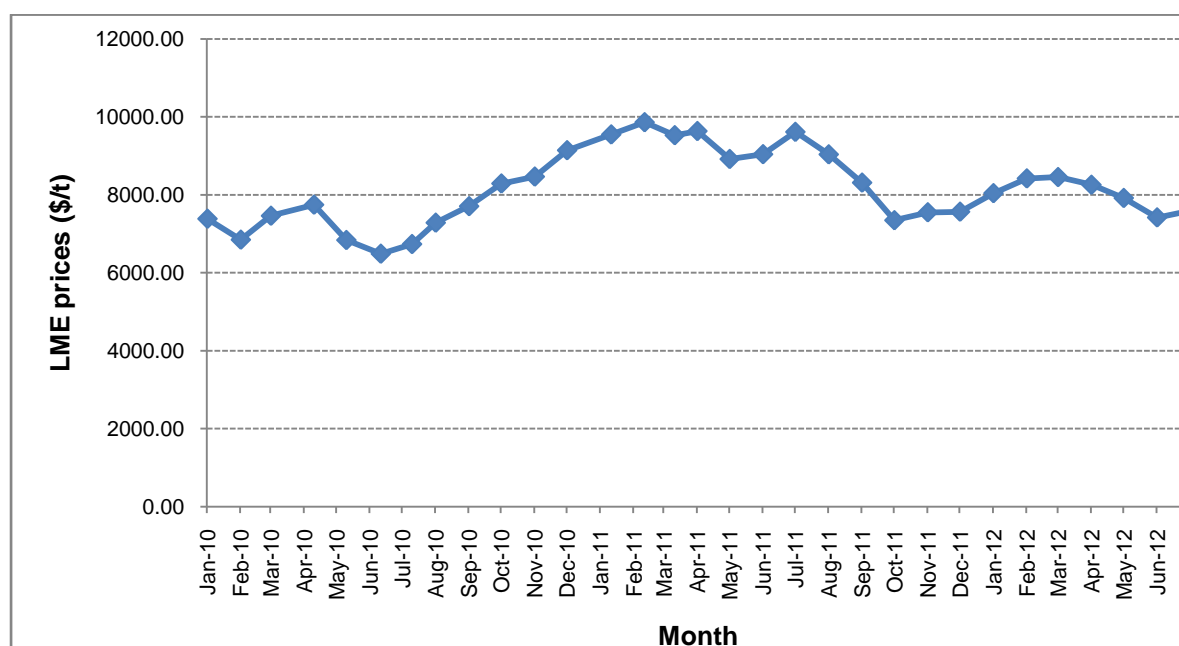


Source: London Metal Exchange (LME), 2011

PRICES

London Metal Exchange (LME) copper cash settlement prices remained robust despite the prevailing Eurozone debt crisis and the US economic woes. Copper prices rose by 17.2 percent to an annual average of \$8 833.73/t in 2011 (Fig. 34). This was mainly attributed to the LME falling copper inventories, which decreased by 2.5 percent to 437 kt in 2011 compared with 2010.

FIGURE 34: LME CASH SETTLEMENT COPPER PRICES (MONTHLY AVERAGES), 2010-2012



Sources: Metal Bulletin, 2012

After hitting a record high of \$9 867.60/t in February 2011, LME copper prices plummeted to a low average of \$7 347.50/t in October 2011, due to the persisting Eurozone debt crisis. However, the copper price improved during the first quarter of 2012 to an average \$ 8 307.67/t, spurred by Chinese demand but then slid down to a monthly average of \$7 919.93/t in May 2012.

SOUTH AFRICA

South Africa's copper production (cathode, copper in concentrate) improved by 6.0 percent to 89 kt in 2011 compared with 2010. Copper output was supported by production from Platinum Group Metals (PGMs) mines. PGMs copper production rose by 3.3 percent to 25.2 kt. Local consumption rose by 5.3 percent to 60 kt while exports climbed by 4 percent to 26 kt. Local average unit value rose by 16. 9 percent to R65 168/t while average export unit value went up by 20.2 percent to R58 581/t. Also, local sales revenue climbed by 24.6 percent to R3.94 billion while revenue from export sales rose by 23.6 percent to R1.21 billion as a result of higher average copper prices.

TABLE 49: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF COPPER, 2002–2011

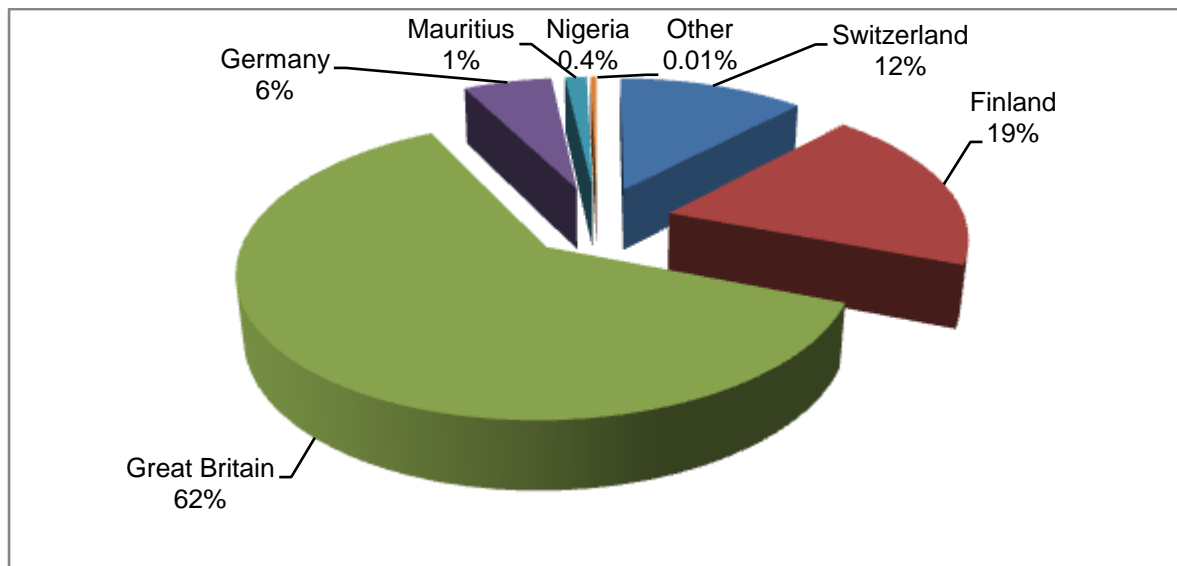
YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	Mass		Mass	Value (FOR)	Mass	Value (FOR)	
	kt		kt	R'000 R/t	kt	R'000 R/t	
2002	130		80	1 381 519 17 197	51	761 829 14 909	
2003	121		76	1 073 734 14 114	46	567 502 12 229	
2004	103		84	1 542 829 18 381	29	583 293 16 495	
2005	99		82	1 926 378 23 496	30	656 721 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	4 120 564 60 168	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	1 209 297 48 718	
2011	89		60	3 937 749 65 168	26	1 495 100 58 581	

Source: Department of Minerals Resources, Directorate Mineral Resources

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

Of the total exports of copper, 62 percent were shipped to Great Britain (UK), 19 percent went to Finland, followed by Switzerland and Germany at 12 percent and 6 percent respectively (Fig.35). Mauritius and Nigeria imported 1 percent and 0.4 percent of South Africa's copper exports, respectively.

FIGURE 35: SOUTH AFRICA'S EXPORTS DESTINATION BY COUNTRY, 2011



Source: Department of Mineral Resources, 2011, Directorate Mineral Resources

DEVELOPMENTS IN AFRICA

Mwembeshi Resources, a subsidiary of Zambezi Resources in Zambia, is set to develop an opencast mine project located at Kanguluwi in the Chongwe district, 50 km from Lusaka at the estimated cost of \$494 million. The company committed \$12 million to this project in 2011. The feasibility study is expected to be completed in 2013. The full capacity is expected to be 15 Mt/a of copper concentrate and will recruit a workforce 250.

Also, in Zambia, a London listed company, Vedenta Resources, plans to extend the life of mine of Konkola Copper Mines (KCM)'s Nchanga operations by 25 years after 2013. The total cost of the project is estimated at \$180 million; the company had committed \$70 million in mid 2012. The project is expected to add 35 kt of copper per annum.

In South Africa, Palabora Mining Company approved exploration and development on the Lift II project at an estimated value of R363 million. The project is expected to add 12 to 14 years life of mine.

OUTLOOK

World copper mine production in 2012 is projected to increase by 5.1 percent to 16.9 Mt. Capacity utilization rates are expected to improve from 79 percent in 2011 to an average of 81 percent in 2012. Growth in mine output is expected to come from restoration of production at existing operations rather than from new projects. Some expansions and start-ups are envisaged to occur in 2013 and could help boost mine production by 7.6 percent to 18.1 Mt.

In 2012, world refined copper production is expected to remain constrained by the shortage of concentrates due low copper ore grades but is projected to increase by 2.5 percent to reach 20.2 Mt. International Copper Study Group (ICSG) predicts world refined usage to grow by 2.5 percent to 20.4 Mt. Demand growth in China is anticipated to slow down to 3.6 percent, a contraction in demand is also expected for the EU, no growth is foreseen for usage in Japan and the US while global usage is expected to grow by 3.9 percent

According to ICSG, in 2012, world demand for refined copper is expected to exceed production of refined copper by 240 kt, as supply lags behind the growth in demand. This would be the third consecutive year of production deficit. However, in 2013, increased output from new and existing mines could reverse the 3-year trend and refined copper production could exceed demand by 350 kt.

The ICSG recognizes that numerous factors, such as the world economic slowdown, EU sovereign debt issues, political disturbances in the Middle East and North Africa, production shortfalls owing to labor unrest, utility and capital shortages, and technical factors, may confound these predictions.

In 2012, LME copper prices are expected to decline by 5 percent to \$7 209.90/t as a result of Eurozone debt crisis and the economic woes in the US. However, prices are anticipated to increase in 2013 to reach \$8 533.35/t due to the expected supply deficit. This could encourage the start-up of new copper projects, which may drag the markets back into surplus thereby impacting the prices in 2014.

South Africa's production and sales are expected to be stagnant in 2012 due to lower copper recoveries resulting from the non-floatability of ore. Palabora Mining Company is planning to mine deeper to exploit higher copper ore grades to ameliorate the impact of lower copper recovery. Copper production from PGMs mines is expected to decline due to labour unrest in 2012 but will not have significant impact on the country's copper output. South Africa's copper prices are anticipated to reach R74 999.14/t in 2012, which could have a positive effect on company revenues.

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LEAD

Eunice Pitso

WORLD SUPPLY

Global lead mine output in 2011 was 4 616 kt, an increase of 9.8 percent compared with 4 205 kt recorded in 2010. China at 2 358 kt remained the largest producer followed by Australia at 561 Kt, at USA 345 kt and Peru at 230 kt (Table 50). South Africa dominated Africa's production at 54 kt, followed by Morocco at 42 kt and Namibia at 10 kt. Lead's fortunes rest almost solely on the state of the global automotive markets. Whether used in replacement batteries for existing cars and e-bikes, incorporated into new bikes, or car and truck production, lead's consumption is driven predominantly by the transport sector.

TABLE 50: WORLD RESERVES, MINE PRODUCTION AND EXPORTS OF LEAD, 2011

COUNTRY	RESERVES			PRODUCTION			EXPORTS		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
Australia	28	20	2	561	12.1	2	513	18.4	1
Canada	9	6.4	4	59	1.3	8	131	4.7	5
China	36	25.7	1	2 358	50.7	1	10	0.4	25
India	X	-	-	115	2.5	6	-	-	-
Ireland	X	-	-	51	1.1	10	39	1.4	11
Mexico	2	1.4	7	220	4.7	5	223	8.0	3
Morocco	1	0.7	8	42	0.9	14	55	2.0	13
Peru	4	2.9	5	230	4.9	4	250	9.0	2
South Africa*	3	2.1	6	54	1.2	9	50	1.8	14
Sweden	1	0.7	8	62	1.3	7	94	3.4	12
USA	20	14.3	3	345	7.4	3	44	1.6	15
Other	36	25.7	-	519	11.2	-	1381	49.5	-
TOTAL	140	100		4 616	100	-	2790	100	-

Sources: ILZSG, July 2011

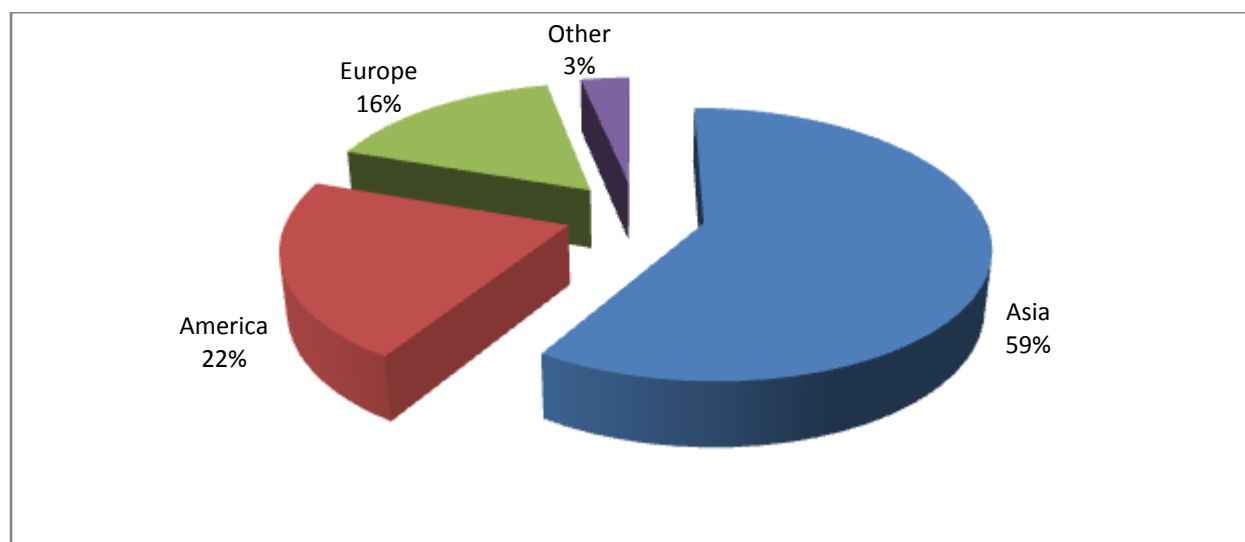
USGS, April 2011

DMR, Directorate Mineral Economics

Note: X Not specified, but estimates have been included in other countries

World refined lead production reached 10 647 kt in 2011, an increase of 7.1 percent compared with 2010. China and the USA led the increase in world metal production with 9.7 percent and 4.9 percent increases to 4 648 kt and 1 317 kt, respectively. Regional lead metal production was dominated by Asia, which accounted for 58.9 percent, followed by the Americas' 21.5 percent and Europe's 16.4 percent, (Figure 36). Africa accounted for 1.1 percent, with South Africa leading at 54 kt, 5.8 percent higher than in 2010.

FIGURE 36: REFINED LEAD PRODUCTION BY REGION IN 2011

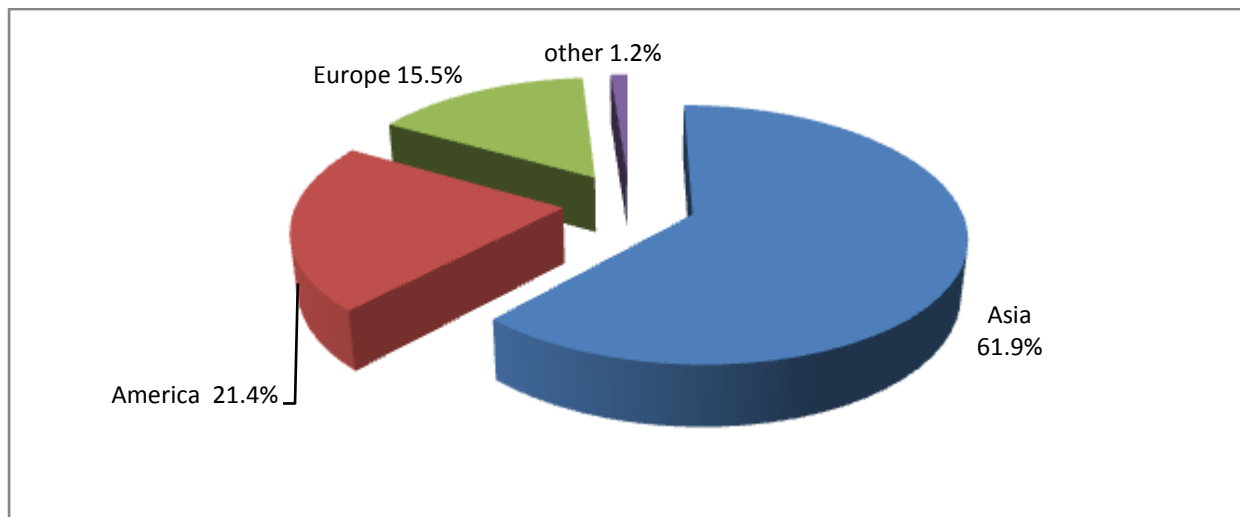


Sources: ILZSG, July 2011
USGS, April 2011
DMR, Directorate Mineral Economics

WORLD DEMAND

World refined lead metal consumption grew by 6.6 percent to 10 494 kt in 2011 compared with 9 846 kt in 2010. China continued to dominate global demand, and its consumption increased by 9.9 percent to 4 632 kt, while the US's increased by 11.1 percent to 1 441 kt. Regionally, Asia remained the leading lead metal consumer, with an increase of 8.4 percent to 6 498 kt in 2011. Asia accounted for 61.9 percent of world consumption followed by America's 21.4 percent and Europe's 15.5 percent (Figure 37). Africa accounted for 0.9 percent of world consumption. South Africa dominated Africa's secondary lead consumption, accounting for 68.4 percent while Morocco accounted for 5.1 percent.

FIGURE 37: REGIONAL LEAD METAL CONSUMPTION IN 2011.



Sources: ILZSG, July 2011

USGS, April 2011

DMR, Directorate Mineral Economics

DEVELOPMENTS IN SOUTH AFRICA

The Gamsberg zinc deposit was discovered in 1971. Five feasibility studies which were done in 1978, 1983, 1984, 1993 and 2000 indicate that the project would not generate an attractive return. More studies were done in 2009 to 2010, and the results were positive and the project was commenced. The identified resource is estimated at 186 Mt and the production capacity of both lead and zinc are expected to be four times of South Africa's current total per annum with a minimum life-of-mine of 16 year.

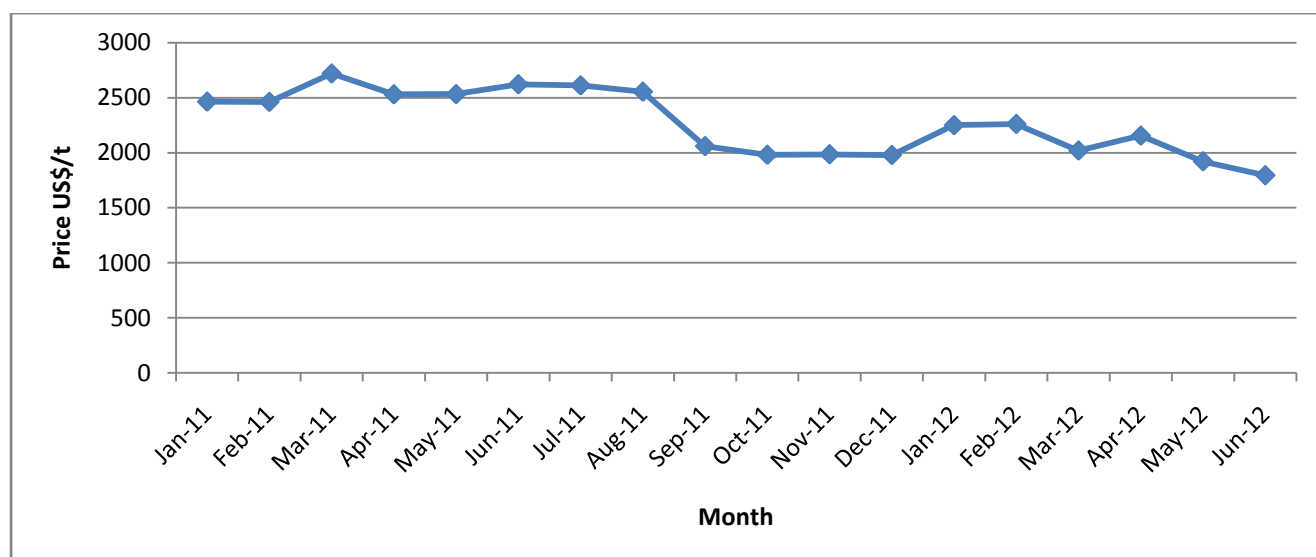
DEVELOPMENTS OUTSIDE SOUTH AFRICA

In July 2012, the administrator of the Doe Run Company in Peru announced the restarting of operations at the metallurgical complex of La Oroya after being shut down in 2009 due to weak metal prices. The La Oroya complex includes both smelters and refineries that process copper, zinc, gold, silver, lead, indium, bismuth, gold, selenium, tellurium, antimony and other products. Production is expected to commence in the last quarter of 2012. The restart of operations will begin on the zinc-processing circuit, where equipment is already in place, and will followed resumption of lead operations.

PRICES

The annual average London Metal Exchange (LME) lead price was \$2 375.92/t in 2011, 8.9 percent higher than \$2 165.10/t in 2010. During 2011, metal prices declined throughout the year, the lowest lead cash settlement price was recorded in December, averaging \$1 980 while the maximum average lead cash settlement price was recorded in March at \$2 720, (Figure 38). According to International Lead and Zinc Study Group (ILZSG), the refined lead market was in surplus of 170 kt with the consumption increase above 9 percent year on year, higher than its production increase of almost 8 percent year on year. LME lead stocks increased to 370 kt in 2011 from 299 kt in 2010.

FIGURE 38: LEAD CASH SETTLEMENT PRICES (MONTHLY AVERAGE) IN 2011



Sources: *Metal Bulletin*, Jan 2011 – April 2012

Fry's Metals, 2011

International Lead and Zinc Study Group

DMR, Directorate Mineral Economics

SOUTH AFRICA

South Africa's lead mine production increased by 5.8 percent to 54 kt in 2011 compared with 51 kt in 2010, principally because of the higher grade ore mining at Black Mountain, South Africa's only lead mine. Export sales decreased by 1.9 percent to 52 kt (Table 51). South Africa exports all its lead concentrate.

TABLE 51: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF LEAD, 2002-2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
	kt	t	R'000	R/t	kt	R'000	R/t
2002	50	4 882	22 923	4 782	41	88 833	2 214
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

Source: DMR, Mineral Economics Directorate

According to International Lead and Zinc Study Group (ILZSG), world lead mine production is expected to rise by 10.9 percent to 5.21 Mt in 2012, and by a further 2.8 percent Mt in 2013, due to the expected increase in output from China. Chinese mine output is forecast to reach 2.54 Mt, and contribute 52 percent to the world output. Other rises are expected in countries such as Mexico, Peru and the Russian Federation.

Refined lead metal production is also expected to increase by 2.9 percent to 10.93 Mt in 2012 and by 3.8 percent to 11.32 Mt in 2013, principally because of re-opening of capacity which was placed under care and maintenance in recent years and additional capacity from new operations. This includes the reopening of a mine in Peru and a plant in Italy, the expansion of a plant in Kazakhstan, opening of a secondary operation in Florida and South Carolina in the USA and the commissioning of new capacity at a number of plants in China.

Global refined lead metal demand is anticipated to increase by 3.4 percent to 10.80 Mt in 2012 and by 3.3 percent to 11.54 Mt in 2013. The main driver behind a rise in world demand for refined lead metal is the expected continuation of recovery of lead-acid batteries production in China after closure of many small plants in 2011, due to new stricter environmental regulations. Chinese usage is forecast to rise by 4.8 percent in 2012 and by a further 4.7 percent in 2013. Higher demand growth is also expected in Asia (particularly in India, Japan, the Republic of Korea, Thailand and Vietnam), while European demand is expected to be the same as 2010 due to declining automotive sales. In the US, demand for lead metal is expected to increase by 3.9 percent due to growth in the original and industrial battery sectors. It is

expected that global supply of refined lead metal will exceed demand by 108 kt in 2012 and by 174 kt in 2013.

Prices have remained highly volatile reflecting swings in investor sentiments and risk for lead-zinc mining assets. Since the economic recovery, investors are looking to invest in other metals, because of the lead price trends that show conflicting signals in the market, with some indicating weakness and some strength. However prices are forecast to improve in 2014, owing to expectations of an improving macroeconomic backdrop and more significant deficit in lead market that year.

The development of the Gamsberg project in South Africa brings positive future prospects for the country's lead output although the orebody is mostly zinc but there are few lead grades as associate mineral.

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NICKEL

Chili Thomas

WORLD SUPPLY

According to the US Geological Survey, world nickel reserves rose by 5.3 percent to 80 Mt in 2011 compared with 76Mt in 2010. Australia at 30 percent, hosts the world's largest reserves followed by New Caledonia at 15 percent, Brazil (10.9 percent) and Russia (7.5 percent). South Africa accounts for 4.6 percent of world reserves and is ranked 7th (Table 52). 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, Colombia and New Caledonia. The balance is sourced from sulphides, particularly in Canada and Russia.

In 2011, world nickel mine production rose by 18 percent to 1.83 Mt in 2011 when compared with 2010, driven by growth in the stainless steel sector, particular from China (Table 52). Philippines became the world's largest nickel producer, accounting for 15.6 percent while Russia accounted for the 15.6 percent. Third and fourth positions were occupied by Indonesia and Canada at 12.4 percent and 12 percent, respectively. South Africa contributed 2.4 percent to the world nickel mine output and was ranked 10th.

TABLE 52: WORLD NICKEL RESERVES AND MINE PRODUCTION, 2011

Country	Reserve			#Mine Production		
	kt	percent	Rank	kt	percent	Rank
Australia	2 4000	30.0	1	212.0	11.6	5
Brazil	8 700	10.9	3	65.8	3.6	9
Canada	3 300	4.1	8	219.6	12.0	4
China	3 000	3.8	9	89.8	4.9	7
Colombia	720	0.9	12	37.8	2.1	11
Cuba	5 500	6.9	5	66.0	3.6	8
Indonesia	3 900	4.9	6	226.9	12.4	3
Madagascar	1 600	2.0	10	0.0	0.0	N/A
New Caledonia	12 000	15.0	2	130.7	7.1	6
Philippines	1 100	1.4	11	286.2	15.6	1
Russia	6 000	7.5	4	285.6	15.6	2
South Africa*	3 700	4.6	7	43.3	2.4	10
Other	6 480	8.1		167.7	9.2	
Total : 2011	80 000	100		1831.4	100	
2010	76 000			1550.0		

Source: USGS, Mineral Commodity Summaries, January 2012
 □ DMR, Mineral Economics Directorate
 #World Bureau of Metal Statistics

*

In 2011, global refined nickel production increased by 15.5 percent to 1.65 Mt augmented by new production from Asia, South America and Africa (Table 53). China, at 28.9 percent, was the world's largest producer of refined nickel, followed by Russia's 15.7 percent and Japan's 9.4 percent. South Africa contributed 2.6 percent to the global refined nickel production and was ranked 9th.

TABLE 53: WORLD REFINED NICKEL PRODUCTION, 2011

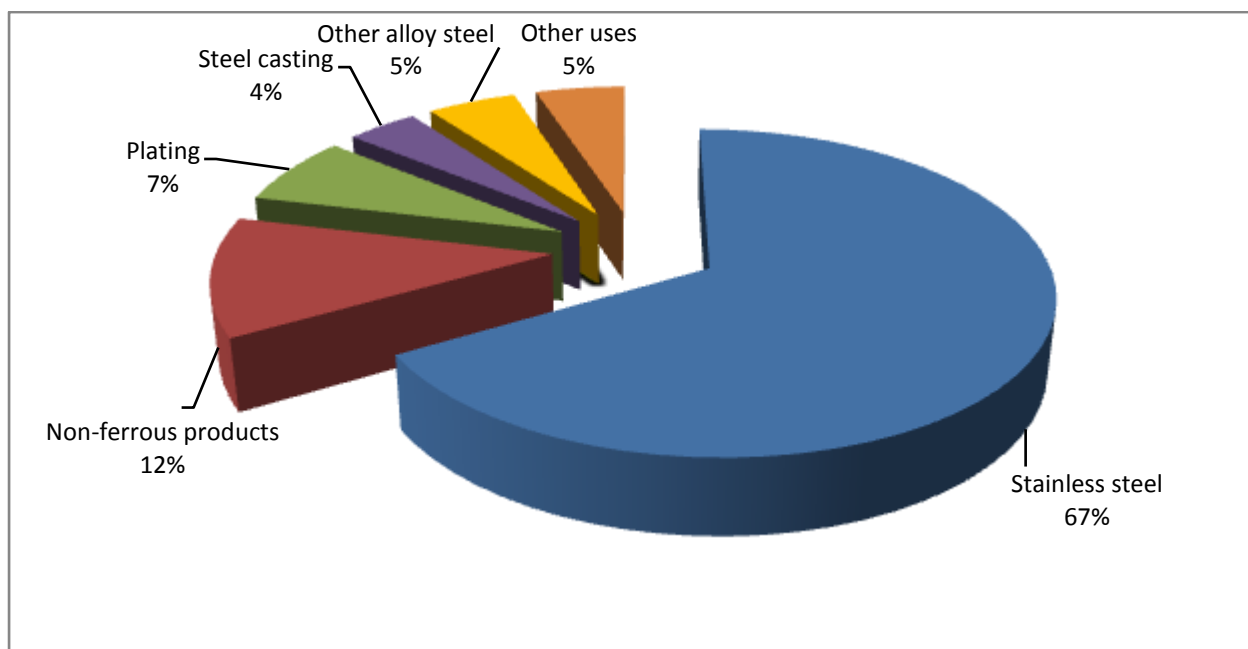
COUNTRY	Refined production		
	kt	percent	Rank
Australia	111.0	6.7	5
Brazil	30.0	1.8	13
Canada	142.4	8.6	4
China	480.3	28.9	1
Colombia	37.8	2.3	10
Cuba	31.4	1.9	12
Finland	48.5	2.9	7
Japan	156.9	9.4	3
New Caledonia	47.4	2.9	8
Norway	92.4	5.6	6
Russia	260.4	15.7	2
South Africa	36.0	2.6	9
UK	36.3	2.2	11
Other	143.6	8.6	
TOTAL:			
2011	1654.4	100	
2010	1432.8		

Source: World Metal Statistics Yearbook 2012

WORLD DEMAND

Demand for nickel is underpinned by its main driver, stainless steel, which accounts for 67 percent of consumption followed by non-ferrous metal products at 12 percent, while plating and steel casting accounted for 7 percent and 4 percent respectively (Fig. 39). Despite the Eurozone debt crisis and the US economic woes, global industrial growth recovered, as evidenced by the rising demand in the stainless steel. According to the International Stainless Steel Forum (ISSF), stainless steel production rose by 3.3 percent to 32.1 Mt in 2011 when compared with 2010.

FIGURE 39: THE PRIMARY END-USES FOR NICKEL 2011



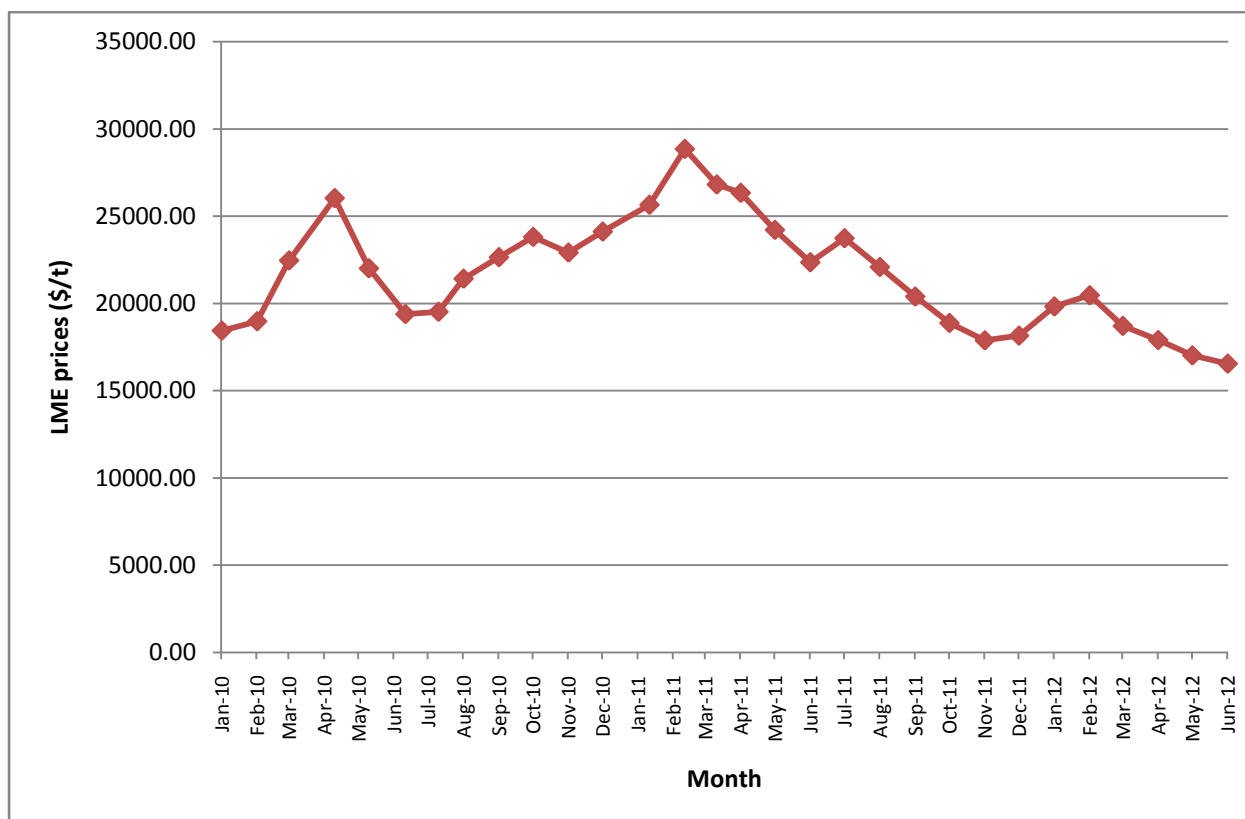
Source: International Nickel Study Group, 2011

World demand for nickel increased by 16.8 percent to 1.65 Mt in 2011 fuelled by the robust demand from the stainless steel and the automotive industries for the manufacture of electric and hybrid vehicles. China, at 43.1 percent, continued to dominate nickel consumption, followed by Japan and the United States at 10.5 and 12.7 percent respectively. However, the growth rate has slowed down during the first half of 2012 due to lower growth from the global stainless steel sector.

PRICES

The movement of nickel prices in 2012 was driven by two factors, the demand from China and the ramp-up of long-delayed nickel mines. Chinese demand pushed nickel prices to a record high monthly average level of \$28 249.50/t in February 2011 (Fig. 40). However, in response to the Eurozone debt crisis nickel prices, fell to a low level of \$17 879/t in November 2011. The decline in prices was also attributed to a surplus resulting from rising levels of production in the face of weakening demand from the stainless steel sector. According to the International Nickel Study Group (INSG), the nickel market was 17 kt oversupplied in 2011. In 2012, nickel prices remained within a narrow band of \$19 818.21/t and \$20 461.55/t between January and February 2012. Despite the global economic uncertainty, the average annual price of nickel increased by 5.2 percent to \$22 93.74/t in 2011, spurred by economic growth from Asia.

FIGURE 40: MONTHLY AVERAGE NICKEL PRICES, 2010-2012



Source: Metal Bulletin, 2012

GLOBAL PROJECTS/DEVELOPMENTS

Over the last few years, producers have shown a flexibility to align projects developments with market demand and prices. A lot of projects have been stalled or suspended since 2009 as companies waited for the right market conditions to recommence their projects. Table 3 depicts the summary of major nickel projects.

In South Africa, URU Metals committed \$4.2 million for exploration of nickel reserves in the northern Bushveld. The project, which is located 16 km from Anglo American Platinum's rich Mogalakwena mine near Mokopane, has the potential to produce 56 million pounds of nickel per annum for a period of 25 years. A prefeasibility study is expected to be carried out at the cost of \$8.5 million in 2014 with the expected mine capital expenditure of \$708 million.

TABLE 54: GLOBAL NICKEL MAJOR PROJECTS

Project	Country/ Region	Operators/ Owners	Commodities	Potential start year	Nickel production (tons / year)
Marlborough Laterite Nickel Project	Australia	Gladstone Pacific Nickel Ltd (Operator)	Nickel, Cobalt	Stalled	63 000
Koniambo Laterite Nickel Mine	New Caledonia	Xstrata plc (Operator)	Nickel, Cobalt	2012	60 000
Ambatovy Laterite Nickel Mine	Madagascar	Sherritt International Corporation (Operator)	Nickel, Cobalt	2012	60 000
Mindoro Laterite Nickel Project	Philippines	Intex Resources ASA (Operator)	Nickel, Cobalt	NA	52 700
Long Harbour Hydrometallurgy Nickel Smelter	Canada	Vale S.A. (Operator)	Nickel, Cobalt	2013	50 000
Minago Nickel Project	Canada	Victory Nickel Inc. (Operator)	Frac Sand, Nickel, Sand	2015	49 895
Honeymoon Well Nickel Project	Australia	OJSC MMC Norilsk Nickel (Operator)	Nickel	Revived	40 000
Wingellina Laterite Nickel Deposit	Australia	Metals X Limited (Operator)	Nickel, Cobalt	NA	40,000
Kabanga Nickel Project	Tanzania	Xstrata plc (Operator)	Cobalt, Copper, Nickel, Palladium, Platinum	2014	40 000
Taganito HPAL Nickel Refinery	Philippines	Sumitomo Metal Mining Co., Ltd. (Operator)	Nickel, Cobalt	2013	30 000
FeNi Haltim Nickel Project	Indonesia	PT Antam	Nickel	2014	27 000
Acoje Laterite Nickel Mine	Philippines	ENK plc	Cobalt, Gold, Nickel, Palladium, Platinum	2014	24 500

Fenix Laterite Nickel Operation	Guatemala	Solway Group (Operator)	Nickel, Cobalt	2014	24 250
Sheba's Ridge PGE/Nickel/Copper Project	South Africa	Aquarius Platinum Limited (Operator)	Copper, Gold, Nickel, Palladium, Platinum, Platinum Group Elements	NA	23 900
Eagle Nickel/Copper Mine	United States	Rio Tinto Limited (Operator)	Copper, Gold, Nickel	2013	17 300

Source: KPMG, Quarterly Commodity Insights Bulletin, 2012

SOUTH AFRICA

Seventy two percent of South Africa's nickel output is sourced from platinum-group metals (PGMs) and 0.2 percent is derived from copper mining. Nkomati Nickel mine, which is the only primary nickel producer, accounted for 26.8 percent of nickel production. In 2011, South Africa's nickel production rose by 8.3 percent to 43.3 kt due to improved output from Nkomati Mine, which rose by 3.8 percent trivial quantity.

TABLE 55: SOUTH AFRICA'S PRODUCTION AND SALES OF NICKEL, 2002 – 2011

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

Source: DMR, Mineral Economics Directorate

Local sales volumes almost doubled from 7.3 kt in 2010 to 14.5 kt in 2011, due to improved local demand. Revenue generated rose by 116.8 percent to R2.33 billion as a result of higher prices and sales volumes. Export volumes and revenues declined by 19.6 percent and 17.0 percent to 26.6 kt and R4.1 billion, owing to the weaker demand from the global stainless steel sector the Eurozone debt crisis.

OUTLOOK

In 2012, world mine production is expected to increase by 2 percent to 1.9 Mt due to the ramping-up of stalled mining projects in Australia, Finland and Africa. Also, over the medium term, a host of laterite projects are expected to commence production in New Caledonia, Madagascar, Papua New Guinea and Myanmar. The increasing scarcity of high quality and easily accessible sulphide deposits suggests that the trend toward higher exploitation of laterite reserves will continue. World mine production is thus expected to reach 2.3 Mt by 2017, an average annual growth rate of 3 percent from 2013.

Refined nickel production is expected to follow a similar trend to mine production in 2012. Production growth, in the medium term is forecast to grow at an average annual growth rate of 3 percent to reach 1.9 Mt by 2017, supported by capacity expansions in China, Australia, Japan, Madagascar, New Caledonia and Brazil.

The slowdown in industrial growth in China resulted from credit restraints. The rollover effects of the sovereign debt crisis in Europe, the slow growth in the US and slowing growth in China are expected to limit the growth in global consumption of nickel by 5 percent in 2012.

Declining demand from stainless steel mills and the rising nickel output are likely to lead to an excessively oversupplied market in the second half of 2012 placing a downward pressure on prices. The uncertain world economic outlook could exacerbate the situation further.

Despite the continuing poor demand and falling prices, South Africa's nickel industry is expected to grow through an investment of over \$200 million being injected into the Nkomati Mine by MMC Norilsk Nickel. The total design capacity of the two Nkomati nickel concentrators amounts to 7.5 Mt of ore per annum. In 2012, the plant is expected to operate at a design capacity that is 58 percent more than in 2011. Nickel production from PGMs is expected to be stagnant as mines reduce production as a result of dampened platinum markets.

The new area of focus for nickel use, albeit only five percent currently, is the growing battery market, used for electric cars and mobile devices such as phones, cameras and computers. Recent improvements to lithium-ion batteries have created some competition for nickel metal hydride batteries, but the characteristics both types of batteries have led to technology developments that can combine lithium and nickel to produce a battery with higher energy potential, longer life and fewer fire risks. Thus, with increased focus on energy efficient motor vehicles and consumer goods, this sector is expected to grow rapidly to create a large market for nickel in the future.

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TITANIUM

Linda Maphango

WORLD SUPPLY

Global production of titanium mineral concentrates (ilmenite, rutile, and titanium slag), also known as feedstock, increased by 4.6 percent to 6.7 Mt in 2011 when compared with 2010, as producers continued to scale up output in an attempt to satisfy increasing demand (Table 56). Australia remained the major producer of titanium minerals, contributing 19.4 percent to total world output, followed by South Africa (17.3 percent), Canada (10.4 percent), India (8.6 percent), Mozambique (7.7 percent) and China (7.5 percent). Many years of under-investment in new mines has severely constrained the supply of feedstock to the market.

TABLE 56: WORLD RESERVES AND MINE PRODUCTION OF TITANIUM CONCENTRATES, 2011

COUNTRY	RESERVES			PRODUCTION*		
	Mt	%	Rank	kt	%	Rank
Australia	118.0	17.1	2	1 300	19.4	1
Canada	31.0	4.5	8	700	10.4	3
China	200.0	29.0	1	500	7.5	6
India	92.4	13.4	3	574	8.6	4
Mozambique	16.4	2.4	9	516	7.7	5
Norway	37.0	5.4	7	300	4.5	9
South Africa	71.3	10.3	4	1 161	17.3	2
Ukraine	8.4	1.2	10	357	5.3	8
USA	2.0	0.3	12	300	4.5	9
Vietnam	1.6	0.2	13	490	7.3	7
Other	111.9	16.2	-	502	7.5	-
TOTAL	2011	690.0	100.0	6 700	100.0	
	2010	690.0		6 400		

Sources: USGS, January 2012, p 175

Notes: *TiO₂ content of ilmenite and rutile

According to TZ Minerals International (TZMI), titanium dioxide pigment production rose by 6.7 percent to 6.4 Mt in 2011, as demand strengthened. In China, production of titanium dioxide pigment increased by more than 23 percent to over 2 Mt in 2011 when compared with 2010. China's pigment capacity surpassed that of the US for the first time in 2011 to become the world's leading producer.

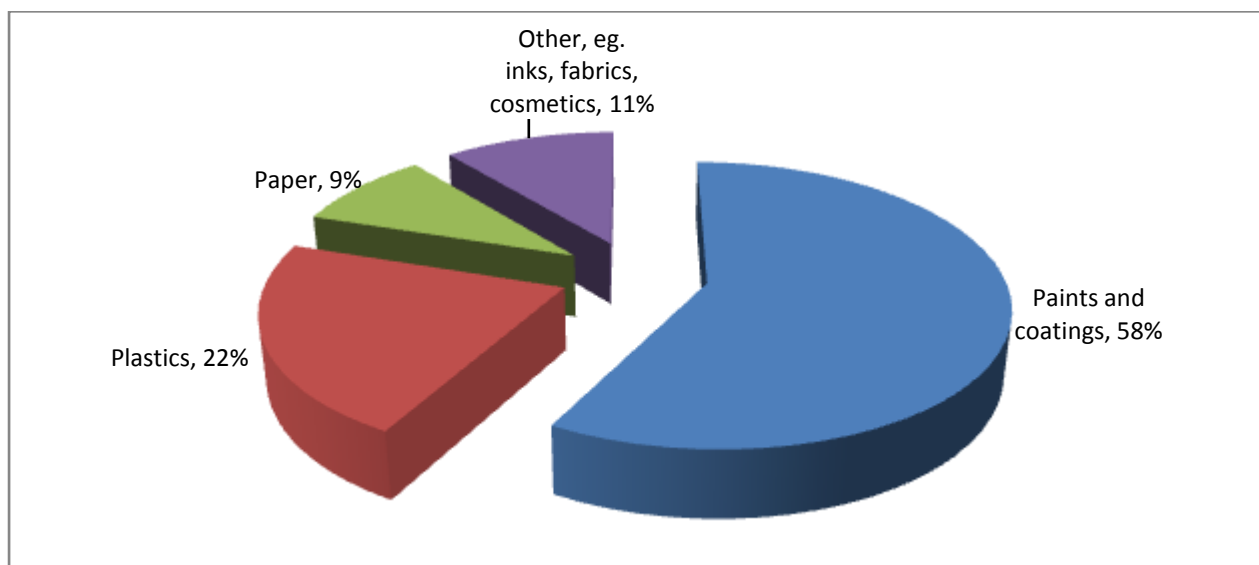
According to the estimates of the United States Geological Survey (USGS), titanium metal sponge production climbed by 35.8 percent to 283 kt in 2011, as producers ramped up output in response to increasing demand and lower inventory levels resulting from production cutbacks between 2009 and 2010.

WORLD DEMAND

About 90 percent of global titanium feedstock is consumed in the production of titanium dioxide pigment, 5 percent goes to the production of titanium metal and the other 5 percent is used in the manufacture of fluxes and welding rods. Paint and coatings contributes 58 percent to global titanium dioxide pigment usage, followed by plastics (22 percent), and paper (9 percent), Fig. 41.

The year 2011 was characterised by strong growth in demand for titanium dioxide pigment. The robust demand was mainly driven by growth in emerging economies, led by Brazil, Turkey, Russia and India. Consumption of titanium dioxide pigment increased by 1.4 percent to 5.4 Mt in 2011 when compared with the previous year. The Asia Pacific region contributed about 30 percent to global demand, followed by North America, Europe, Middle East, Africa and Latin America. Increasing demand and low inventory levels during 2011 resulted in a tight pigment market.

FIGURE 41: GLOBAL CONSUMPTION OF TITANIUM DIOXIDE PIGMENT BY SECTOR



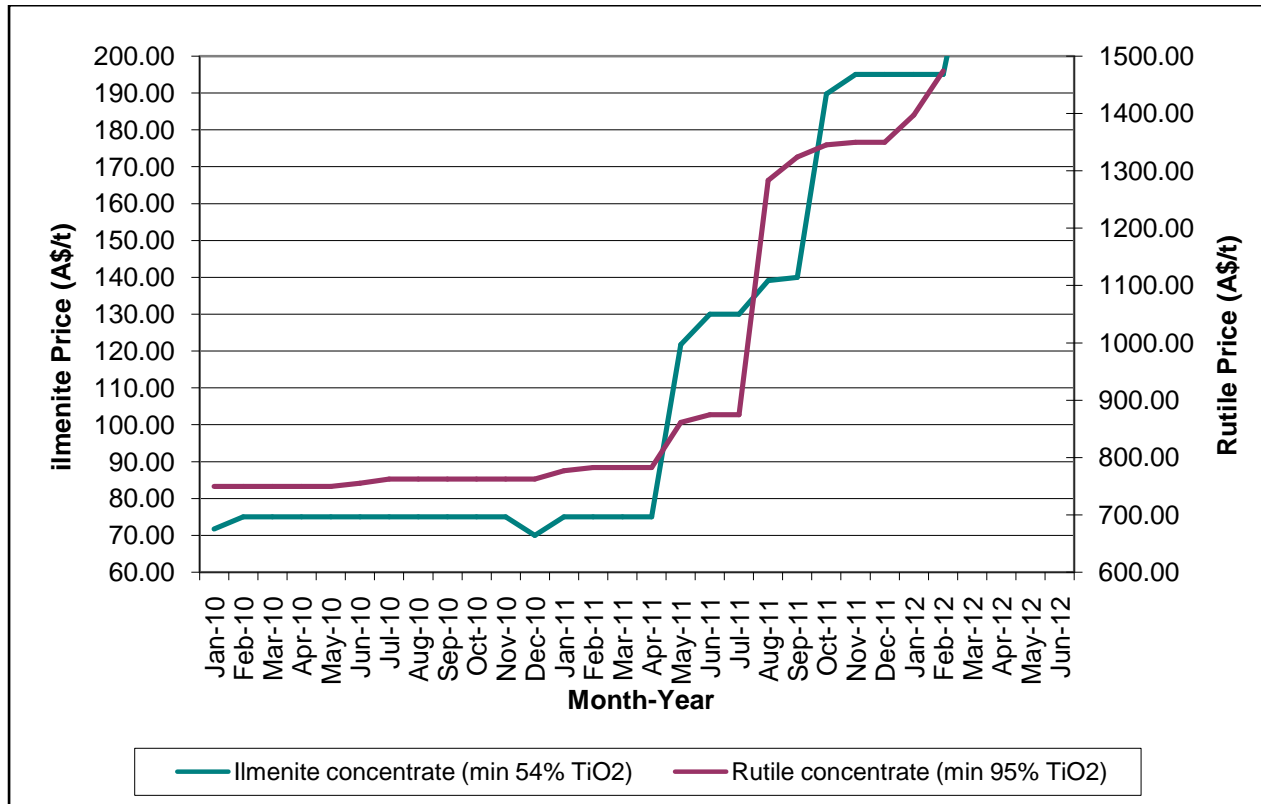
Source: Rio Tinto and TZMI 2012

PRICES

Prices of titanium mineral concentrates rose exponentially from April 2011 up until the third quarter of 2012 (Fig. 42). The sharp increase in prices did not come as a surprise to the industry due to chronic shortages of feedstock. Buoyant market conditions have propelled both rutile and ilmenite prices to historic highs as demand exceeded the supply of titanium mineral concentrates.

Ilmenite (min 54% TiO₂) prices surged from a monthly average of A\$70/t in December 2010 to A\$195/t in December 2011, an increase of about 178 percent. Rutile (min 54% TiO₂) soared by about 77 percent from A\$762/t in December 2010 to A\$1 350/t in December 2011. In 2011, the annual average prices of ilmenite and rutile rose steeply by 73.0 and 36.5 percent to A\$128/t and A\$1 032/t, respectively, when compared with 2010. The rising prices have prompted a number of titanium dioxide pigment producers to embark on backward-integration to secure feedstock supplies in an attempt to curtail future cost increases.

FIGURE 42: METAL BULLETIN PRICES FOR RUTILE AND ILMENITE, 2010 – 2012



Source: Metal Bulletin ,2012

DEVELOPMENTS IN SOUTH AFRICA

Tronox, an Australian holding company, made an announcement in June 2012, that it had concluded the amalgamation of its assets and that of Exxaro Resources' heavy mineral sands business. The new company, named Tronox, was created through the incorporation of Exxaro's Namakwa Sands and KZN Sands (Hillendale mine), together with its 50 percent stake in the Tiwest joint venture in Australia in the new company. This transaction makes Tronox the world's largest fully integrated producer of titanium minerals and titanium dioxide pigment. The new Tronox subsequently listed on the New York Stock Exchange in June 2012.

Tronox (formerly Exxaro Resources) received environmental and water approval in early 2012, for its Fairbreeze mineral sands project near Richards Bay, KwaZulu-Natal. Fairbreeze mine, which is expected

to have a mine life of between 12 and 15 years, has a planned annual capacity of 500 kt ilmenite and 60 kt zircon. The long-awaited project is expected to start mining operations in the second half of 2014. The Fairbreeze mine will replace Tronox' Hillendale mine in KwaZulu-Natal, which is likely to come to the end of its life by the end of 2012. During the construction phase approximately 1 080 temporary jobs are expected to be created and the new mine will absorb all the employees (about 1 000) from Hillendale on a permanent basis. However, Fairbreeze is not expected to create new permanent jobs.

Mineral Commodities, an Australian based company, has completed its definitive feasibility study on its Tormin mine sands project located about 400 km north of Cape Town, in the Western Cape Province. Tormin's planned run-of-mine production would be about 1.1 Mt per annum, producing 47.8 kt per annum of non-magnetic concentrate grading up to 10 percent rutile and 80 percent zircon. The project, which is estimated to cost approximately \$A16 million, is scheduled to produce its first concentrate in the first half of 2013. Tormin mine is expected to last between 3 and 5 years.

The Council for Scientific and Industrial Research (CSIR) and the research community, supported by the Department of Science and Technology (DST), are currently 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 substantially reduces the energy requirements and costs of production. Further cost reduction would also result from powder metallurgy, which allows the use of near-net-shape (NNS) technology in downstream fabrication of titanium metal.

According to CSIR, this process is being developed in a stage-wise manner to manage the inherent scale-up risks. The DST and CSIR have given the green light for the design, construction and operation of a small pilot plant. The pilot plant is expected to have a nominal design capacity of producing 2 kg/hr of titanium powder, continuously. Construction and commissioning of the pilot plant are scheduled to be completed by 31 March 2013.

DEVELOPMENTS IN OTHER AFRICAN COUNTRIES

Base Resources, an Australian miner, is developing the Kwale heavy mineral sands deposit in Kenya, 40 km south of Mombasa. The mine, scheduled to start production in the second half of 2013, is expected to produce about 330 kt ilmenite, 80 kt rutile and 40 kt zircon per annum. Ilmenite and rutile from Kwale mine could contribute about 10 percent and 14 percent of global output, respectively. The deposit has an estimated resource of 138.8 Mt of heavy minerals. Kwale is expected to have a mine life of about 13 years. Base Resources has an off-take agreement with DuPont, the world's largest titanium dioxide pigment producer, for 72 percent of its rutile production for a period of six years.

Mineral Deposits, an Australian based company, is developing Grand Cote mine sands project, in Senegal, 50 km north of Dakar. The mine has a measured and indicated resource of 1.03 Bt at 1.7 percent heavy minerals. The mine, which is expected to commence production in early 2014, is projected to produce approximately 575 kt ilmenite, and 85 kt zircon per annum, as well as small quantities of rutile and

leucoxene. The life of the mine is expected to be more than 20 years, but further drilling could extend the life of mine.

OUTLOOK

According to Ti Insights, the supply of titanium dioxide pigment is projected to grow at about 3.5 percent, compounded annually, reaching close to 7 Mt by 2015. This would represent an effective increase of 21.4 percent when compared with 2011. Approximately 65 percent of additional capacity is expected to come from China. DuPont, one of the major producers, is expected to increase its capacity by 350 kt per annum by the end of 2014.

In the first half of 2012, demand for titanium dioxide pigment began to soften owing to inventory build up and continued global economic uncertainty as some of the European member countries experienced negative GDP growth due to waning consumer confidence and austerity measures. However, demand for titanium dioxide pigment is forecast to outstrip supply in the short to medium term, driven mainly by urbanisation in emerging countries, with China leading the pack. The market deficit is expected to ease when feedstock and pigment projects, currently in the pipeline, come on stream.

According to Roskill Information Services, the demand for titanium metal is projected to grow by 6 percent compounded annually until 2015, due to the expected increase in consumption of the metal in commercial aircraft and industrial applications, particularly in desalination plants in the Middle East. Titanium metal sponge prices are expected to hover around \$10/kg until 2014. The recent expansions in production capacity from Japan and China are envisaged to support the expected rise in demand. Nonetheless, titanium metal production capacity is expected to continue to exceed demand for the next few years.

As the second major producer of titanium feedstock, South Africa is well placed to benefit from the buoyant market conditions. And the country's position in the global supply of titanium minerals will be consolidated by the commissioning of the Fairbreeze project. According to Exxaro, the Exxaro/Tronox transaction is expected to improve the prospects of establishing a pigment plant in South Africa as demand increases and growth strategies are developed. All the role players in the heavy mineral sands industry should leverage on this development by exploring the opportunity to set up a pigment facility in line with the Beneficiation Strategy of South Africa and the New Growth Path. Titanium dioxide pigment production, which consumes about 90 percent of global mine output of titanium-bearing feedstock, would add substantial value to the country's production of titanium minerals.

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ZINC

Eunice Pitso

WORLD SUPPLY

World zinc mine production rose by 5.6 percent to 12 963 kt in 2011 compared with 12 270 kt in 2010 (Table 57). China at 33.1 percent continued to dominate world production followed by Australia's 11.3 percent and Peru's 9.6 percent.

TABLE 57: WORLD RESERVES, MINE PRODUCTION AND EXPORTS OF ZINC, 2011

COUNTRY	RESERVES		PRODUCTION			EXPORTS		
	Mt	%	Kt	%	Rank	Kt	%	Rank
China	92	20.0	4 308	33.2	1	46	0.5	14
Peru	20	4.3	1 256	9.7	3	966	10.1	2
Australia	80	17.4	1 473	11.4	2	1 682	17.5	1
USA	90	19.6	767	5.9	5	662	6.9	4
Canada	31	6.7	610	4.7	7	679	7.1	3
India	x	-	825	6.4	4	353	3.7	5
Kazakhstan	35	7.6	495	3.8	8	491	5.1	6
Mexico	25	5.4	660	5.1	6	433	4.5	7
Ireland	x	-	344	2.7	9	330	3.4	8
Namibia	x	-	197	1.5	10	180	1.9	21
South Africa*	15	3.3	37	0.3	25	31	0.3	24
Other	72	15.7	1 992	15.4	-	3 732	38.9	-
Total	460	100	12 963	100	-	9 585	100,0	-

Sources: ILZSG, August 2011

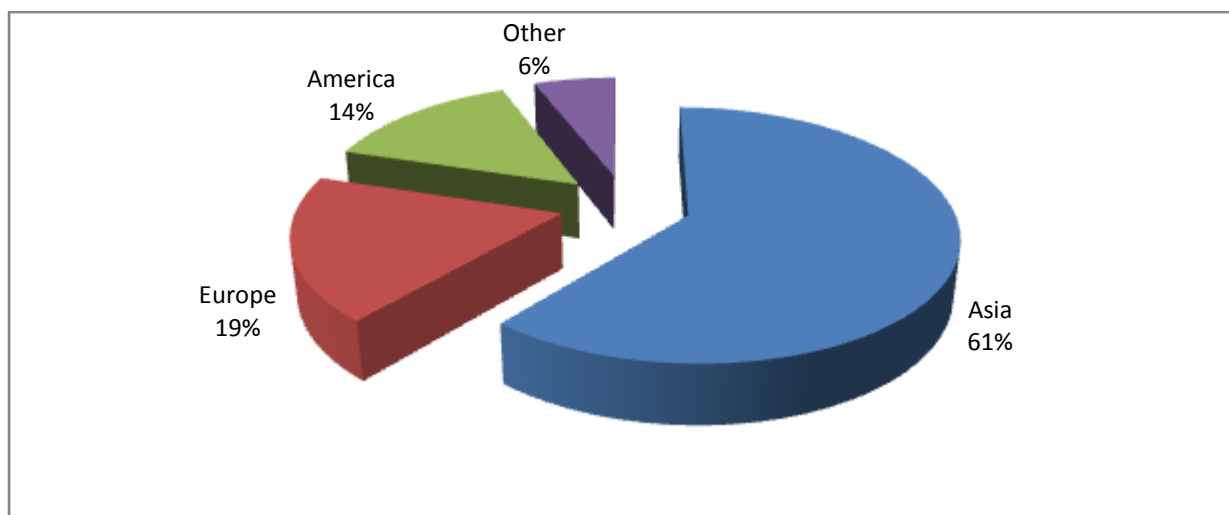
USGS, Commodities Summaries 2012

DMR, Directorate Mineral Economics

Notes: X Not specified, but estimates have been included in other countries.

World refined zinc production increased by 1.5 percent to 13 026 kt in 2011 compared with 12 832 kt in 2010. Refined zinc output increased in most of regions, except in Africa where production declined by 10.9 percent. Asia at 61.2 percent remained the dominant region, followed by Europe's 18.6 percent and the America's 14.3 percent (Figure 43).

FIGURE 43: REGIONAL PRODUCTION OF REFINED ZINC, 2011

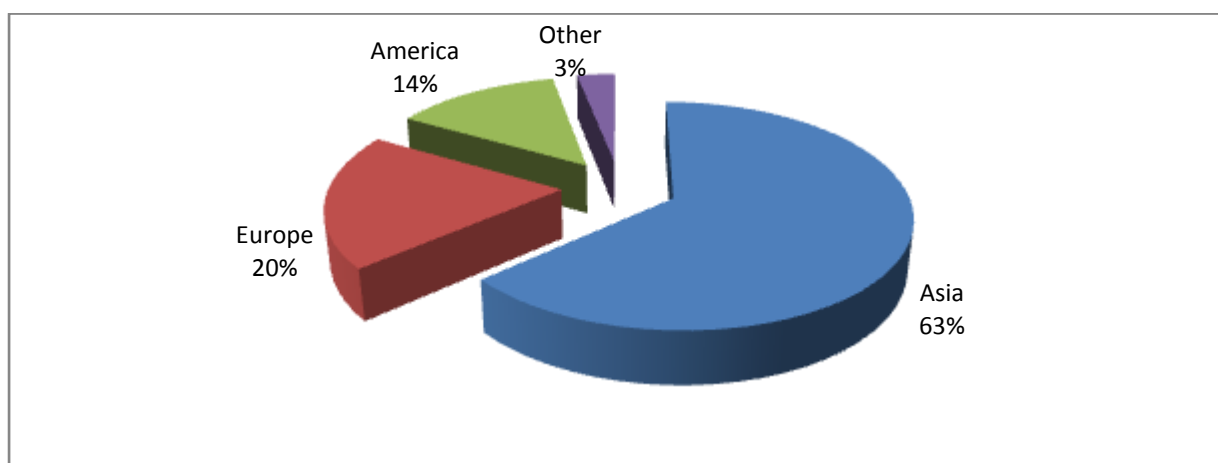


Source: International Lead and Zinc Study Group
Metal Bulletin Jan 2009-April 2010

CONSUMPTION

World refined zinc consumption was 12 079 kt in 2011, a decrease of 5.9 percent compared with 12 830 kt in 2010. Consumption increased in all regions except in Africa where it declined by 0.6 percent. Asia was the largest consumer at 63.6 percent followed by Europe's 19.7 percent and America's 14.4 percent (Figure 44). Africa accounted for 1.5 percent of consumption with South Africa accounting for 46.7 percent of the Africa's consumption.

FIGURE 44: REGIONAL CONSUMPTION OF REFINED ZINC, 2011

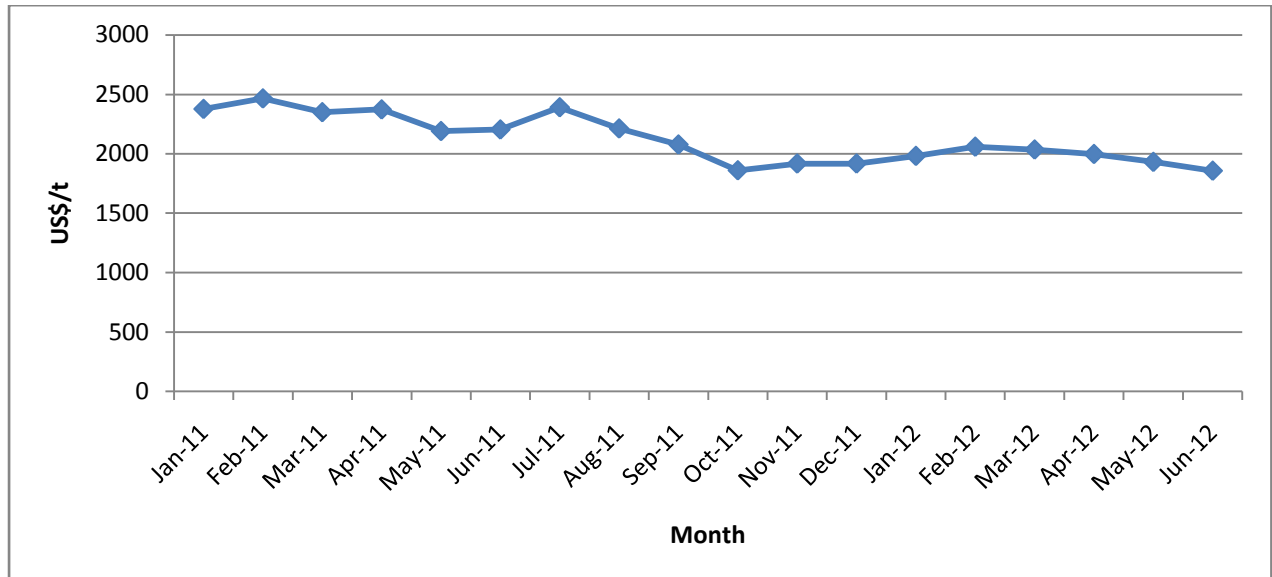


Source: International Lead and Zinc Study Group
Metal Bulletin Jan 2009-April 2010

PRICES

A yearly average LME zinc cash settlement price in 2011 was recorded at \$2 193.98/t, a 7.7 percent decrease compared with 2010, due to weak demand, particularly in China. A minimum monthly average price of \$1 859.17/t was recorded in October; while a maximum of \$2 456.13/t was recorded in February (Figure 45).

FIGURE 45: LME ZINC CASH SETTLEMENT PRICES (MONTHLY AVERAGES), 2011



Sources: Black Mountain Monthly Returns

International Lead and Zinc Study Group metal bulletin Jan 2010- August 2011

DMR, Directorate Mineral Economics

SOUTH AFRICA

South Africa's zinc mine production increased by 2.8 percent to 37 kt in 2011 compared with 36 kt in 2010 (Table 58). South Africa's exports of zinc-in-metal-concentrates amounted to 19.8 kt in 2011, an increase of five fold compared with 3.6 kt exported in 2010. Export revenue amounted to R233 million in 2011. South Africa started exporting zinc concentrate towards the end of 2010. Between 2002 and 2009 there were no exports of zinc concentrates as all the output was consumed locally as produce zinc metal..

TABLE 58: SOUTH AFRICA'S PRODUCTION AND SALES OF ZINC METAL-IN-CONCENTRATE
2002–2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mas	Value (FOR)		Mass	Value (FOB)	
		s					
	kt	t	R'000	R/t	kt	R'000	R/t
2002	64	58	290 799	4 985	-	-	-
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

Sources: DME, Directorate Mineral Economics

South Africa's refined zinc metal production decreased by 15.3 percent to 72 kt in 2011 compared with 2010, due to the closure of the Zincor refinery in December 2011. For the six years since 2005 there were no export sales recorded for refined zinc metal as all the output was consumed locally (Table 59).

TABLE 59: SOUTH AFRICA'S PRODUCTION AND SALES OF REFINED ZINC 2002- 2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
		kt	t	R'000	R/t	kt	R'000
2002	111	95	797 929	8 399	18,3	149 914	8 192
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	-	-	-

Sources: *DME, Directorate Mineral Economics

DEVELOPMENTS IN SOUTH AFRICA

The Gamsberg zinc deposit was discovered in 1971. Five feasibility studies which were done in the 1978, 1983, 1984, 1993 and 2000, indicated the project would be unable to generate an attractive return on investment. More studies were done between 2009 and 2010, and the results were positive and the project was commenced. Although the mine has not yet been fully commissioned, small scale mining is currently producing about 300 t/a. The Gamsberg zinc mining and beneficiation project will have two phases:

- Phase 1: the establishment of a mine and a concentrator for zinc concentrate production with power requirements of 70 MW.
- Phase 2: the establishment of a smelter/refinery for refined zinc metal production (400kt/a) and sulphuric acid (950 kt/a) as a by-product, at the Saldanha Industrial Development Zone (Saldanha IDZ) with a power requirement of 250 MW.

The identified resource is estimated at 186 Mt, and the mine is expected to produce 475 kt of zinc per annum over its 16 years life-of-mine. Although the Saldanha Industrial Development Zone has been identified as a potential location for the smelter, other locations may be considered. About 950 kt/a sulphuric acid would be produced as a by-product from the smelter at the identified location. Phase 1 of the Gamsberg zinc project is planned for completion by March 2013. Physical site preparation is expected to commence by April 2013, while the first ore production is projected to commence in April 2015 and full production is expected in 2017.

Phase 2 is projected to commence in April 2015 and the refinery will be in operation by April 2016, but the commencement date will depend on aspects such as the confirmation of smelter's location and the incentive schemes available to the project. Total capital expenditure is estimated at R14.6 billion phased over 4 years.

DEVELOPMENTS OUTSIDE SOUTH AFRICA

Xstrata Zinc announced the commencement of the development of the high grade zinc-lead-silver Lady Loretta deposit in north-west Queensland, Australia, as a new greenfield underground mine. Work has already commenced to develop the decline, underground services and surface infrastructure at the value of AU\$246 million (US\$239 million). The mine, which was initially planned to be operational by the end of 2013, is now expected to come on stream in mid-2013 as development started ahead of schedule in June 2012.

Xstrata Zinc assumed sole ownership of the Lady Loretta deposit by acquiring the remaining 25 percent stake in the project in April 2011. Lady Loretta contains a total mineral resource estimated at 13.7 Mt, with 14.2 percent zinc and 4.8 percent lead grade. The Lady Loretta project is expected to produce 1.8 Mt/a of zinc-lead-silver ore and an annual average of 126 kt of zinc in concentrate and 40 kt of lead in concentrate over its 12 year mine life. Ore will be treated at Mount Isa's processing facilities in Australia.

Xstrata Zinc recently approved an incremental expansion of the Handlebar Hill open cut zinc-lead mine 20 km north of Mount Isa. The expansion will extend the current open pit to access an additional reserve of 2.4 Mt of ore, extending the life of the mine until 2013. The mine will produce an additional 88 kt of zinc and 22 kt of lead.

OUTLOOK

According to the International Lead and Zinc Study Group (ILZSG), world zinc mine production is expected to increase by 5 percent to 13.60 Mt in 2012, this will be driven mainly by expected increase of 13.7 percent in China. Chinese mine production is anticipated to increase by further 2.7 percent in 2013 with other additional production expected in countries such as Australia, Burkina Faso, Kazakhstan, Mexico, Portugal and USA contributing to 13.96 Mt global zinc mine output in 2013.

Although world zinc mine output is expected to increase, world refined zinc metal production is anticipated to decrease by at least 2 percent to 12.86 Mt in 2012 and increase by 4.8 percent to 13.48 Mt in 2013. Chinese refined zinc metal production has been increasing for the past 23 years, but is expected to decline by 5.2 percent in 2012. However in 2013, Chinese refined metal production expected to rise again by 9.1 percent due to expected expansions in the country. Production is also projected to increase in Italy, Japan, the Republic of Korea and Peru.

World refined zinc metal demand is anticipated to decrease by 0.3 percent to 12.71 Mt in 2012, and increase by 3.8 percent to 13.19 Mt in 2013. Refined metal usage is expected to fall in countries such as

Belgium, Germany, Italy and Spain. This is expected to lead to a 5.5 percent decline in European demand. World refined zinc metal supply is expected to exceed world demand in both 2012 and 2013, with a surplus of 153 kt in 2012 and a further surplus of 293 kt in 2013.

Since 2007, the zinc market has been in surplus and the 2011 zinc market was characterised by another year of surplus, leading to reported inventories rising by almost a quarter. As a result, the outlook for fundamentals in 2012 suggests that the zinc market will continue to be oversupplied. The key swing factor for the zinc market outlook over the next few years is supply. While currently the market is oversupplied, a medium-term concentrate crunch may be looming, although the timing and extent of this will be partly defined by prices (high prices will encourage marginal production). According to analysts zinc prices are expected to take off in 2016. CRU International forecasts that the real three-month price of zinc, defined as the nominal price/US consumer price index, will rise from \$2 125 in 2012, to \$2 455 in 2015, and \$3 305 in 2016.

The development of the Gamsberg project in South Africa brings positive future prospects for the country's zinc industry. A 400 percent increase of zinc production is expected from this project. Gamsberg is identified as the world's 4th largest zinc resource and is poised to deliver significant economic and social benefits.

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ZIRCON

Linda Maphango

WORLD SUPPLY

Global production of zircon increased by 13.5 percent to 1 413 kt in 2011 from 1 245 kt in 2010 (Table 60). Australia and South Africa continued to dominate world supply of zircon. At 720 kt, Australia accounted for 51.0 percent of global output followed by South Africa's 26.9 percent. During 2011, the supply of zircon was very tight as production could not keep pace with strong demand.

TABLE 60 WORLD RESERVES AND MINE PRODUCTION OF ZIRCON CONCENTRATES, 2011

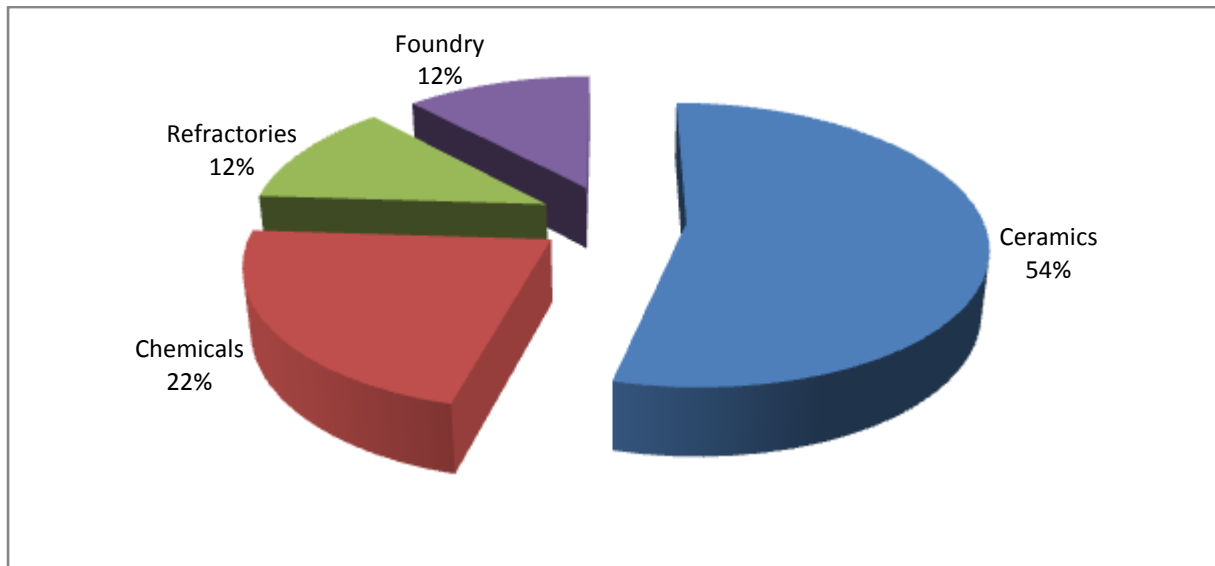
COUNTRY	RESERVES			PRODUCTION		
	Mt	%	Rank	kt	%	Rank
Australia	21.0	40.5	1	720	51.0	1
Brazil	2.2	4.2	5	18	1.3	9
China	0.5	1.0	7	100	7.1	3
India	3.4	6.6	4	38	2.7	5
Indonesia	na	na	na	50	3.5	7
Mozambique	1.2	2.3	6	40	2.8	4
South Africa	14.0	27.0	2	380	26.9	2
Ukraine	4.0	7.7	3	35	2.5	6
USA	0.5	1.0	7	na	na	na
Other	5.0	9.6		32	2.3	
TOTAL 2011	51.8	100.0		1 413	100.0	
2010	56.0			1 245		

Source: USGS, 2012, p 191

WORLD DEMAND

Zircon is mainly used in ceramics as an opacifier in floor tiles, sanitaryware, and tableware. Ceramics remains the biggest end-user of zircon, accounting for 54 percent of consumption (Fig. 46), followed by chemicals (22 percent), refractories (12 percent) and foundry (12 percent).

FIGURE 46: ZIRCON CONSUMPTION BY SECTOR



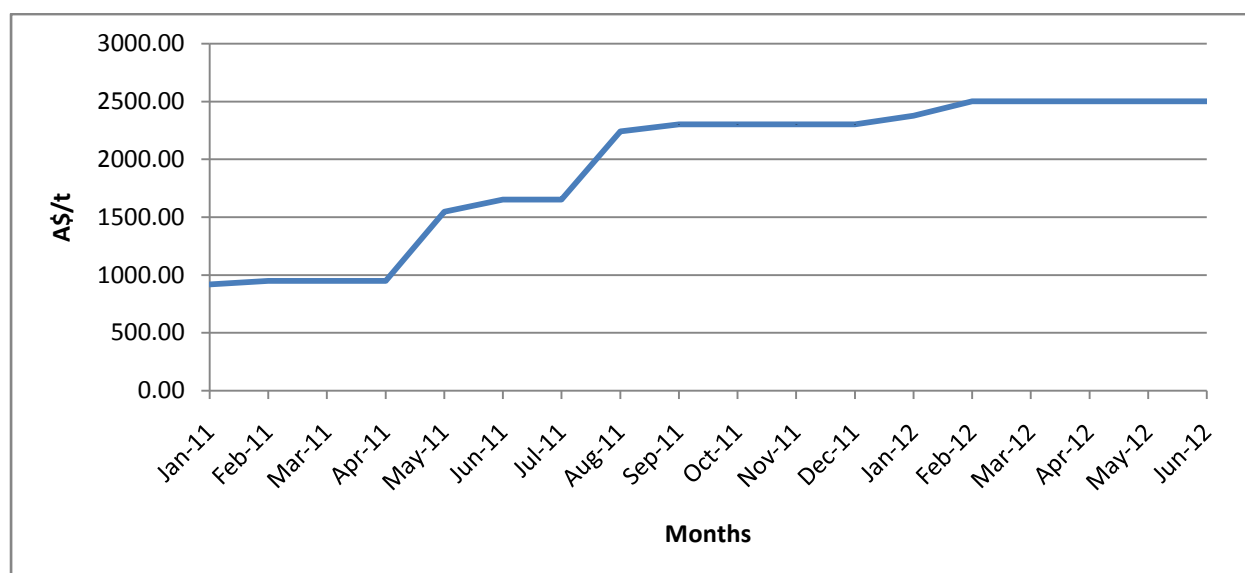
Source: *Industrial Minerals May 2012*

The consumption of zircon in the ceramic sector has been rising as a result of sharp increases in floor space driven by rapid urbanisation and China's voracious appetite for tiles. Demand for zircon as an opacifier has been growing phenomenally in China, fuelled by the increasing consumption of higher quality porcelain tiles compared with traditional glazed tiles. These factors led to stronger demand during 2011. China, which consumes about 50 percent of global zircon production, was the main driver of zircon demand.

PRICES

Prices of zircon increased significantly during 2011 on the back of bullish market fundamentals (Fig. 47). The annual average price of zircon spiked almost twofold from A\$839/t in 2010 to A\$1 671/t in 2011, due to constrained supply which was lagging behind the recovery in demand. Prices skyrocketed by 150.4 percent from a monthly average of A\$918/t in January to A\$2 300/t in December, equivalent to a compounded growth rate of 9.6 percent per month. The rising trend continued in 2012 with prices reaching an all-time high average of A\$2 500/t in February.

FIGURE 47: PRICE FOR FOUNDRY GRADE ZIRCON, FREE ON BOARD AUSTRALIA, 2011 – 2012



Source: Metal Bulletin, 2011 – 2012

DEVELOPMENTS

New Tronox (formerly Exxaro Resources) received environmental and water approval in early 2012, for its Fairbreeze mineral sands project near Richards Bay, KwaZulu-Natal. The long-awaited project, which has a mine production capacity of approximately 500 kt of ilmenite and 60 kt of zircon per annum, is expected to commence in the last quarter of 2014. The Fairbreeze mine will replace Exxaro's Hillendale mine in KwaZulu-Natal, which is expected to come to the end of its life by the end of 2012. During the construction phase about 1 080 temporary jobs will be created and the company plans to absorb close to 1 000 employees from Hillendale on a permanent basis.

Gunson Resources is developing Conburn, a mineral sands mine, in Western Australia. The project is expected to have the capacity to produce 17.5 Mt per annum of mineral sands for 23 years, including 40 kt per annum of zircon (66 percent ZrO_2) and 90 kt per annum of ilmenite (61 percent TiO_2). Conburn is expected to start producing at the end of 2013. Other mine projects expected to come on line in the next 2 – 3 years include the Minerals Deposits' Grand Cote project in Senegal, Base Resources' Kwale project in Kenya and Trimex Sands' Kalingapatnam-Bhavanapadu in India.

MZI Resources (previously Matilda Zircon) is planning to begin site construction of its Keysbrook mine sands project in Western Australia in early 2013. It is anticipated that Keysbrook will have a mine life of more than 8 years. Keysbrook is forecast to produce about 20 kt of zircon and 60 kt of leucoxene per annum. First production is expected towards the end of 2013

OUTLOOK

According to TZMI, the supply of zircon could remain at levels around 1.35 Mt per annum until the end of the decade. Over 200 kt per annum of new output is anticipated to come on stream by 2020. However, this new capacity is only expected to make up for reduction in production from existing mines due to depleting resources. Global zircon demand is forecast to continue its upward trajectory until 2015, driven mainly by ceramics and chemicals growth in China. Iluka's analysis predicts that China's zircon consumption could double by 2016 from the current level and by 2020, China's consumption could possibly be more than total world zircon consumption in 2010.

The economic crisis in southern Europe and the economic embargo on Iran, the fourth largest tile manufacturing country, could slow down the demand for zircon. Demand has also been affected by weak economic activity in India and South East Asia. According to Iluka Resources, the world's largest mineral sands producer, China's absence of direct policy adjustments to boost the property sector has led to a high level of ceramic inventories, thus suppressing demand for zircon in China. However, China's demand improved in the second quarter of 2012 following destocking.

China's economic growth and urbanisation is expected to continue to underpin the demand for zircon for many years to come. Prices of zircon are forecast to remain high for the next two years. The high prices of zircon are likely to continue to attract more investment into the heavy mineral sands sector.

South Africa's mineral sands industry is well placed to benefit from the buoyant zircon market situation. Moreover, the Exxaro Resources' Fairbreeze project, expected to come on stream in mid-2014, is likely to raise South Africa's contribution to world output. The country has the opportunity to move downstream by investigating the possibilities of establishing ceramics manufacturing facilities by participating in the ceramics space in line with the Beneficiation Strategy of South Africa.

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FERROUS METALS AND MINERALS OVERVIEW

Lesego Malebo

INTRODUCTION

South Africa is a major producer and supplier of primary ferrous minerals and their alloys. The ferrous minerals industry in South Africa includes ores of, chrome ore, iron ore, and manganese, which were produced at some 40 mines and value-added ferro-alloys at 23 metallurgical works in 2011.

GLOBAL DEMAND

Demand for ferrous minerals is driven by steel production where over 80 percent is consumed. According to the World Steel Association (WSA), global steel production amounted to 32.1 Mt in 2011, an increase of 3.3 percent compared with 2010. Demand for ferrous minerals in 2011 was driven mainly by China, on the back of increasing steel output in that country. China contributed approximately 40 percent to global steel production in 2011, and recorded an increase of 6.5 percent compared with 2010. Although world steel output for 2011 was at record levels, the steel market slowed down towards the end of the year, reducing the utilization of the world steel production capacity from 80.8 percent in January 2011 to 71.1 percent in December 2011. The slowdown in the global steel output towards the end of 2011 fuelled by weaker demand from the Eurozone had a negative effect on the ferrous minerals and alloys market during 2011.

SOUTH AFRICA'S PRODUCTION AND SALES OF PRIMARY AND PROCESSED FERROUS MINERALS

Primary ferrous minerals

South Africa's aggregated production of ferrous minerals increased by 0.9 percent to 77 430 kt (Table 61). Iron ore contributed 75 percent to the ferrous minerals total production, followed by chrome ore and manganese at 14 percent and 11 percent, respectively. Manganese contributed mainly to the increase in the ferrous production, increasing by 21 percent, while chrome and iron ore production both declined by 1.4 percent and 1.1 percent, respectively. Total sales revenue of primary ferrous minerals contributed 21.9 percent (R 81.1) billion to total South Africa's mineral sales, an increase of 33.7 percent over the 2010 revenue. The increase in the ferrous total sales was mainly due to increased export volumes in 2011 compared with 2010.

TABLE 61: SOUTH AFRICA'S PRODUCTION AND SALES OF PRIMARY FERROUS MINERALS, 2010 AND 2011

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		kt	kt	R mil	kt	R mil	kt	R mil
Chrome ore	2011	10 721	7 434	5 382	2 000	3 237	9 434	8 620
	2010	10 871	7 267	4 159	1 929	2 459	9 196	6 619
Iron ore	2011	58 057	9 844	4 208	51 891	58 444	61 735	62 652
	2010	58 709	10 561	3 270	47 493	40 148	58 053	43 419
Manganese ore	2011	8 652	1 855	1 325	6 773	8 570	8 628	9 895
	2010	7 172	1 930	1 321	5 986	9 340	7 916	10 661
Total	2011	77 430	19 133	10 915	60 663	70 251	79 797	81 167
	2010	76 752	19 758	8 750	55 408	51 948	75 166	60 698

Source: DMR, Directorate Mineral Economics

Processed ferrous minerals

South Africa's aggregated production of ferroalloys increased by 2.2 percent to 4 695 kt (Table 62). Chromium alloys contributed 72.9 percent to the ferroalloys total production, followed by manganese alloys at 23 percent. Manganese alloys and silicon production which increased by 35.0 percent and 5.1 percent respectively were the main contributors to the increase in ferroalloys production. Chromium alloys and vanadium production both declined by 5.0 percent and 4.3 percent, respectively. Total sales revenue of processed ferrous minerals stood at R 40.3 billion, an increase of 2.3 percent over the 2010 revenue.

TABLE 62: SOUTH AFRICA'S PRODUCTION AND SALES OF PROCESSED FERROUS MINERALS, 2010 AND 2011

COMMODITY	YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
		kt	kt	R mil	kt	R mil	kt	R mil
Chromium alloys	2011	3 426	451	3 431	3 048	23 793	3 499	27 224
	2010	3 607	397	2 852	3 116	24 216	3 513	27 068
Manganese alloys	2011	1 064	54	483	854	7 410	908	7 893
	2010	790	65	601	751	7 016	816	7 617
Silicon	2011	183	68	759	131	1 894	199	2 654
	2010	174	70	771	123	1 494	193	2 265
Vanadium	2011	22	2	270	18	2 288	20	2 558
	2010	23	2	286	17	2 182	19	2 468
Total	2011	4 695	575	4 943	4 051	35 385	4 626	40 328
	2010	4 594	535	4 509	4 007	34 908	4 542	39 418

Source: DMR, Directorate Mineral Economics

EMPLOYMENT

Employment in the ferrous mineral sector increased by 20.3 percent to 47 471 (Table 63), with the manganese, chrome and iron ore sectors increasing employment by 25 percent, 17 percent and 23 percent, respectively. The increase in employment in these sectors could be attributed to the expansion projects and opening of new mines. Total remuneration for the year increased by 68.4 percent to R 10.9 billion, due to a payout of the Envision share scheme by Kumba Iron Ore to its employees, thereby doubling the compensation of its employees in 2011.

TABLE 63: EMPLOYMENT AND GROSS REMUNERATION, 2005-2011

YEAR	AVERAGE NUMBER OF EMPLOYEES	TOTAL REMUNERATION (R'000)
2005	18 673	1 466 880
2006	22 016	1 919 137
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	47 471	10 988 437

Source: DMR, Directorate Mineral Economics

OUTLOOK

Steel is the largest consumer of ferrous minerals and therefore change in the dynamics of the steel industry will have an impact on the ferrous ore industry. World Steel Association forecasts that global steel use will increase by 3.6 percent to 1 422 Mt in 2012 and by a further 4.5 percent in 2013, less than the 5.6 percent growth in 2011. The decline in the growth rate follows a continuing slowdown of Chinese steel demand and the Eurozone debt crisis. China's economic growth, which dominated world steel production in 2011, is forecast to slow down significantly compared with the high growth rates achieved in recent years. The slower growth in China is expected to negatively affect the demand for ores and alloys of iron and manganese for steel production and chrome ore and ferrochrome for stainless steel production. Demand for other applications such as batteries is likely to show some growth, with manganese consumption expected to rise to approximately 60 kt by 2020 in this sector.

The ferrous minerals and alloys prices declined gradually during 2011, following a steady increase in 2010 post the 2008/2009 global financial crisis. The average spot price for China's chrome ore imports from South Africa declined by 7 percent in 2011 to \$253/t compared with 2010. Manganese ore annual prices averaged \$5.46/mtu in 2011, down by 25.6 percent compared with \$7.33/mtu in 2010. Iron ore spot prices reached \$187/t in February 2011 before gradually declining throughout the year to close at \$136/t in

December 2011. The continuing Eurozone debt crisis as well as the slowdown of Chinese steel demand, are likely to negatively affect prices in 2012.

Iron ore is expected to account for the biggest share of South Africa's total ferrous ore revenues between 2012 and 2015. Total ferrous ore export revenues are forecast to rise at 3.6 percent per annum over this period. Transnet's planned expansion of its rail and port infrastructure is expected to give new producers an opportunity to participate in export markets. However, the intensification of the drive for local downstream value addition in the country is likely to increase local consumption of the ferrous ores in the medium to long term.

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CHROMIUM

Sqhelo Ntshobane

GLOBAL SUPPLY

Chrome

According to the International Chromium Development Association (ICDA), the global resources are estimated at more than 12 billion tons of chromite, of which approximately 95 percent are concentrated in southern Africa and Kazakhstan. The global chrome ore reserves are estimated at 3.666 billion tons (Table 64). South Africa's Bushveld Complex (BC) accounts for 84.6 percent of the world's chrome ore reserves, followed by Kazakhstan and Zimbabwe with 8.7 percent and 3.8 percent, respectively.

TABLE 64: WORLD CHROME ORE RESERVES, PRODUCTION AND EXPORTS, 2011

COUNTRY	RESERVES+			PRODUCTION+			EXPORTS+		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
Australia	-	-	-	342	1.4	9	209	1.8	8
Brazil	14	0.4	6	599	2.4	7	60	0.5	9
China	-	-	-	300	1.2	11	5	0	10
Finland	41	1.1	4	693	2.8	6	0	0	11
India	27	0.7	5	2 835	11.3	3	478	4.2	4
Iran	-	-	-	330	1.3	10	330	2.9	6
Kazakhstan	320	8.7	2	3 655	14.6	2	888	7.7	3
Albania	-	-	-	384	1.5	8	357	3.1	5
South Africa	3 100	84.6	1	10 404	41.5	1	5 382	46.9	1
Turkey	-	-	-	2 528	10	4	1 918	16.7	2
Zimbabwe	140	3.8	3	781	3.1	5	212	1.8	7
Other	24	0.7		2 220	8.9		1 634	14.2	
TOTAL: 2011	3 666	100		25 071	100		11 473	100	
2010	3 666			24 228			10 358		

Source: ICDA Statistical Bulletin 2012

The major application of chromite is for the production of ferrochrome. The stainless steel industry consumes over 90 percent of the global ferrochrome production. Global chrome ore output increased by 3.5 percent to 25.1 Mt in 2011 compared with 2010 (TABLE 64). South Africa remained the largest chrome ore producer in the world, accounting for 41.5 percent of world production, followed by Kazakhstan and India at 14.6 percent and 11.3 percent respectively. Global chrome ore exports grew by 10.8 percent to

11.5 Mt in 2011, with South Africa accounting for 46.9 percent. China was the major export destination of South Africa's chrome ore in 2011.

Ferrochrome

Global ferrochrome production increased by 3.8 percent to 9.2 Mt compared with 2010, due to sustained high demand from the stainless steel industry (Table 65). South Africa, Kazakhstan, India and China accounted for nearly 90 percent of the global ferrochrome production. Despite a decline of 8.9 percent in ferrochrome output, South Africa remained the world leading producer in 2011. South Africa's market share of the global ferrochrome production declined by 5 percent to 36 percent compared with 2010. The decline is attributable to China's increased production, which grew by approximately 26.5 percent to 2.8 Mt in 2011. This resulted in China's share of the global ferrochrome production market increasing from 25 percent in 2010 to 30 percent in 2011.

TABLE 65: WORLD FERROCHROME PRODUCTION AND SALES, 2011

COUNTRY	PRODUCTION			EXPORTS		
	kt	%	Rank	kt	%	Rank
Albania	29	0.3	11	29	0.5	9
Brazil	140	1.5	8	8	0.1	10
China	2 798	30.3	2	4	0.1	11
Finland	231	2.5	6	102	1.8	6
India	985	10.7	4	466	8.4	3
Kazakhstan	1062	11.5	3	924	16.7	2
Russia	271	2.9	5	107	1.9	5
South Africa	3 337	36.1	1	3 190	57.8	1
Sweden	80	0.9	10	76	1.4	7
Turkey	140	1.5	9	45	0.8	8
Zimbabwe	163	1.8	7	187	3.4	4
Other	4	0		384	7	
TOTAL: 2011	9 240	100		5 522	100	
2010	8 903			5 646		

Source: ICDA Statistical Bulletin 2012

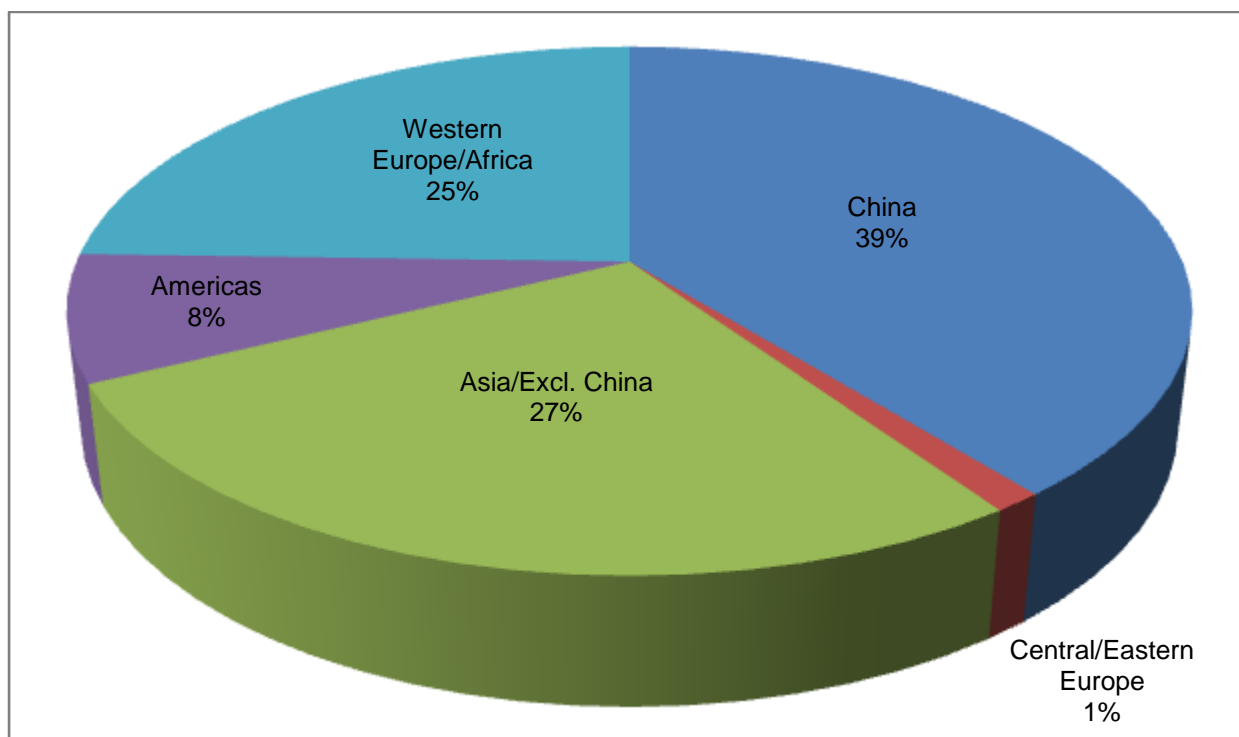
Global ferrochrome exports stood at 5.5 Mt in 2011, with South Africa contributing 57.8 percent, followed by Kazakhstan at 16.7 percent. India's exports continued to decline in 2011, dropping by 13.7 percent compared with 2010.

GLOBAL DEMAND

According to the International Stainless Steel Forum (ISSF), world stainless steel production increased to a record 32.1 Mt in 2011, an increase of 3.3 percent compared with 2010, in line with the 3.8 percent growth rate of ferrochrome production. China remained the leading producer of stainless steel, accounting for approximately 40 percent of the world's total stainless steel output in 2011 (Figure 48). China's production increased by 11.9 percent to 12.6 Mt in 2011 compared with 2010. According to the ISSF, South Africa accounted for just 1.4 percent of the global stainless steel production in 2011.

Stainless steel end-use consumption increased by 7.6 percent in 2011 to a record high of 30.7 million tonnes compared with 2010. However, Japan's nuclear crisis, the Eurozone debt crisis, the uncertainty in the United States economy and the Arab Spring political uprising all impacted negatively on industrial, manufacturing and consumer confidence in the second half of 2011 and slowed down ferrochrome demand (ISSF).

FIGURE 48: REGIONAL STAINLESS STEEL PRODUCTION, 2011



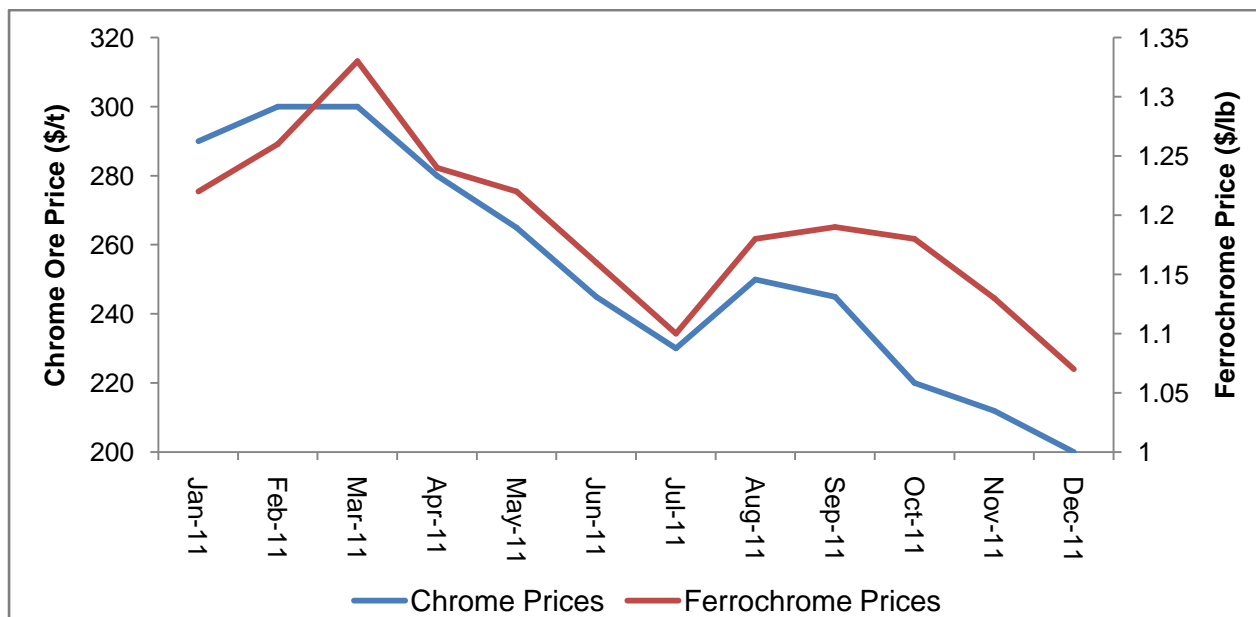
Source: International Stainless Steel Forum

PRICES

Chrome ore prices declined gradually in 2011, after a steady increase in 2010 following the recovery from the 2008/2009 global financial crisis. Chrome ore prices opened the year at an average price of \$290/t in January 2011 and closed the year at an average price of \$200/t in December 2011, a decrease of 31 percent. The average spot price for China's chrome ore imports from South Africa declined by 7 percent in

2011 to \$253/t compared with 2010. The decline in prices could be attributed to the oversupply of chrome ore in the global market resulting from increased UG2 chrome ore (produced as a by-product of platinum production) supply from South Africa.

FIGURE 49: CHROME AND FERROCHROME PRICES, 2011



Source: CRU Group

According to CRU, ferrochrome annual average prices increased from \$1.16/lb in 2010 to \$1.19/lb in 2011 (Figure 49), due to increased stainless steel production in China. However, prices slowed down in mid 2011 due to falling demand from Japan and the European Union. Ferrochrome opened the year at an average price of \$1.22/lb in January 2011 and closed the year at an average price of \$1.07/lb in December 2011, a decline of 12 percent.

DEVELOPMENTS IN SOUTH AFRICA

Production and Sales

According to the Department of Mineral Resources (DMR), South Africa's chrome ore production declined slightly by 0.4 percent from 10.9 Mt in 2010 to 10.8 Mt in 2011 (Table 66). However, South Africa's chrome ore total sales volumes increased by 10.1 percent to 10.1 Mt in 2011 compared with 2010, due to an increase in both local sales and export sales volumes of 10.9 percent and 6.9 percent, respectively. Total sales revenues amounted to R9.2 billion, increasing by 39 percent partly due to higher sales volumes in 2011 compared with 2010. The increase in local sales volumes, which accounted for approximately 63 percent of total sales volumes, was due to high consumption levels by local ferrochrome producers. Revenue from local sales increased to R5.8 billion in 2011 from R4.2 billion in 2010.

Export sales volumes reported by primary chrome ore producers to the DMR stood at 2.1 Mt, while export data reported by the ICDA stood at 5.4 Mt. The export data discrepancy between the two institutions could be attributed to the unaccounted chrome ore production and exports of chrome tailings from UG2 reef platinum production in South Africa. Chrome ore exports increased by more than 100 percent in 2011 compared with 2005, with South Africa being the dominant supplier of chrome ore in this period.

TABLE 66: SOUTH AFRICA'S CHROME ORE PRODUCTION AND SALES, 2002 – 2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value	Unit Value	Mass	Value	Unit Value
	kt	kt	R' mil	R/t	kt	R' mil	R/t
2002	6 436	5 300	787	148	651	314	483
2003	7 405	6 334	977	154	502	178	354
2004	7 677	6 743	1 369	203	513	319	622
2005	7 552	6 128	1 469	240	657	442	673
2006	7 418	6 384	1 802	282	735	500	679
2007	9 665	7 389	2 347	315	904	676	747
2008	9 683	7 116	4 131	581	762	1 268	1 664
2009	6 865	4 855	2 066	426	1 035	1 196	1 155
2010	10 871	7 267	4 159	572	1 929	2 459	1 275
2011	10 824	8 061	5 814	721	2 063	3 358	1 628

Source: DMR Mineral Economics

South Africa's ferrochrome production declined by 5.1 percent to 3.4 Mt in 2011 compared with 3.6 Mt in 2010 (Table 67). Local sales volumes increased by 12.8 percent to 448 kt, despite the decline in local stainless steel production by 7.7 percent in 2011 compared with 2010. Export sales volumes decreased by 2.5 percent to 3.0 Mt in 2011 compared with 2010. The declining export sales volumes could be attributed to the growth in China's ferrochrome production which has depressed demand for ferrochrome imports in the global market. Local sales revenue increased by 17 percent to R3.4 billion on the back of higher local sales volumes, while export sales revenue declined by 2.5 percent to R23.7 billion due to declining export sales volumes.

TABLE 67: SOUTH AFRICA'S FERROCHROME PRODUCTION AND SALES, 2002 – 2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value	Unit Value	Mass	Value	Unit Value
	kt	kt	R' mil	R/t	kt	R' mil	R/t
2002	2 351	211	595	2 820	2 199	6 117	2 782
2003	2 813	301	886	2 945	2 640	7 659	2 901
2004	3 032	484	1 856	3 836	2 646	10 110	3 821
2005	2 802	358	1 422	3 968	2 480	9 923	4 001
2006	3 030	353	1 352	3 832	2 581	10 370	4 017
2007	3 561	395	1 995	5 047	2 972	15 534	5 227
2008	3 269	334	3 416	10 227	2 525	28 356	11 230
2009	2 346	432	2 253	5 215	2 621	15 882	6 059
2010	3 607	397	2 852	7 183	3 116	24 216	7 772
2011	3 422	448	3 414	7 620	3 037	23 739	7 817

Source: DMR Mineral Economics Directorate

Employment

Employment in South Africa's chrome industry increased by 17 percent to 16 337 in 2011 compared to 2010, due to expansion projects (Table 68). The average remuneration increased by 29 percent to R2.7 billion in 2011. Productivity per employee decreased by 14.9 percent to 663 t compared with 2010.

TABLE 68: EMPLOYMENT IN SOUTH AFRICA'S CHROME INDUSTRY, 2007 – 2011

YEAR	EMPLOYEES	EMPLOYEE PRODUCTIVITY PER	
		TOTAL REMUNERATION	TON
		R' 000	
2007	9 757	876 699	991
2008	12 279	1 297 315	789
2009	10 966	1 457 367	626
2010	13 959	2 081 837	779
2011	16 337	2 700 242	663

Source: DMR Mineral Economics Directorate

Industry Developments

The Xstrata-Merafe Chrome Venture's total installed capacity is expected to increase to over 2.3 Mt per annum when Phase Two of the Lion ferrochrome plant (Lion II) is commissioned in 2013. Lion II is projected to yield 360 kt per annum upon completion. Lion II will use the proprietary Premus technology,

which cuts electricity consumption by between 33 percent and 50 percent. Project Tswelopele, a 600 kt per annum pelletising and sintering plant, is expected to be fully operational in 2013. The plant will agglomerate UG2 tailings in addition to primary ore, significantly improving cost and operational efficiencies. Xstrata-Merafe completed the development of the Waterval mine to produce 360 kt per annum of chrome ore in 2011.

Anglo American Platinum will commission a chrome recovery plant at the Waterval mine in a joint venture with International Ferrometals (IFM) by January 2012. IFM will be entitled to 15 kt of chrome concentrate from the plant, which will provide 30 percent of IFM's annual chrome supply requirements until 2020.

Hernic Ferrochrome's development of the Bokone underground mine commenced early 2010; once operational it will ensure security of supply that will allow Hernic Ferrochrome to produce ferrochrome for the next 60 years.

OUTLOOK

Stainless steel is the dominant consumer of ferrochrome and therefore a change in the dynamics of the stainless steel industry has an impact on the ferrochrome industry. Demand for chrome ore, which is driven by ferrochrome demand, will move in line with the increase in the global stainless steel production. South Africa will remain the leading global supplier of chrome ore and ferrochrome as it already has an established chrome industry. Demand for UG2 chrome tailings is expected to drive demand for South African chrome ore over the next few years.

New ferrochrome expansion projects are expected to come on line in the next few years which will increase production. South Africa's ferrochrome industry has not been operating at full capacity in recent years, due to various factors that affected the sector; however, it is expected that the low capacity utilization will be corrected by an increase in demand which will increase the capacity utilization levels.

The oversupply of UG2 in the market, as well as the slow growth in China's stainless steel industry will impact negatively on the chrome ore and ferrochrome prices. The chrome ore prices are anticipated to reach \$215/t for the remainder of 2012 and \$240/t in 2013.

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IRON ORE

Sqhelo Ntshobane

GLOBAL SUPPLY

According to the United States Geological Survey (USGS), global iron ore reserves stood at 80 billion tons in 2011. Australia accounted 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 iron ore reserves; contributing only 0.8 percent to global reserves. The Organisation for Economic Co-operation and Development (OECD), estimates that at current global production levels, reserves of iron ore will last approximately 44 years.

TABLE 69: WORLD IRON ORE RESERVES, PRODUCTION AND EXPORTS, 2011

COUNTRY	RESERVE#			PRODUCTION+			EXPORTS+		
	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank
Australia	17 000	21.3	1	487.9	25.4	1	438.8	38	1
Brazil	16 000	20	2	391	20.3	2	348.6	30.2	2
Canada	2 300	2.9	6	37.1	1.9	9	34	3.0	5
China	7 200	9.0	4	321.9	16.7	3	-	-	-
India	4 500	5.6	5	196.0	10.2	4	78.8	6.8	3
Russia	14 000	17.5	3	103.1	5.4	5	27.0	2.3	7
South Africa	650	0.8	10	52.9	2.8	8	52.2	4.5	4
Sweden	2 200	2.8	7	26.1	1.4	10	21.0	1.8	8
United States	2 100	2.6	8	53.6	2.8	7	10.0	0.9	9
Ukraine	2 100	2.6	8	81.2	4.2	6	34.1	3.0	5
Other	11 950	14.9		171.9	8.9		110.5	9.6	
TOTAL: 2011	80 000	100		1 922.5	100		1 155	100	
2010	87 350			1 836.1			1 063		

Source: Sources: + UNCTAD Trust Fund on Iron Ore, 2011

USGS, 2010 (Reserve – Iron content)

Global production of iron ore increased by 4.7 percent in 2011 compared with 2010, to a record high of 1 922.5 Mt, largely to satisfy surging demand from China. Australia, China, Brazil and India together accounted for approximately 72.6 percent of iron ore global production in 2011. Australia was the largest producer and exporter accounting for 25.4 percent to total world production and 38 percent to total global exports. South Africa accounted for just 2.8 percent of the total world production of iron ore.

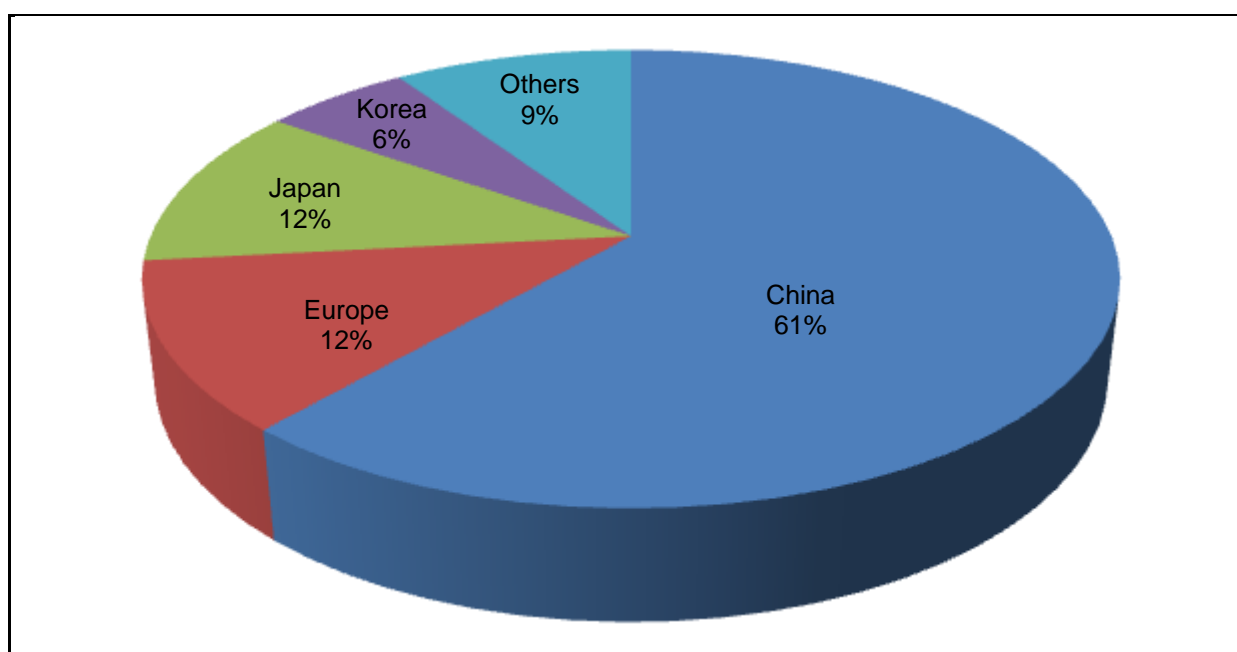
Global iron ore production was dominated by three companies, namely: Brazil-based Vale, Rio Tinto and BHP Billiton. The three companies accounted for 34.7 percent of world iron ore production in 2011

compared to 35 percent in 2010. All three companies are ramping up their production capacities significantly; however, BHP Billiton has acknowledged that their expansion plans are subject to existing demand, prices and the ability to spend capital on expansion projects.

GLOBAL DEMAND

Growth in global crude steel production drove the demand for iron ore throughout the world. International iron ore exports reached a record 1 155 Mt in 2011, an increase of 8.7 percent compared with 2010. China has driven the global recovery in crude steel production since the global financial crisis of 2008/09, increasing the demand for iron ore. China imported 686.7 Mt of iron ore in 2011, an increase of 11 percent compared with 2010. According to the OECD, developing countries, including China, accounted for approximately 68.1 percent of total iron ore imports in 2011 (Fig. 50), a 2.1 percent increase as compared with 2010.

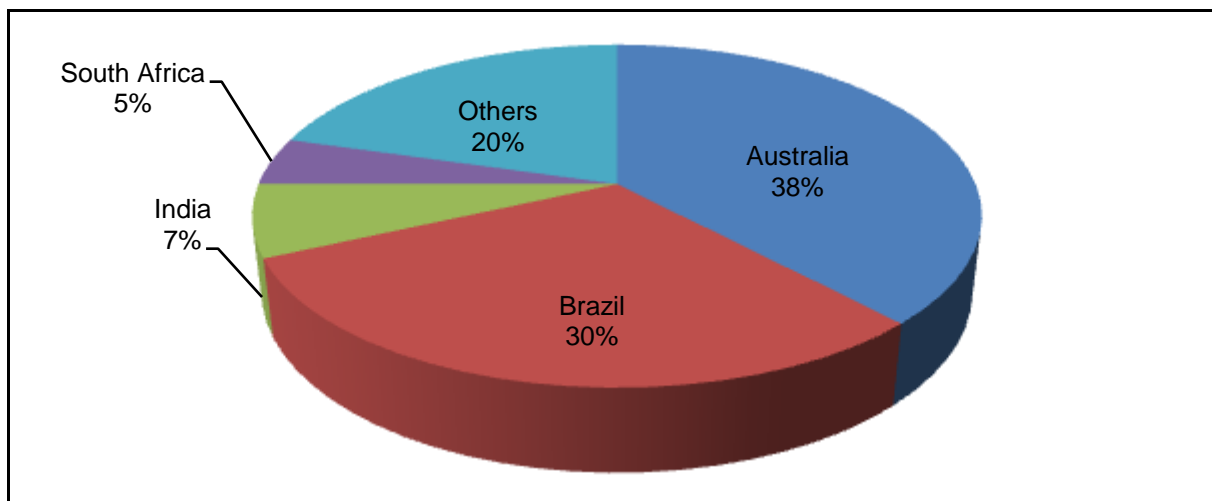
FIGURE 50: GLOBAL IRON ORE IMPORTS, 2011



Source: Organisation for Economic Co-operation and Development

Australia and Brazil were the global leaders in iron ore exports; together accounting for approximately 68 percent of total exports in 2011 (Fig. 51). Australia's iron ore exports increased by 8.9 percent to 438.8 Mt, while Brazil's exports increased by 12.1 percent to 348.6 Mt. India, the third largest exporter, recorded a 17.8 percent decline in iron ore exports to 78.8 Mt in 2011 compared with 2010. The decline was attributed to a clamp down on illegal mining, increased regulatory measures and high levies and charges by the government. South African exports increased by 11 percent compared with 2010, to 52.2 Mt in 2011.

FIGURE 51: GLOBAL IRON ORE EXPORTS, 2011

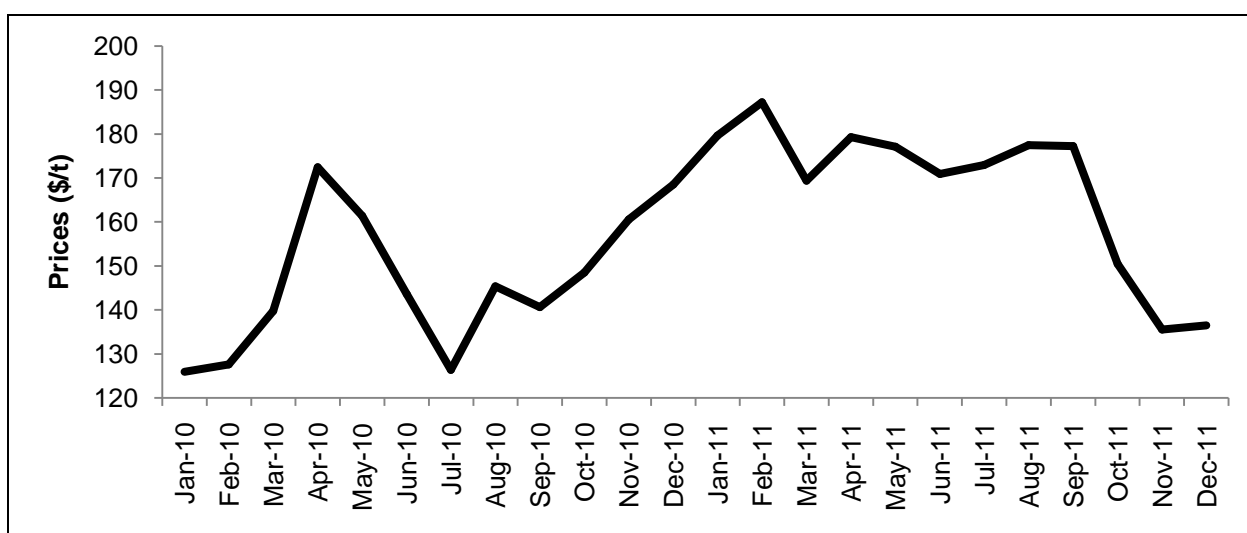


Source: Organisation for Economic Co-operation and Development

PRICES

Following the 2008 financial crisis, major iron ore producers have dropped annual contract-pricing in favour of a shorter-term quarterly-pricing scheme. Spot prices tend to exceed contract prices; which means that iron ore producers are not reaping the maximum profits possible. Iron ore spot prices reached \$187/t in February 2011 before gradually declining throughout the year to close at \$136/t in December 2011. The average spot iron ore price increased by 9.8 percent to \$168/t (CIF) in 2011 compared with the average iron ore spot price of \$153/ton (CIF) in 2010.

FIGURE 52: IRON ORE SPOT PRICES, 2010 AND 2011



Source: International Monetary Fund

SOUTH AFRICA'S IRON ORE INDUSTRY

Production and Sales

South Africa's iron ore output declined by 1.1 percent to 58.1 Mt in 2011, compared with 2010 (Table 70). Local sales volumes declined by 6.8 percent to 9.8 Mt in 2011 while export sales volumes increased by 9.3 percent to 51.9 Mt due to increased global crude steel demand. Total sales revenue increased by 44 percent to R62.7 billion on the back of higher export volumes and prices compared with 2010.

TABLE 70: 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' mil	R/t	kt	R' 000	R/t
2002	36 484	11 057	1 009	91	24 303	4 305	177
2003	38 085	12 079	1 061	88	24 076	3 130	130
2004	39 322	12 430	1 146	92	27 745	3 440	124
2005	39 542	12 009	1 273	106	26 628	6 247	235
2006	41 326	11 989	1 395	116	27 370	8 532	312
2007	42 083	12 407	1 749	141	29 724	11 681	393
2008	48 983	11 258	1 975	175	32 766	20 267	619
2009	55 313	8 369	1 889	226	44 550	25 243	567
2010	58 709	10 561	3 270	310	47 493	40 148	845
2011	58 057	9 844	4 208	427	51 891	58 444	1126

Source: DMR Mineral Economics Directorate

EMPLOYMENT

Employment in South Africa's iron ore industry was 22.7 percent higher in 2011 compared with 2010 due to expansion projects (Table 71). The compensation of employees doubled in 2011, mainly due to a payout of R2.3 billion by Kumba Iron Ore to its employees under the Envision share scheme. In terms of tons per employee, productivity declined by 19 percent to 2 597t per employee.

TABLE 71: SOUTH AFRICA'S IRON ORE INDUSTRY'S EMPLOYMENT AND REMUNERATION

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R' 000
2007	13 858	1 362 392
2008	13 256	1 667 836
2009	13 727	2 178 041
2010	18 216	3 037 690
2011	22 342	6 504 656

Source: DMR Mineral Economics Directorates

Beneficiation

South Africa is a major producer of iron ore, which is the key input for iron and steel production. Despite the decline in local sales volumes in 2011, local iron ore sales volumes are expected to increase in the future when the new Beneficiation Strategy of South Africa is implemented. 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 addressing import parity pricing for downstream users in order to encourage local fabrication projects.

Industry Developments

Kumba Iron Ore's Kolomela mine is expected to come into production in the first half of 2012, ramping up production to 9 Mt in 2013. The mine will increase Kumba Iron Ore's production capacity to 50 Mt by the end of 2012, in line with the company's long term strategy to produce 70 Mt of ore per annum by 2019. The total capital invested in the project is R8.5 billion, of which R5.3 billion has already been spent. The mine is expected to create more than 800 permanent employment opportunities when it reaches full production.

Assmang has production expansion plans for its Khumani and Beeshoek iron ore mines. Khumani iron ore mine currently produces around 12 Mt and the expansion will increase production to 14 Mt by 2013, after Assmang has secured railway allocation. Production from the Beeshoek iron ore mine will expand to 2.5 Mt from the current 2 Mt.

The Anglo American-owned Minas Rio venture in Brazil, which plans to reach a capacity of 26 million tons by 2015, is facing further delays due to the strict environmental process requirements and project designing changes.

OUTLOOK

On the basis of an unchanged relationship between iron ore demand and crude steel production, the United Nations Conference on Trade and Development (UNCTAD) estimated that iron ore use will increase from 1.92 billion tons in 2011 to about 2 billion tons in 2012 and to 2.08 billion tons in 2013. World crude steel production is expected to reach approximately 1 530 Mt in 2012; nearly 4 percent higher than in 2011. A short term forecast from the World Steel Association (Worldsteel) predicted steel use to increase by 3.6 percent in 2012, followed by an increase of 4.5 percent in 2013. Worldsteel estimated that global steel demand growth rates will remain high; however, forecasted growth rates are below the pre-crisis levels.

China's economic growth is forecast to slow down significantly compared to the high growth rates achieved in recent years. The slower growth in China is expected to negatively affect the demand for iron ore as the major input into iron and steel production.

Growth in supply is expected to outpace the growth in demand due to the anticipated increase in production capacity in the medium term, leading to declining prices. Average prices are forecast to decline to \$143/t in 2012 and \$140/t in 2013.

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MANGANESE

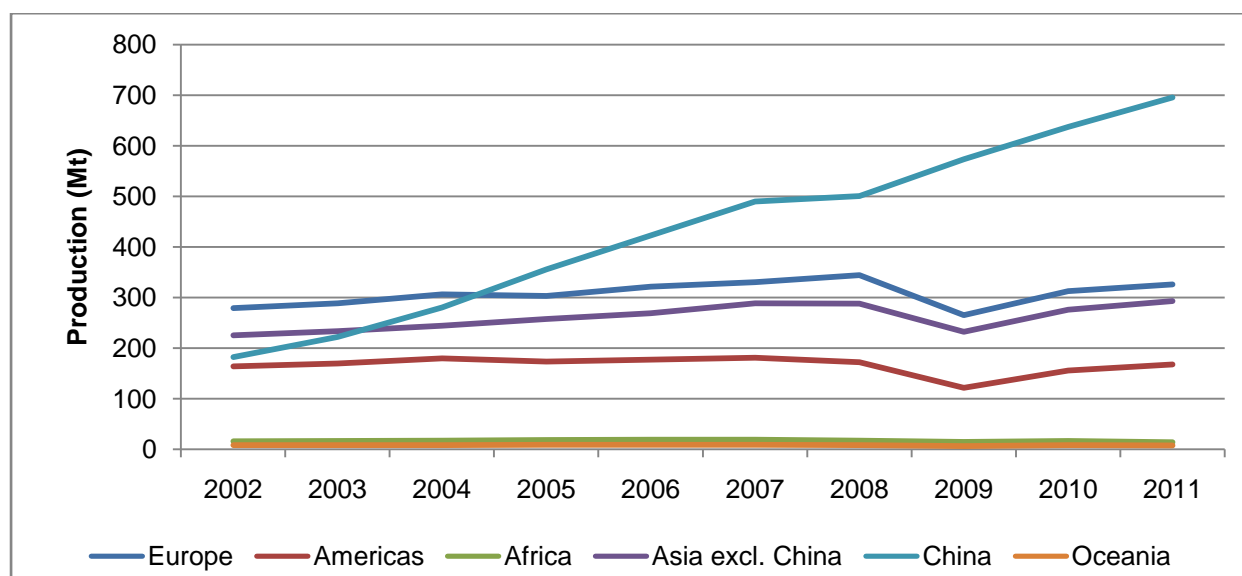
Keneilwe Ratshomo

WORLD DEMAND

Demand for manganese ore in 2011 was driven mainly by China, on the back of increasing steel output in that country. The country imported 13 Mt of seaborne ore in 2011, up by 12 percent from 11.6 Mt in 2010. India and Korea increased their demand for manganese ore in 2011 and both imported approximately 1 Mt of the ore, driven by their increase in manganese alloys production capacities. Global unit consumption of manganese ferroalloys continued to vary significantly from region to region due to different steel production processes, the quality of the raw materials used and types of steel products produced. The global average consumption was about 10 kg gross weight of manganese ferroalloys per ton of steel produced in 2011.

World crude steel output, which continued to be driven mainly by China, increased by 6.8 percent to 1 527 Mt in 2011 compared with 2010, according to the Worldsteel Association (WSA) (Fig. 53). China's steel production increased by 8.9 percent, raising its share of world steel production from 44.7 percent in 2010 to 45.5 percent in 2011. The rest of the Asian region increased steel production by 6.2 percent in 2011. Steel output in the European Union increased by 2.8 percent, with its share of world steel production lower at 11.6 percent in 2011 compared with 12.1 percent in 2010. Although output for the year was at record levels, the steel market slowed down towards the end of the year. The utilization of the world steel production capacity went down from 80.8 percent in January 2011 to 71.1 percent in December 2011, due to poor demand from the end-use markets.

FIGURE 53: WORLD STEEL PRODUCTION, 2002 – 2011

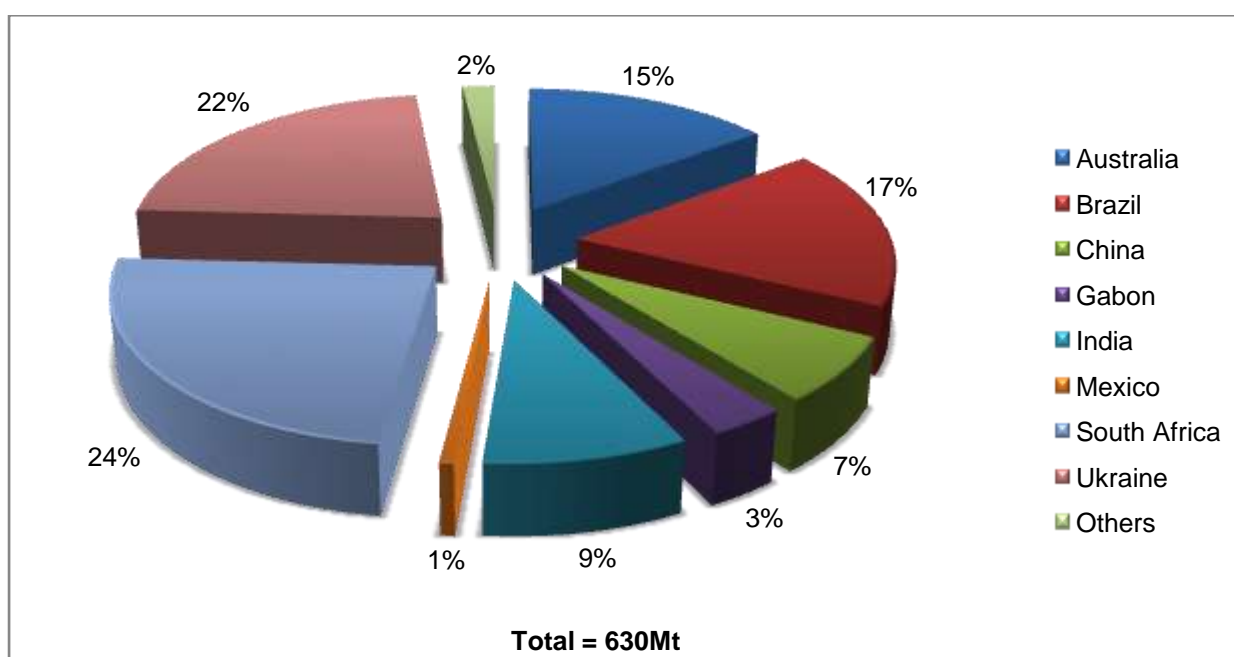


Source: WSA, 2002 – 2011

WORLD SUPPLY

Manganese ore reserves were revised upwards for South Africa as well as for Brazil and downwards for Gabon in 2011. As a result, South Africa accounted for 24 percent of the world's reserves in 2011 from 19 percent in 2010, followed by Ukraine's 22 percent and Brazil's 17 percent (Fig. 54). In response to increasing demand for manganese ore during 2011, the industry ramped up production by 9 percent to 15.8 Mt in terms of manganese units contained. This amounted to a gross of 48 Mt of manganese ore, up by 4.6 percent from 45.9 Mt in 2010, with an average grade of 32.8 percent manganese (Mn). World exports of manganese ore increased by 12.6 percent to 22.3 Mt in 2011. South Africa accounted for 29.7 percent of the exports, followed by Australia's 29.5 percent and Gabon's 13.4 percent.

FIGURE 54: WORLD MANGANESE ORE RESERVES, 2011



Sources: USGS 2012

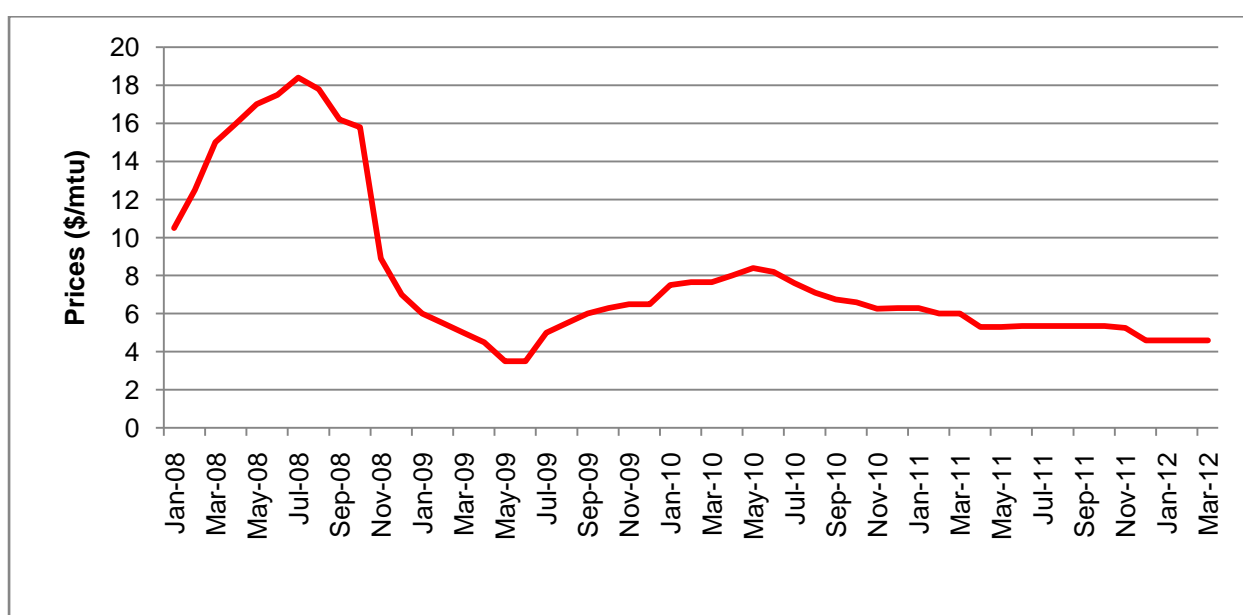
World manganese alloys output rose by 7 percent to 16 Mt in 2011, in line with growth in the steel sector. Silico-manganese (SiMn) production, accounted for 62 percent of total manganese alloys production at 9.8 Mt, followed by high carbon ferromanganese (HCF Mn), which accounted for 28 percent at 4.5 Mt and the remaining 10 percent was refined ferromanganese (MCF Mn) at 1.6 Mt.

Global exports of SiMn amounted to an estimated 2.7 Mt in 2011, with Ukraine accounting for about 24.5 percent of the exports. India at 23.2 percent and South Africa at 11 percent ranked second and third. World exports of HCF Mn increased by 18.2 percent to 1.4 Mt in 2011. South Africa's share of HCF Mn exports rose from 27.8 percent in 2010 to 32 percent in 2011 due to increased production capacity, followed by Norway's 10.1 percent and Australia's 9.4 percent.

WORLD PRICES

Manganese ore prices declined during 2011 (Fig. 55), continuing the trend from the last two quarters of 2010 after reaching a post crisis peak of \$8.40/mtu in May 2010. Annual prices averaged \$5.46/mtu in 2011, down by 25.6 percent compared with \$7.33/mtu in 2010. This could be due to the drop in manganese alloys prices as well as the oversupplied ore market during this period. Prices averaged \$6.10/mtu during the first quarter of 2011 and \$5.32/mtu during the second quarter, down by 4.4 percent and 12.8 percent, respectively, compared with the previous quarters. The market improved slightly during the third quarter of 2011, with prices increasing marginally by 0.6 percent to \$5.35/mtu. However, the recovery did not last as prices dropped 5.3 percent to \$5.07/mtu during the last quarter of the year and by a further 9.2 percent to \$4.60/mtu during the first quarter of 2012, the lowest level since June 2009.

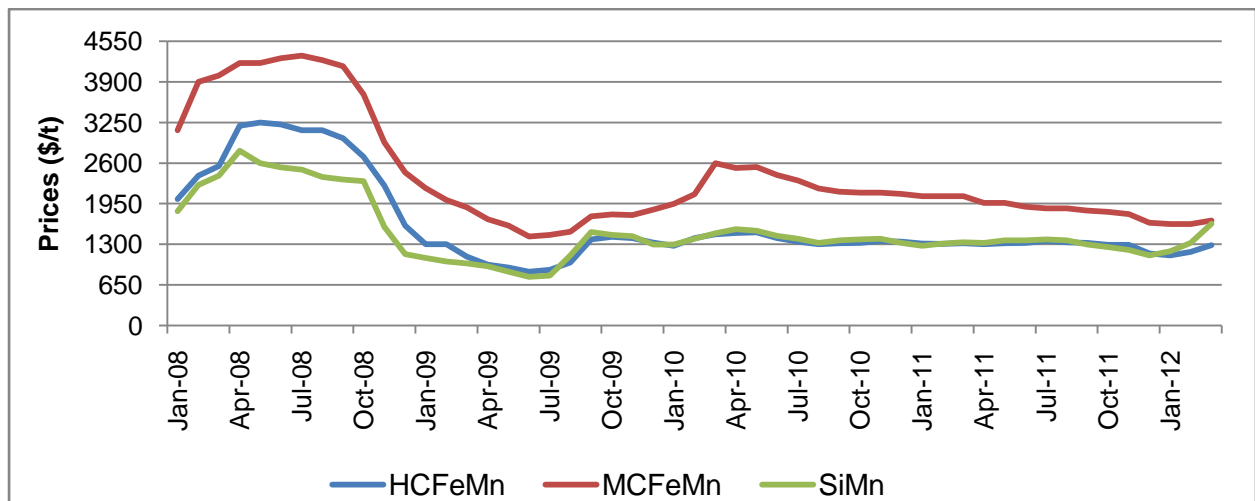
FIGURE 55: MONTHLY MANGANESE ORE PRICES, 2007 – 2011



Source: CRU, 2008-2012

The slowdown in global steel output towards the end of 2011 as well as weaker demand from the Eurozone had a negative effect on the manganese alloys market during 2011. MCFeMn prices went from \$2 070/t in January 2011 to \$1 645/t in December 2011, averaging \$1 907/t for the year, which was a 15.7 percent decline compared with 2010 (Fig. 56). The HCFeMn annual average price declined by 5.3 percent to \$1 300/t in 2011 from \$1 373/t in 2010, while the SiMn annual average price declined by 7.2 percent to \$1 302/t from \$1 402/t in 2010. However, prices showed a modest improvement during the first quarter of 2012, with SiMn prices outperforming the other alloys mainly due to supply cutbacks.

FIGURE 56: MONTHLY AVERAGE PRICES OF MANGANESE ALLOYS, 2008 – 2011



Source: CRU, 2007-2011

SOUTH AFRICA

South Africa's manganese ore production increased by 21 percent to 8 652 kt in 2011 compared to 2010 (Table 72). Local sales volumes declined by 3.9 percent while corresponding revenue increased slightly by 0.4 percent to R1.33 billion due to higher local unit values. Exports sales volumes increased by 13 percent to 6 773 kt, while export sales value decreased by 8 percent to R8.57 billion due to a 19 percent decline in unit values.

TABLE 72: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORTS SALES OF MANGANESE ORE, 2002 – 2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'000	R/t	kt	R'000	R/t
2002	3 322	W	583 603	W	1 539	1 042 952	678
2003	3 501	W	614 393	W	1 956	852 983	436
2004	4 282	W	656 435	W	2 403	1 082 285	450
2005	4 612	W	681 860	W	2 119	1 518 965	717
2006	5 213	W	727 182	W	2 846	1 518 652	534
2007	5 996	W	934 901	W	3 691	2 636 526	697
2008	6 807	W	1 761 848	W	4 689	15 581 560	3 323
2009	4 575	W	583 601	W	3 975	5 003 011	1 258
2010	7 172	W	1 320 564	W	5 986	9 340 026	1 560
2011	8 652	W	1 325 213	W	6 773	8 569 854	1 265

Source: DMR, Directorate Mineral Economics

Note: W = Withheld

South Africa's production of HCFeMn and MCFeMn, which accounted for 67 percent of the total manganese alloys production in 2011, increased by 51 percent to 714 kt in 2011 compared with 2010 (Table 73). Local sales volumes declined by 1 percent to 20 t while revenues generated from local sales declined by 9 percent R169.5 million. Exports sales volumes increased by 14 percent to 556 kt while the corresponding revenues increased by 7 percent to R4.4 billion, despite a 6 percent decline in exports unit values.

TABLE 73: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORT SALES OF HIGH AND MEDIUM-CARBON FERROMANGANESE, 2002-2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R'mil	R/t	kt	R'mil	R/t
2002	619	162	530	3 280	476	1 805	3 795
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

Source: DMR, Directorate Mineral Economics

Production of other manganese alloys increased by 11 percent to 350 kt in 2011 (Table 74). Local sales volumes declined by 23 percent to 34 kt while revenues generated from local sales declined by 24 percent to R313.6 million. Export sales volumes increased by 10 percent to 298 kt while exports sales revenues increased by 1 percent to R3.02 billion, driven by higher sales volumes despite lower unit values.

TABLE 74: SOUTH AFRICA'S PRODUCTION, LOCAL AND EXPORT SALES OF OTHER MANGANESE ALLOYS, 2002-2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	Mass	Mass	Value		Mass	Value	
	kt	kt	R' mil	R/t	kt	R' mil	R/t
2002	316	35	123	3 495	215	1 257	5 840
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

Source: DMR, Directorate Mineral Economics

Employment in the manganese industry increased by 25 percent to 7 356 in 2011 due to new projects (Table 75). Productivity declined by 3.6 percent to 1 176 t per employee per year due to an increase in employment from operations that are still under construction and outside contractors. Each employee generated R1.35 million in 2011, a 26 percent decline compared with 2010.

TABLE 75: SOUTH AFRICA'S MANGANESE MINES EMPLOYMENT AND REMUNERATION, 2007-2011

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2007	3 240	405 313
2008	3 934	666 356
2009	4 988	731 618
2010	5 879	946 139
2011	7 356	1 263 289

Source: DMR, Directorate Mineral Economics

OUTLOOK

According to Management Engineering & Production Services (MEPS), world crude steel output is expected to grow by 3.7 percent to 1 600 Mt in 2012. World Steel Associates (WSA) forecasts that global apparent steel use will increase by 3.6 percent to 1 422 Mt in 2012, a decline from a 5.6 percent growth in 2011 as a result of the continuing slowdown of Chinese steel demand and the Eurozone debt crisis. In 2013, it is forecast that world steel demand will grow by a further 4.5 percent to around 1 486 Mt.

The use of manganese in the production of steel will continue to dominate demand. However demand for manganese for batteries is likely to show some growth, with manganese consumption in this sector expected to rise to approximately 60 kt by 2020. World demand for manganese is expected to increase by around 6 percent per year over the next five years. Although supply is expected to increase in the coming years, power restrictions and industry restructuring will add some upward pressure to prices of ore and alloys. Manganese ore prices are expected to remain stable with occasional spikes. Ferromanganese prices are expected to increase slightly faster than silico-manganese, reflecting faster expansion of the flat steel products market. As a result, manganese prices could be 20-30 percent higher in five years time compared with end of 2011 levels.

South Africa's high grade ore will continue feeding into the major ferroalloys markets, where the domestic ores are typically low grade and unsuitable for production of good quality manganese ferroalloys. The country's planned new mining capacity, with three new mining projects comprising a total output of about 6.3 Mt per year of saleable ore or sinter, could increase South Africa's share of the world's manganese ore production. This provides investment opportunities for increasing manganese alloys production capacity in the country, and increasing South Africa's share of global manganese alloys markets.

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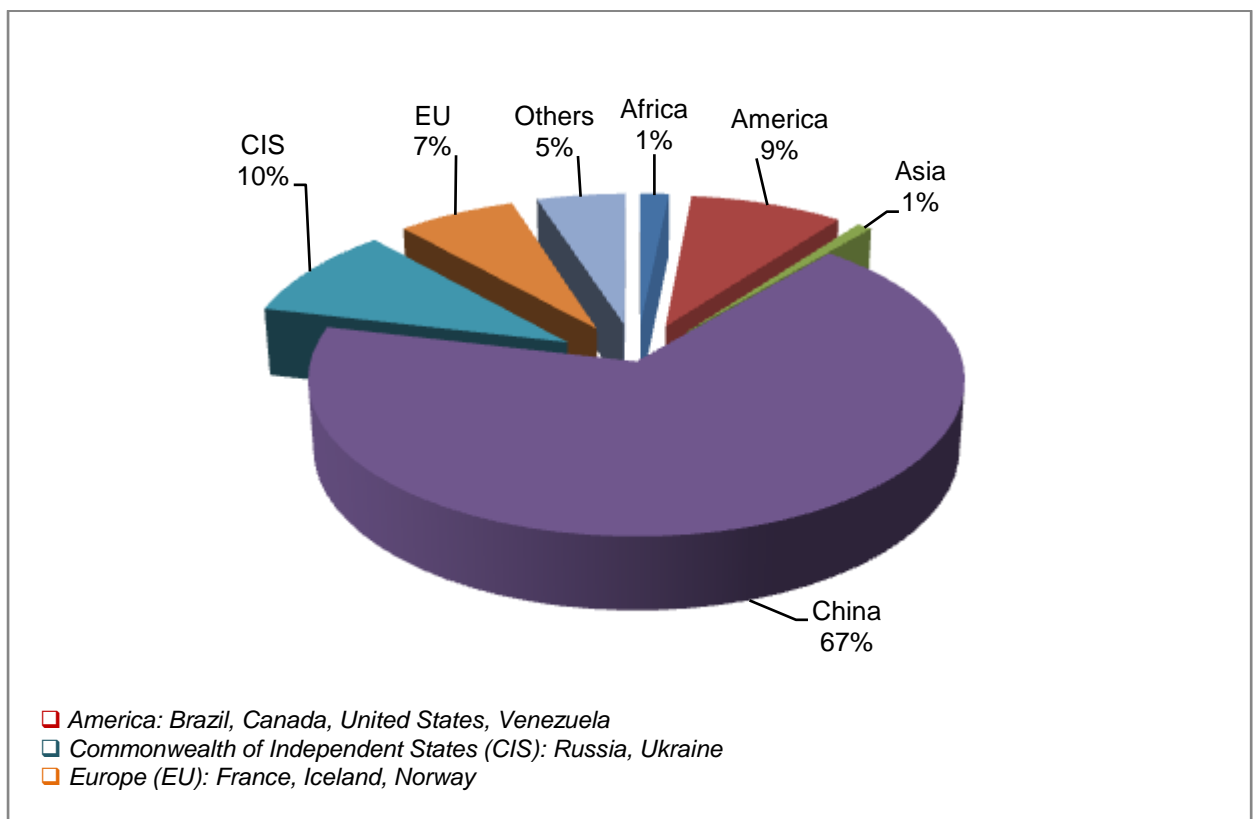
SILICON

Nomsa Mahlangu

WORLD DEMAND

Silicon is the second most abundant element, constituting 27.7 percent of the earth's crust. It occurs naturally as the mineral quartz and is widely used in the iron, steel and non-ferrous metal industries in the form of silicon metal and ferrosilicon. Silicon metal is used for alloying with aluminium (45%) and for the production of chemicals (35%), while the demand for ferrosilicon is driven by the production of cast iron (15%) and steel (85%). China remained the largest producer in 2011, accounting for 67 percent of the world silicon production, followed by Commonwealth of Independent States at 10 percent and America at 9 percent (Fig. 57).

FIGURE 57: REGIONAL CONTRIBUTION OF SILICON PRODUCTION, 2011



Source: USGS Mineral Commodity Summaries, 2012

Silicon metal

The global production of silicon metal increased by approximately 49.9 percent to 2 723 kt in 2011, from 1 816 kt in 2010 (Table 76). China remained the top producer accounting for 60.6 percent in 2011, followed by Brazil at 8.4 percent while South Africa contributed only 2.2 percent of global silicon metal production. World silicon metal exports grew by 1 percent to 1 377 kt in 2011 when compared with 2010.

TABLE 76: WORLD PRODUCTION AND EXPORTS OF SILICON METAL, 2011

COUNTRY	PRODUCTION			EXPORTS		
	Mass (kt)	%	Rank	Mass (kt)	%	RANK
Brazil	228	8.4	2	191	13.9	2
Canada	48	1.8	8	43	3.1	7
China+	1 650	60.6	1	584	42.4	1
CIS	208	7.6	3	189	13.7	3
France	137	5.0	6	-	-	-
Norway	193	7.1	4	180	13.1	4
South Africa*	59	2.2	7	63	4.6	6
USA	145	5.3	5	82	6.0	5
Others	55	2.0		45	3.3	
Total: 2011	2 723	100		1 377	100	
2010	1 816			1 364		

Source: Data estimated (in silicon content) from information supplied by various bureaux

* DMR, Mineral Economics Directorate

+ USGS Mineral Commodity Summaries, 2012 (Production)

Ferrosilicon

World ferrosilicon production was estimated at 7 312 kt in 2011, an increase of 32.6 percent when compared with 2010 (Table 77). China remained the largest producer of ferrosilicon contributing 79.3 percent, with South Africa contributing only 1.7 percent. World ferrosilicon exports increased by 6.7 percent to 2 021 kt in 2011, in line with global crude steel production, which increased by 7 percent to 1 499 Mt in 2011.

TABLE 77: WORLD PRODUCTION AND EXPORTS OF FERROSILICON, 2011

COUNTRY	PRODUCTION			EXPORT		
	Mass (kt)	%	Rank	Mass (kt)	%	Rank
Brazil	157	2.1	5	106	5.2	4
China+	5 800	79.3	1	923	45.7	1
CIS	717	9.8	2	336	16.6	2
France	80	1.1	7	45	2.2	6
Iceland	58	0.8	8	38	1.9	7
Norway	161	2.2	4	189	9.4	3
South Africa*	124	1.7	6	68	3.4	5
USA	173	2.4	3	20	1.0	8
Others	42	0.6		296	14.6	
Total: 2011	7 312	100		2 021	100	
Total: 2010	5 369			1 894		

Source: Data estimated (in silicon content) from information supplied by various bureau

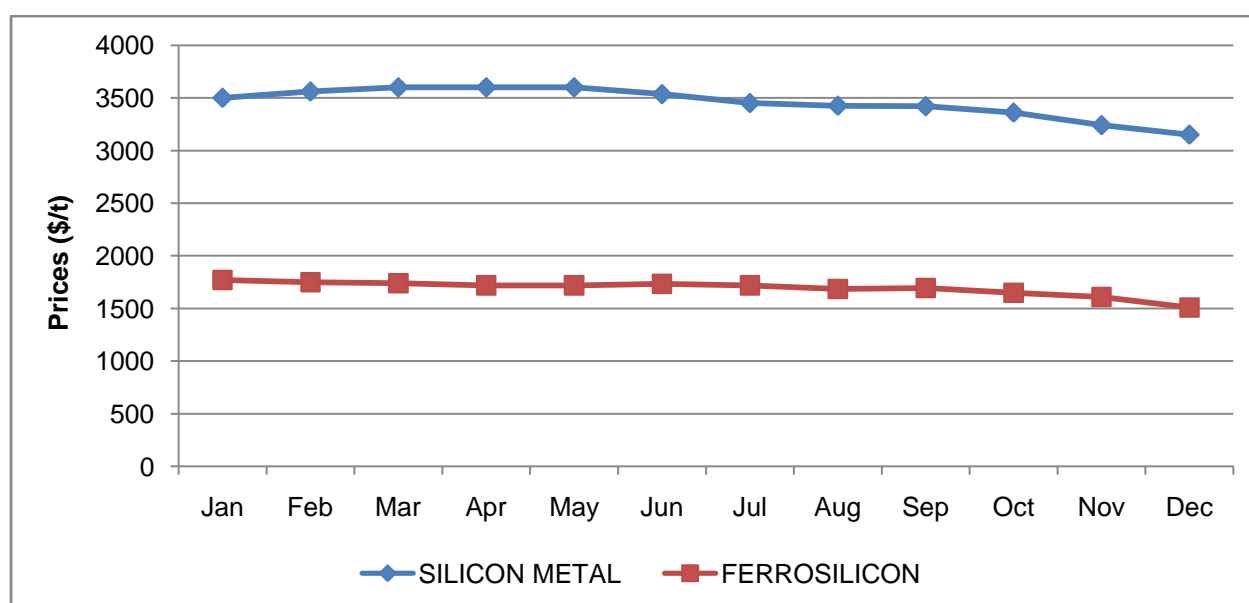
* DMR, Mineral Economics Directorate

USGS Mineral Commodity Summaries, 2012 (Production)

PRICES

Year-on-year, the prices of silicon metal and ferrosilicon rose by 12.8 percent and 5.8 percent, respectively, from 2010 to 2011. However when comparing with the average prices of the first half of 2010 with the first half of 2011, there were significant increases of 26 percent for silicon metal and 16 percent for ferrosilicon. During the second half of 2011 prices of both silicon metal and ferrosilicon stabilized and recorded only modest increases of 2 percent and 3 percent, respectively, when compared to the second half of 2010. In 2011, silicon metal prices opened the year 2011 at \$3 500/t and closed the year at \$3 150/t, a decrease of 10 percent, while ferrosilicon opened the year at \$1 770/t and closed the year at \$1 510/t, a decrease of 15 percent. If the weak demand from China and other parts of the world is not reversed, the prices are likely to drop even further.

FIGURE 58: SILICON METAL AND FERROSILICON SPOT PRICES IN THE US, 2011



Source: CRU

SOUTH AFRICA'S PRODUCTION AND SALES OF SILICON METAL AND FERROSILICON

Silicon metal

South Africa's production of silicon metal increased by 26.8 percent to 58.8 kt in 2011, from 46.4 kt in 2010 (Table 78). Local sales volumes and values both declined by 1.9 percent and 37.2 percent, respectively, while export sales volumes and values increased by 1.2 percent and 27.8 percent, respectively.

TABLE 78: SOUTH AFRICA'S PRODUCTION AND SALES OF SILICON METAL, 2001-2011

YEARS	PRODUCTION	LOCAL SALES		EXPORT SALES	
	Mass kt	Mass kt	Value (R'mil)	Mass kt	Value (R'mil)
2001	39.4	2.2	15.2	39.4	313.6
2002	42.5	4.3	38.6	29.7	320.0
2003	48.5	5.7	49.7	40.8	392.6
2004	50.5	8.8	65.4	45.9	389.4
2005	53.5	5.5	47.9	41.6	450.2
2006	53.3	7.8	72.3	47.4	503.6
2007	50.3	8.9	101.8	46.3	570.8
2008	51.8	3.9	87.4	53.5	1213.1
2009	38.6	6.4	91.6	38.4	640.4
2010	46.4	10.8	106.0	62.4	840.1
2011	58.8	10.6	66.6	63.1	1073.7

Source: DMR, Mineral Economics Directorate

Ferrosilicon

South Africa's production of ferrosilicon declined by 2.6 percent to 124.3 kt in 2011 from 127.5 kt in 2010 (Table 79). Despite a 4.0 percent decrease in local sales volumes in 2011, local sales revenues increased by 4.2 percent compared with 2010 due to higher prices. Export sales volumes and values increased by 11.8 percent and 25.5 percent, respectively, in 2011.

TABLE 79: SOUTH AFRICA'S PRODUCTION AND SALES OF FERROSILICON, 2001-2011

YEAR	PRODUCTION	LOCAL SALES		EXPORT SALES	
	Mass kt	Mass kt	Value (R' mil)	Mass kt	Value (R' mil)
2001	107.6	65.9	245.9	31.4	110.8
2002	141.7	79.5	325.2	73.0	306.9
2003	135.3	79.0	364.7	65.7	280.3
2004	140.6	84.3	436.1	57.8	268.9
2005	127.0	73.4	388.4	41.3	223.2
2006	148.9	79.5	444.3	49.0	301.5
2007	139.6	91.7	616.4	54.7	395.4
2008	134.5	71.2	842.2	44.2	512.0
2009	110.4	61.0	659.9	43.6	460.9
2010	127.5	59.6	664.6	60.5	654.1
2011	124.3	57.2	692.6	67.6	820.8

Source: DMR, Mineral Economics Directorate

Developments in South Africa

In July 2010 INSIAVA (Injection-enhanced Silicon in Avalanche), a South African start-up company established by the University of Pretoria, announced an important milestone in the company's programme to develop CMOS (Complementary Metal Oxide Semiconductor) optical chip-to-chip interconnects. This was to enable INSIAVA's technology to attain data communication in the range of multiple Gb/s (gigabytes per second) in conventional all-silicon technology.

In November 2011 INSIAVA announced that it had reached its milestone of developing the fastest known all-silicon electroluminescent devices (switching at frequencies above 1 Ghz) as well as the fastest all-silicon optical data links (data rates of 10 Mb/s) in the world.

In 2011, Emvelo and German based FG.de created a joint venture company FG Emvelo, a South African independent power developer of concentrated solar plants. FG Emvelo together with its partners is developing a pipeline of CSP and CPV projects at the 1.1 GW Karoshoeck Solar Valley site that will concentrate thermal power plants capable of generating dispatchable solar electricity. These developments are likely to increase the use of silicon within the country and hence drive the country's beneficiation strategy.

OUTLOOK

The silicon market has shown a declining trend in 2011 though the production capacity has increased compared with 2010. The driving force for an increase in production capacity was the expansion of smelters particularly in China which added about 350 000 tons. About 180 000 tons were added via plant expansions in Australia, China, Kazakhstan, Russia and Thailand. The growing demand of silicon from the aluminium, steel and solar power generation industries had contributed to an increase of production capacity. Demand for silicon metal from the aluminium industry has grown steadily due to increased usage of aluminum in structural engineering, aircraft manufacture and the automotive industry. The value of the global aluminium market is anticipated to reach \$112.3 billion in 2012.

World crude steel production increased by 7 percent to 1 499 Mt in 2011, from 1 401 Mt in 2010. Demand for ferrosilicon in steel is expected to grow due to rising steel production with crude steel production forecast to grow by annual average of 5 to 6 percent through to 2015.

South Africa's silicon metal industry is likely to grow in response to the country's growing demand for electricity and its intention to reduce 34% of carbon emissions by 2020. This could involve engaging the country's power utility, Eskom, in projects to develop solar energy.

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VANADIUM

Keneilwe Ratshomo

WORLD DEMAND

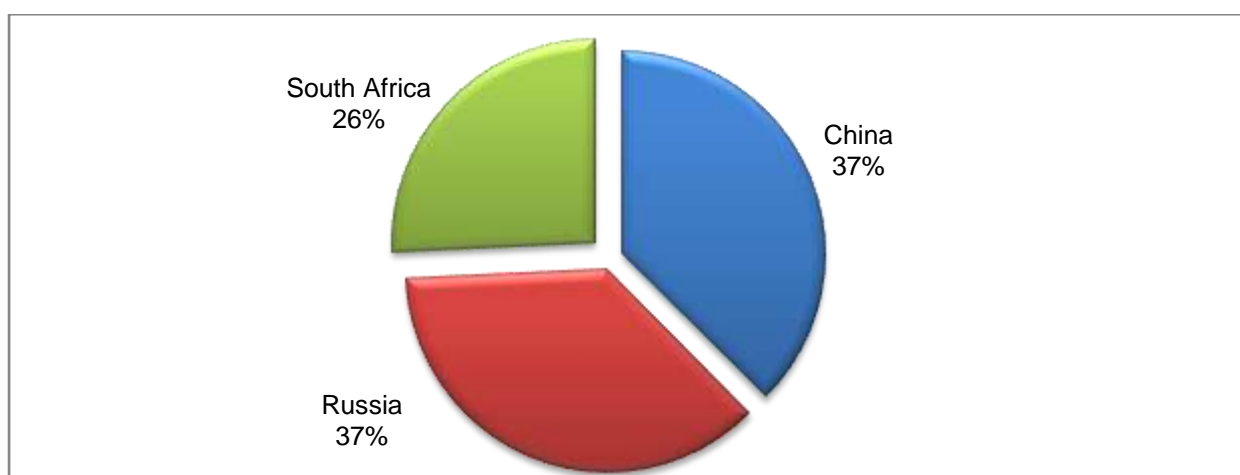
The major application of vanadium is in high strength low alloy (HSLA) steels, but it is also used in tool and some engineering steels. Vanadium is an active grain refiner (i.e. it reduces the grain size of a metal or alloy) and is a strong de-oxidant. Vanadium is usually added to steel in the form of ferrovanadium (FeV). It is also used to increase the strength and temperature stability of titanium, which consumes about 4 percent of global vanadium produced, as well as in lithium-vanadium cells for batteries. The basic vanadium compound, vanadium pentoxide (V_2O_5), is used as a catalyst for the production of sulphuric acid.

The Worldsteel Association (WSA) reported a 6.8 percent increase in world steel production to 1 527 Mt in 2011 compared with 2010. Asia's steel production, which increased by 7.9 percent in 2011, accounted for 64.7 percent of the world's production, led by China which accounted for 45.5 percent of the world's production. As a result, the region was the largest consumer of vanadium.

WORLD SUPPLY

World vanadium resources exceed 63 Mt, however, since vanadium is usually recovered as a by-product or co-product, demonstrated world reserves of the element are not fully indicative of available supplies. World reserves were estimated at 14 Mt in 2011, 2.9 percent higher compared with 2010. China and Russia accounted for the largest vanadium reserves at 37 percent each, followed by South Africa at 26 percent (Fig. 59). The three countries account for almost 100 percent of world's known vanadium reserves. The US has insignificant reserves of less than one percent.

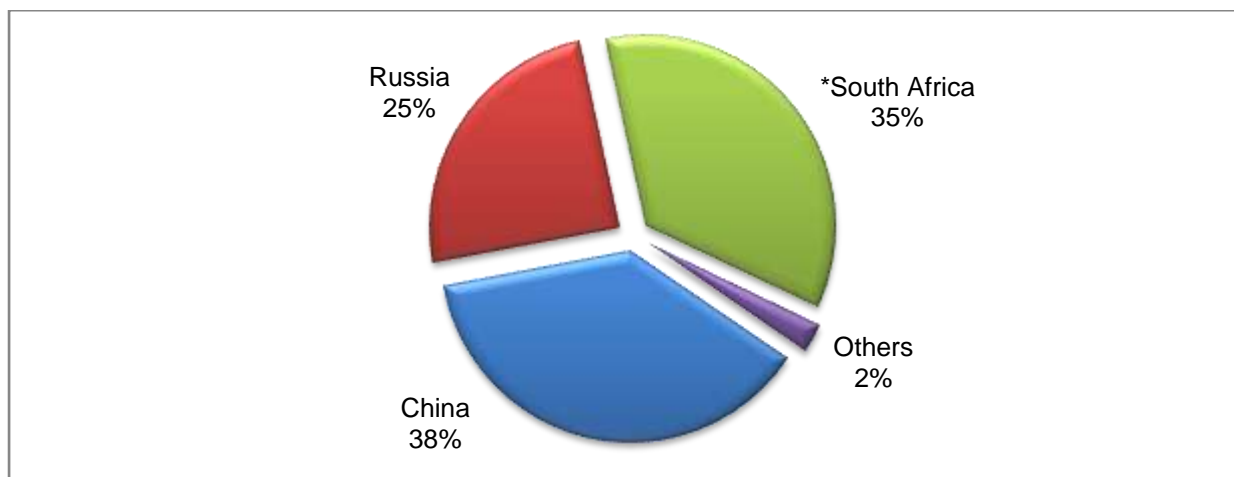
FIGURE 59: WORLD VANADIUM RESERVES, 2011



Source: USGS, *Mineral Commodity Summaries*, January 2012

Global vanadium production increased by 6.2 percent to 61.2 kt in 2011 compared with 57.6 kt in 2010 due to higher demand for high strength steel. China was the biggest producer, accounting for 38 percent of the world's vanadium output while South Africa's 35 percent and Russia's 25 percent ranked second and third (Fig. 60). South Africa's vanadium production declined by 4.2 percent in 2011 while China's increased by 4.5 percent and Russia's remained unchanged compared with 2010.

FIGURE 60: WORLD VANADIUM PRODUCTION, 2011



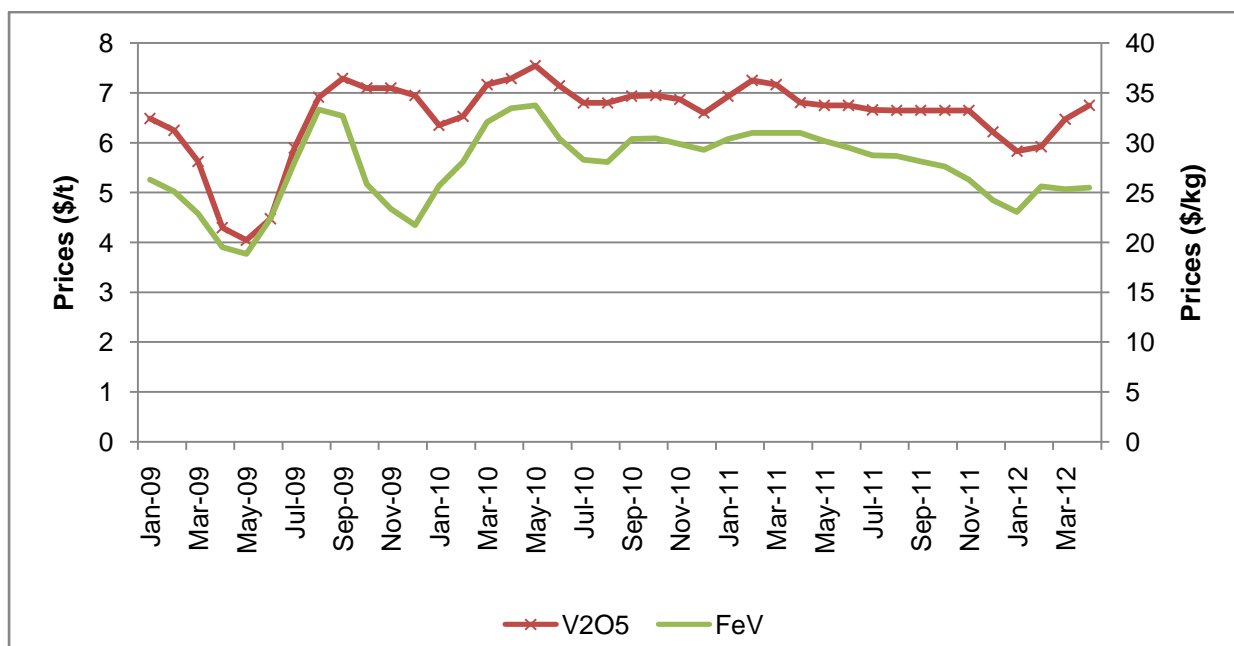
Source: USGS, *Mineral Commodity Summaries*, January 2012

*DMR, *Mineral Economics*

PRICES

Vanadium prices, which stabilized during the second half of 2010, started to decline during the second quarter of 2011 due to weaker demand (Fig. 61). FeV prices averaged \$28.90/kg in 2011, 3.6 percent lower compared with 2010 while V_2O_5 prices declined by 2.2 percent to \$6.76/lb. FeV prices fell to an average of \$24.25/kg in December 2011 from \$30.37/kg in January 2011 while V_2O_5 dropped to \$6.22/lb from \$6.93/lb during the same period. However, prices recovered slightly during the first quarter of 2012, driven by increased demand from steel and alloys producers, which was partly due to the rise of vanadium content in steels produced in developing countries, coupled with supply shortages.

FIGURE 61: MONTHLY FERROVANADIUM AND VANADIUM PENTOXIDE PRICES, 2011



Source: USGS Monthly Mineral Commodity Reports, 2011

SOUTH AFRICA

South Africa's vanadium production declined by 4.2 percent to 21.7 kt in 2011 compared with 2010 (Table 80), due to lower demand, maintenance shutdowns and labour related issues. Local sales volumes declined by 8.5 percent to 1.7 kt due to lower domestic demand, while revenues from local sales declined by 5.6 percent, despite a 2 percent increase in prices in 2011. Export sales volumes increased by 6 percent to 17.9 kt in 2011 while revenues from export sales increased by 4.9 percent to R2.29 billion, despite slightly lower export prices. Over 90 percent of total vanadium products sold were exported in 2011. The biggest consumer of the country's vanadium was Europe, which accounted for 73 percent of the exported volumes in 2011, followed by America at 16.4 percent and Asia at 9.3 percent.

TABLE 80: SOUTH AFRICA'S PRODUCTION AND SALES OF VANADIUM, 2002-2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
		Mass	Value (FOB)		Mass	Value (FOB)	
	kt	kt	R' mil	R/kg	kt	R' mil	R/kg
2002	25.2	0.4	36	91	20.0	1 145	57
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

Source: DMR, Mineral Economics

Notes: Mass data is given in units of vanadium contained. Consumption of vanadium slag and fused pentoxide or trioxide in the production of other downstream saleable products is eliminated from both production and sales figures to avoid double and triple counting. These figures, therefore apply to production and sales of the final product which is sold after processing yield losses. The production and export data include all exported slag and fused pentoxide, which may have a yield loss of vanadium during subsequent processing. In world supply terms, these outputs might regularly be counted more than once as production, overstating the figures.

EMPLOYMENT

Average annual employment in South Africa's vanadium industry increased by 3.9 percent to 1 436 in 2011 (Table 81), while remuneration grew by 13.4 percent to R520 million. Productivity dropped by 7.8 percent to 15 t per employee per year in 2011 compared with 16.4 t in 2010 due to lower demand, maintenance shutdowns and labour related issues coupled with increased employment, while each employee generated R1.78 million in 2011, a 0.3 percent decrease compared with 2010.

TABLE 81: EMPLOYMENT IN SOUTH AFRICA'S VANADIUM INDUSTRY, 2007 – 2011

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R' 000
2007	1 151	244 614
2008	1 253	291 857
2009	1 313	376 688
2010	1 382	458 577
2011	1 436	520 250

Source: DMR, Mineral Economics

OUTLOOK

The world steel market weakened during the fourth quarter of 2011. However, world steel demand for the year grew by 5.6 percent, due to the strong performance of the market during the first half of the year. This was despite widespread challenges facing the industry, including the ongoing Eurozone sovereign debt crisis, earthquakes in Japan, the political unrest in the Middle East resulting in a surge in oil prices, and the tightening of government monetary measures in many emerging economies.

The Eurozone debt crisis had the greatest negative impact on the global steel market. However, signs of stability are emerging and recovery is expected to resume in the second half of 2012, leading to a higher growth forecast for 2013. The WSA forecasts that global apparent steel use will increase by 3.6 percent to 1 422 Mt in 2012, while world steel demand is expected to grow by a further 4.5 percent to around 1 486 Mt in 2013.

Over the period 2012-13, vanadium supply is forecast to increase by 11 percent, while demand is expected to grow by a minimum of 11 percent. Vanadium demand is also expected to grow at an annual growth rate of 7.8 percent through to 2015, due to anticipated increasing demand for stronger and lighter steel alloys.

Vanadium is mainly supplied by co-product, slag-based and primary vanadium producers. However, when the global demand exceeds supplies significantly it forces suppliers to look for vanadium from relatively high-cost secondary sources. The cost of production from these sources defines the minimum sustainable vanadium market price. The figure is currently estimated at about \$29/kg for FeV. Although the prices are currently below this level, prices are forecast to reach \$45/kg in 2014. At these price levels, the South African vanadium industry has the opportunity to expand its production capacity of added value products (mainly ferrovanadium and vanadium chemicals) consistent with South Africa's Beneficiation Strategy.

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INDUSTRIAL MINERALS OVERVIEW

Refiloe Motsie

INTRODUCTION

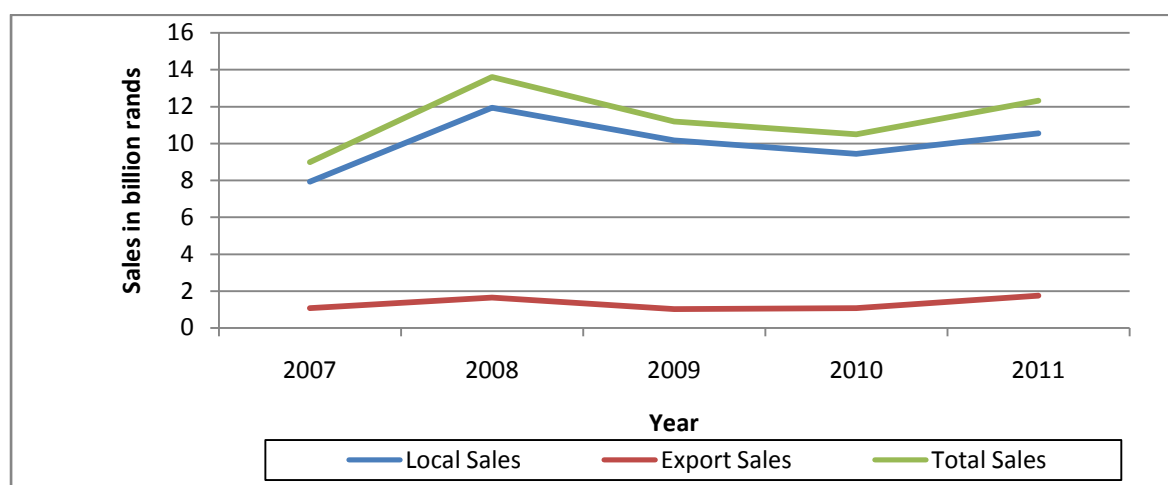
Industrial minerals are generally high volume, low value commodities compared with other economic minerals. Most deposits appear near surface and are usually exploited through opencast mining methods rather than underground mining, presenting an opportunity for small-scale mining development. Because 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

From 2007 to 2011, total sales of primary industrial minerals have grown at a compound annual rate of 3.7 percent (Fig 62). In 2011, industrial minerals contributed 3.3 percent to total revenue generated from South Africa's primary mineral sales, of which R10.6 billion was from local sales and R1.8 billion came from exports (Table 83). Sales trends improved in most sectors in 2011, particularly in the refractories and construction sectors, in spite of the slowdown in demand for minerals in most parts of Europe because of the debt crisis in Greece and other countries.

FIGURE 62: INDUSTRIAL MINERAL SALES, 2007 – 2011



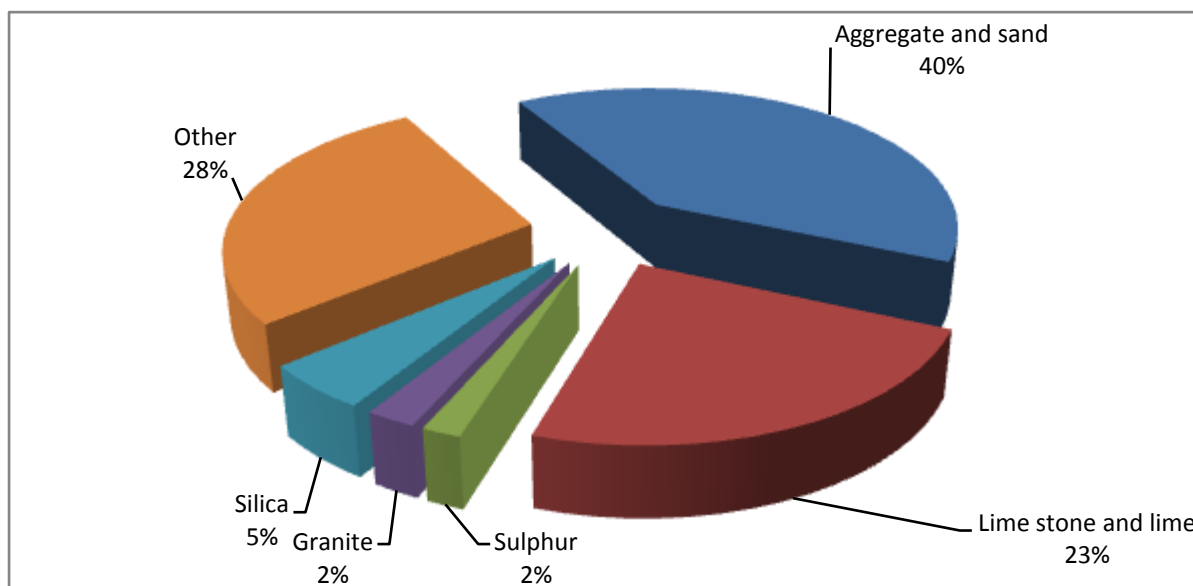
Source: DMR, Directorate Mineral Economics

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 63). Local sales value of industrial minerals increased by 12 percent from R9.4 billion in 2010 to R10.6 billion in 2011 (Table 82 and Table 83), As a result of improvement in activity in the construction industry and rise in demand from the agricultural sector.

Growth in real gross fixed capital expenditure by Government was strong in the fourth quarter of 2011, supported by provincial and local government capital spending in the areas of housing, construction works and water projects, including the construction of waste and water treatment facilities. The real value added by the construction sector expanded at an annualised rate of 1.9 percent in the same period, driven by a rise in demand for residential and non-residential buildings. Furthermore, Transnet's new multi-products pipeline and upgrading of the road network by South African National Roads Agency Limited (SANRAL) gave rise to increased spending on construction works, while the Airports Company of South Africa (ACSA) continued with the improvement of facilities, including the runways and taxiways at the East London Airport. Increased construction activity also reflected a continuation of work undertaken by various public corporations, such as the resumption of construction activity at the Medupi and Kusile power stations after earlier labour disputes that had adversely affected operations.

FIGURE 63: LOCAL SALES VALUE OF INDUSTRIAL MINERALS, 2011

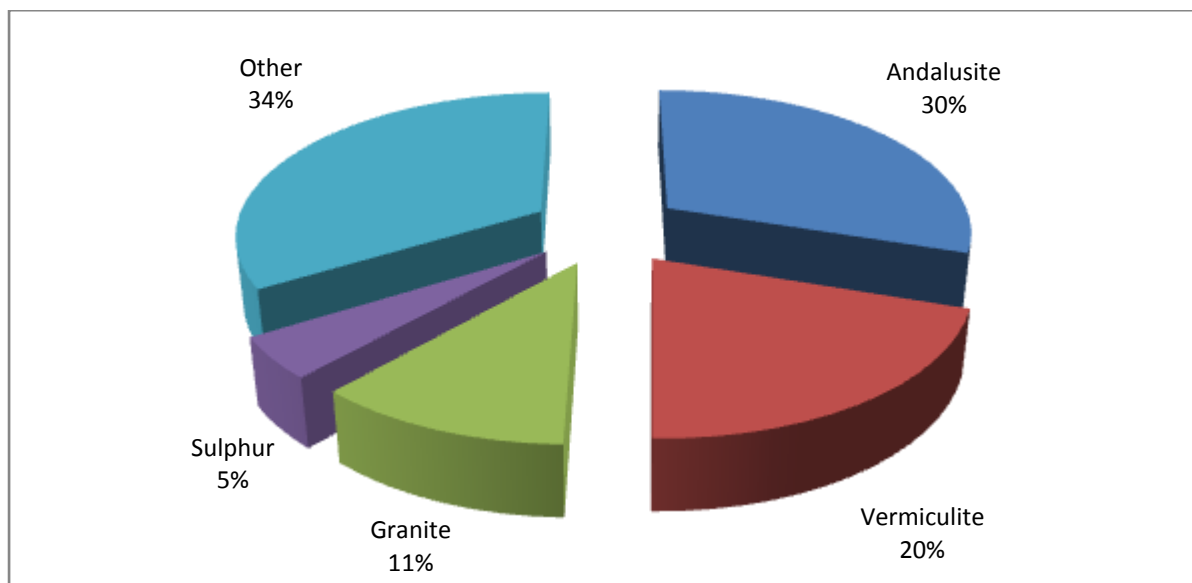


Source: DMR, Directorate Mineral Economics

EXPORT SALES

Export sales value of industrial minerals increased by 64 percent from R1.1 billion in 2010 to R1.8 billion in 2011, mainly owing to a rise in demand for andalusite from Belgium and vermiculite from Great Britain. The biggest contributors to export sales of industrial minerals were andalusite (30 percent), vermiculite (20 percent), granite (11 percent) (Fig 64). The bulk of South Africa's primary industrial mineral exports, were destined for Europe, accounting for 63 percent of exports followed by Pacific Rim countries with 26 percent.

FIGURE 64: EXPORT SALES OF INDUSTRIAL MINERALS, 2011

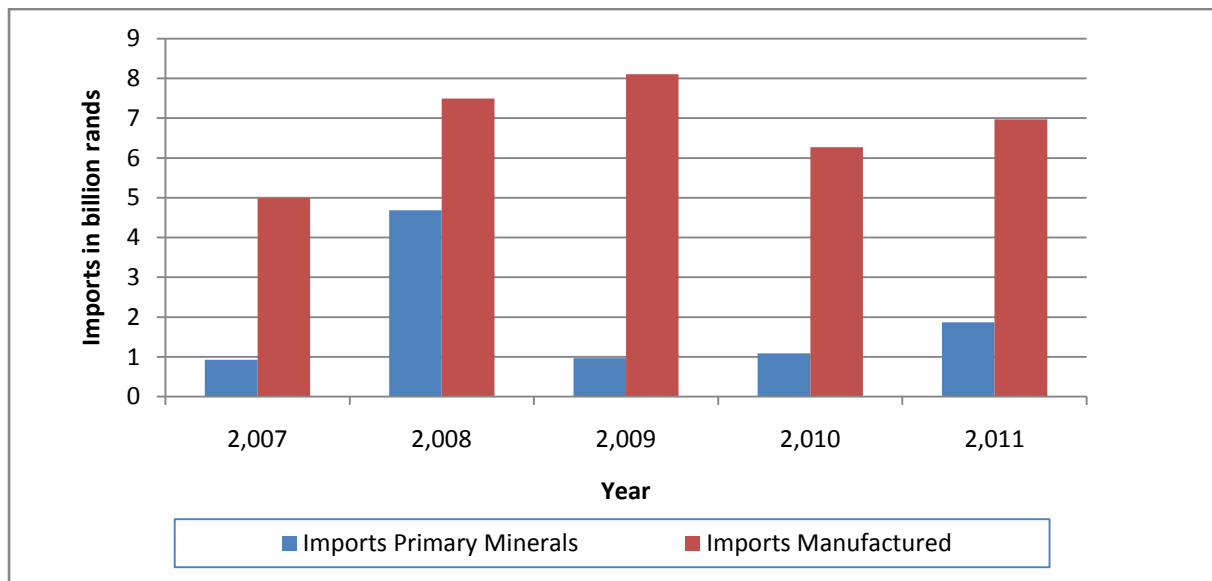


Source: DMR, Directorate Mineral Economics

IMPORTS

In 2011, spending on imports of primary industrial minerals increased by 71 percent to R1.8 billion compared with 2010, driven by an increase in demand for sulphur in agricultural applications (Table 84 & Fig 65). Imports of manufactured industrial commodities improved by 10 percent to R7.7 billion in the same period (Table 85).

FIGURE 65: IMPORTS OF PRIMARY AND MANUFACTURED INDUSTRIAL MINERALS, 2007 – 2011

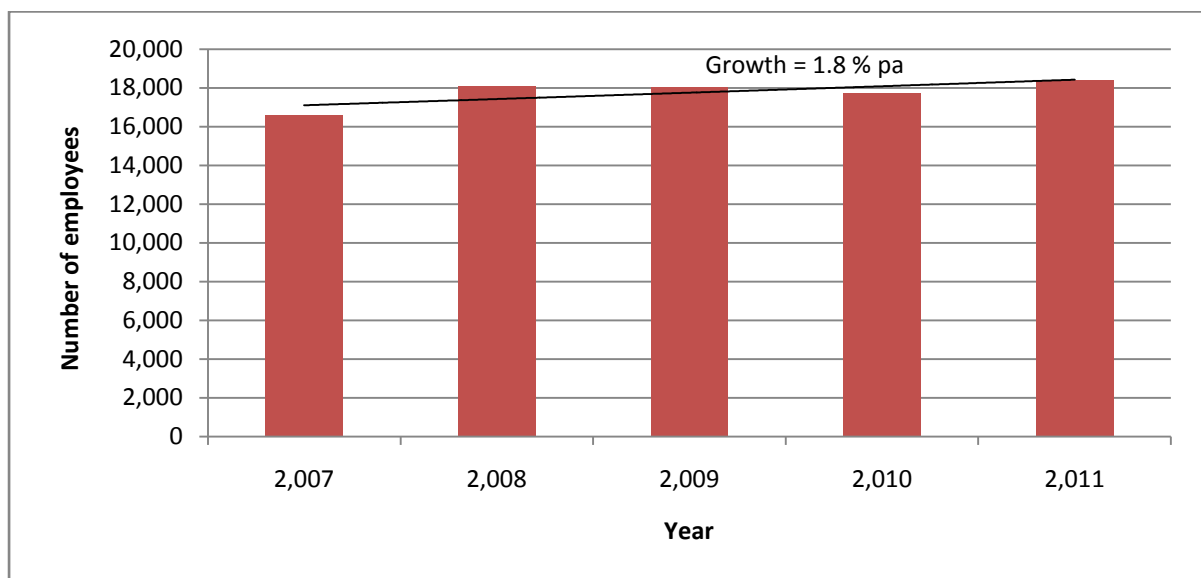


Source: RSA, Commissioner for South African Revenue Service, 2006 – 2010

EMPLOYMENT

Employment in the industrial minerals sector grew at a compound annual rate of 1.8 percent between 2007 and 2011 (Fig 66). The industrial minerals sector accounted for 3.6 percent of the total mining workforce. Average earnings per employee increased by 34 percent to R144 799/employee in 2011 compared with 2010.

FIGURE 66: EMPLOYMENT IN THE INDUSTRIAL MINERALS SECTOR, 2007 – 2011



Source: DMR, Directorate Mineral Economics

OUTLOOK

The current subdued global economic conditions affected by the financial debt crisis in the Eurozone had a direct negative impact on demand for South Africa's mineral commodities due to South Africa's close financial and trading ties with Europe. However, the future prospects for South Africa's construction sector looks positive in the medium term as Government becomes more aware of the dire need for key critical infrastructure development, supported by greater attention on effective planning, which is the focus of the National Planning Commission. Although the residential sector remains under pressure, there has been an improvement in demand for housing, albeit at a slow pace, specifically for smaller more affordable units.

According to *Industry Insight*, investment in residential building is expected to grow at an annual rate of 3.8 percent while investment in non-residential buildings is expected to grow at an annual rate of 4.1 percent between 2012 and 2016. Growth forecasts for both the residential and non-residential sectors have been revised downward due to uncertain global and domestic market conditions, tight budgets in the private sector, higher administrative expenses and overall higher costs being relayed onto the consumer. However, ongoing capital expenditure on civil construction undertaken by State Owned Enterprises (SOEs) and projected expenditure by Government on social infrastructure will counter the subdued conditions in the residential and non-residential building subsectors. The domestic construction market is expected to grow at 3.8 percent annually over the next few years taking the industry value to R196.8 billion (US\$22.7 billion) by 2016.

Use of industrial minerals in the agricultural sector is expected to rise in the short to medium term on the back of a continuous increase in demand for fertiliser products both globally and domestically. South Africa imports over half of its nutritional fertiliser needs. Therefore, opportunities exist in this field for investors to carry out expansion projects and development of new plants that will satisfy local fertiliser demand and reduce the needs for imports.

Vermiculite prices, particularly for coarse grades are expected to fall in the short term as a result of additional supplies from Uganda and China. Furthermore, South Africa's Palabora Mining Company (PMC) has announced significant expansion plans, which could push prices down even further as soon as additional output comes on stream.

Mining will continue to be a cornerstone of the economy for many years to come, contributing significantly to economic activity, job creation and foreign exchange earnings. Industrial minerals will continue to support this growth as their applications contribute to almost every sector of the economy. 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.

TABLE 82: SOUTH AFRICA'S PRIMARY INDUSTRIAL MINERAL PRODUCTION AND SALES 2010

COMMODITY	PRODUCTION	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
	Mass (t)	Mass (t)	Value (R)	Mass (t)	Value (R)	Mass (t)	Value (R)
General							
Andalusite	189 185	91 663	167 666 856	133 798	321 933 121	225 460	489 599 977
Asbestos	*	*	*	*	*	*	*
Barytes	*	319	133 980	*	*	319	133 980
Calcite	*	*	*	*	*	*	*
Feldspar	94 307	69 921	56 204 410	*	*	69 921	56 204 410
Fluorspar	**	**	**	**	**	**	**
Gypsum	513 310	292 149	32 228 284	*	*	292 149	32 228 284
Kieselguhr	*	*	*	*	*	*	*
Limestone & lime	22 479 956	19 225 592	2 271 133 023	10 124	13 325 062	19 235 716	2 284 458 085
Magnesite	**	**	**	**	**	**	**
Mica	904	794	2 077 140	126	744 786	920	2 821 926
Perlite	**	**	**	*	*	**	**
Pigments minerals	244	66	22 440	*	*	66	22 440
Phosphate rock	2 493 904	1 880 058	**	25 020	**	1 905 078	**
Pyrophyllite	**	**	47 761 762	**	16 662 321	**	64 424 083
Salt	394 493	423 156	126 305 196	*	*	423 156	126 305 196
Silica	2 863 441	3 026 801	470 618 138	1 042	1 632 226	3 027 842	472 250 364
Sulphur	375 422	255 982	168 911 649	95 571	48 794 652	351 553	217 706 301
Talc	3 150	5 370	5 572 676	*	*	5 370	5 572 676
Vermiculite	199 285	10 413	12 926 929	166 465	216 305 068	176 878	229 231 997
Dimension and building stone							
Granite		280 733	219 561 487	65 429	120 406 539	346 161	339 968 026
Sandstone		7 776	4 530 250	*	*	7 776	4 530 250
Slate		47 805	12 906 914	*	*	47 805	12 906 914
Clays							
Attapulgit	57 606	57 285	17 585 669	*	*	57 285	17 585 669
Bentonite	82 341	124 584	82 044 072	1 290	1 667 366	125 874	83 711 438
Plastic clays	551 612	146 535	17 187 122	*	*	146 535	17 187 122
Flint clay	39 690	39 118	29 730 499	492	909 878	39 610	30 640 377
Kaolin	29 929	28 233	9 960 493	*	*	28 233	9 960 493
Aggregate & sand		52 624 697	3 864 613 171	*	*	52 624 697	3 864 613 171
Miscellaneous			1 813 387 635				2 139 898 842
TOTALS			9 433 069 795		1 068 892 226		10 501 962 021

Source: DMR, Directorate Mineral Economics

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

Nil

**Classified, included under Miscellaneous

TABLE 83: SOUTH AFRICA'S PRIMARY INDUSTRIAL MINERAL PRODUCTION AND SALES 2011

COMMODITY	PRODUCTION	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
	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	*	189	79 380	*	*	189	79 380
Calcite	*	*	*	*	*	*	*
Feldspar	101 559	98 875	61 031 019	*	*	98 875	61 031 019
Fluorspar	195 502	18 846 322	**	175 365	**	194 211	**
Gypsum	476 118	553	36 831 361	*	*	322 553	36 831 361
Kieselguhr	*	*	*	*	*	*	*
Limestone & lime	21 629 706	18 518 892	2 591 077 562	11 153	14 337 430	18 530 045	2 605 414 992
Magnesite	**	**	**	*	*	**	**
Mica	633	431	1 161 112	174	1 001 191	605	2 162 303
Perlite	**	**	**	*	*	**	**
Pigments minerals	244	66	22 440	*	*	66	22 440
Phosphate rock	2 564 820	2 154 755	**	*	**	2 349 542	**
Pyrophyllite	**	**	45 266 871	**	15 837 040	**	61 103 911
Salt	381 177	441 233 3 052	140 438 554	*	*	441 233	140 438 554
Silica	2 722 491	618	489 727 370	3 882	5 154 232	3 056 500	494 881 602
Sulphur	337 972	217 147	116 738 765	120 291	199 435 740	337 438	316 174 505
Talc	4 453	5 489	6 050 201	*	*	5 489	6 050 201
Vermiculite	170 571	9 623	16 578 549	166 424	328 921 154	172 047	345 499 703
Dimension and building stone							
Granite		227 154	233 338 630	111 231	150 212 064	338 385	383 550 694
Sandstone		1 218	2 135 357	*	*	1 218	2 135 357
Slate		53 643	13 252 491	*	*	53 643	13 252 491
Clays							
Attapulgit	14 448	14 449 177	6 572 386	*	*	14 449	6 572 386
Bentonite	120 417	012	118 344 790	165	255 924	177 177	118 600 714
Plastic clays	785 641	779 999	24 066 685	*	*	779 999	24 066 685
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
Aggregate & sand		52 285 603	4 066 141 840	*	*	52 285 603	4 066 141 840
Miscellaneous			2 311 484 628		715 311 287		3 026 795 915
TOTALS			10 555 422 517		1 754 708 184		12 310 130 701

Source: DMR, Directorate Mineral Economics

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

*Nil

** Classified, included under Miscellaneous

TABLE 84: SOUTH AFRICA'S IMPORTS OF SELECTED PRIMARY INDUSTRIAL MINERAL COMMODITIES, 2009-2011

COMMODITY	2009		2010		2011	
	Mass (t)	Value (R)	Mass (t)	Value (R)	Mass (t)	Value (R)
Salt (25.01)	2 811	20 947 823	3 882	21 557 566	5 363	12 830 375
Iron pyrites (25.02)	245	588 783	415	700 293	341	940 227
Sulphur (25.03)	525 469	354 611 195	592 828	377 801 360	714 629	1 073 705 268
Graphite Natural (25.04)	921	8 657 476	1 108	12 891 254	1 053	18 178 053
Sands (25.05)	6 027	11 410 732	6 894	12 016 399	5 171	9 607 781
Quartz (25.06)	57	599 741	227	2 388 420	408	1 877 186
Kaolin (25.07)	11 049	31 468 649	18 077	36 232 857	13 013	30 533 235
Bentonite (25.08.10)	17 447	44 928 483	22 822	50 358 356	28 255	45 196 964
Fire clay (25.08.30)	28	906 021	31	1 100 398	178	961 624
Other clays (25.08.40)	2 121	9 941 765	4 189	15 810 325	4 348	13 476 855
Alumino silicates (25.08.50)	147	406 390	166	323 825	164	323 974
Mulite (25.08.60)	25	287 459	151	1 023 375	50	412 825
Chamotte (25.08.70)	173	1 233 056	138	1 014 102	77	504 361
Chalk (25.09)	1 825	3 674 704	652	1 549 958	353	870 211
Phosphates (25.10)	49 277	85 422 787	124 474	120 735 436	93 191	116 297 833
Barytes & Witherite (25.11)	2 998	15 351 992	4 142	17 462 123	3 170	11 921 315
Kieselguhr (25.12)	3 930	16 075 153	4 580	17 495 811	5 261	19 572 143
Natural Abresives (25.13)	1 208	7 419 355	1 920	6 837 448	2 095	6 392 899
Slate (25.14)	2 056	5 860 897	2 945	6 117 287	2 401	6 206 264
Marble (25.15)	647	4 382 782	355	1 588 829	80	469 448
Granite (25.16)	7 970	9 953 527	8 663	12 867 732	4 930	9 405 849
Pebbels (25.17)	1 087	2 902 235	2 207	3 045 744	2 138	2 693 491
Dolomite (25.18)	1 127	1 747 777	1 532	2 833 395	1 106	2 625 248
Magnesite & Magnesite (25.19)	44 368	150 024 963	77 999	215 982 203	106 670	339 631 034
Gypsum & Plasters (25.20)	7 218	16 579 261	30 893	18 787 472	9 150	15 742 308
Limestone (25.21)	74 359	385 195	409	702 434	1 015 808	609 645
Slaked,quick, hydraulic lime (25.22)	48 849 905	75 125 955	34 143	47 768 748	30 787 004	42 883 920
Asbestos (25.24)	0	0	0	0	0	0
Mica (25.25)	358	933 778	483	1 151 947	507	1 353 541
Steatite (25.26)	10 254	23 850 792	9 818	26 908 026	7 126	28 015 008
Borates Natural (25.28)	888	4 565 732	759	2 524 403	1 517	4 889 887
Feldspathoids (25.29)	6 680	14 880 753	5 706	13 254 819	4 332	9 389 122
Other Minerals (25.30)	48 890	43 136 770	56 879	38 341 840	47 848	38 633 395
TOTAL		969 214 826		1 089 970 447		1 866 151 289

Source: RSA, Commissioner for South African Revenue Service, 2009 - 2011

TABLE 85: SOUTH AFRICA'S IMPORTS OF MANUFACTURED INDUSTRIAL MINERALS COMMODITIES, 2009-2011

Commodity	2009 Value (FOB) R	2010 Value (FOB) R	2011 Value (FOB) R
Articles of stone, plaster, cement, asbestos, mica or similar materials	1 009 658 338	1 130 254 588	1 160 052 109
Building stone (68.02)	302 991 368	284 596 178	272 751 878
Worked slate & articles of slate (68.03)	26 003 210	24 914 545	17 081 007
Millstones and grindstones (68.04)	99 337 903	99 466 862	123 129 954
Natural abrasive powders (68.05)	179 180 989	195 997 424	190 832 414
Slag wool, rock wool & similar mineral wools (68.06)	257 273 614	332 151 056	390 513 421
Articles of asbestos-cement (68.11)	31 406 156	33 461 484	35 215 937
Fabricated asbestos fibres (68.12)	4 330 868	41 248 079	6 856 316
Friction material (68.13)	91 113 244	100 965 464	108 652 598
Worked mica & articles thereof (68.14)	18 020 986	17 453 496	15 018 584
Refractories	940 536 488	1 003 933 033	1 092 062 112
Of siliceous fossil meals (69.01)	3 166 451	5 575 510	2 787 686
Other bricks (69.02)	815 881 695	851 513 107	943 968 648
Other refractory ceramic goods (69.03)	121 488 342	146 844 416	145 305 778
Ceramic products	2 615 128 759	3 039 879 634	3 429 467 451
Ceramic building bricks (69.04)	738 325	417 378	338 705
Roofing tiles (69.05)	5 991 174	6 389 272	8 612 039
Ceramic pipes (69.06)	702 276	2 097 397	3 264 033
Unglazed ceramic (69.07)	129 924 074	107 759 876	130 960 409
Glazed ceramic (69.08)	549 498 926	692 581 300	774 677 170
Ceramic wares for laboratory (69.09)	1 477 519 764	1 699 927 499	1 956 428 462
Ceramic sinks (69.10)	103 085 549	111 549 981	112 522 005
Tableware (69.11)	167 771 123	187 421 119	193 404 476
Ceramic tableware (69.12)	135 406 928	168 267 899	187 068 177
Ceramic articles (69.13)	27 819 291	46 444 531	49 903 695
Other ceramic articles (69.14)	16 671 329	17 023 382	12 288 280
Glass and glassware (70.00)	1 708 053 194	1 797 039 345	2 002 294 168
TOTAL	6 273 376 779	6 971 106 600	7 683 875 840

Source: RSA, Commissioner for South African Revenue Service, 2009 - 2011

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

AGGREGATE AND SAND

Refiloe Motsie and Marvin Simango

SUPPLY

South Africa's local sales volume of sand and aggregate decreased slightly by 0.65 percent to 52.3 Mt in 2011 compared with the previous year, due to reduced activity within the construction industry (Table 86). The slowdown within the construction industry was attributed to low activity in the housing market. Housing and other associated infrastructure make up about 50 percent of the local building and construction market. Local sales values increased by 5.2 percent to R4.1 billion, owing to favourable market prices.

TABLE 86: SOUTH AFRICAN SALES OF SAND AND AGGREGATE BY MASS, 2002 – 2011

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
2002	22 106	880 469	39.1	6 810	78 249	11.5	28 916	958 718	33.2
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	38 169	3 560 469	93.3	14 116	505 672	36.0	52 285	4 066 142	77.8

Source: DMR, Directorate Mineral Economics

Notes: ⁺Includes crusher sand

^xNatural sand

DEMAND

South Africa's sand and aggregate sector is driven by demand from the construction industry. The construction industry comprises residential building, non residential building and civil construction. The increase in the number of companies within the aggregate and sand sector has resulted in fierce competition within the industry resulting in lower contract prices. Demand for aggregate and sand was weak due to the fall in demand for residential and non-residential buildings but this was offset by growth in

civil construction, which was driven by public sector investment. The construction sector experienced growth of 0.8 percent in 2011 compared to the 0.9 percent year-on-year increase in 2010.

CONSTRUCTION

The construction boom that preceded the current subdued conditions saw many new construction companies entering the market, which has resulted in a situation of overcapacity in the current environment of reduced demand for construction services. Further, with fewer major contracts in the offing, competition in the construction sector has intensified. Aggressive pricing, in an effort to secure contracts, has resulted in pressure on company margins, with several of the major participants in the market reporting loss of market share.

According to the South African Reserve Bank, approximately R176 billion was spent on construction works during 2011, up R10 billion compared to R166 billion spent in 2010. However, real value of recorded building plans passed by larger municipalities fell by 2.1 percent year-on-year in 2011, while the real value of buildings reported as completed (at constant 2005 prices) decreased by 5.6 percent (-R1.7323 billion).

According to *Industry Insights* public sector expenditure for residential contracts awarded amounted to R1.5 billion (Mar 12-Moving Annual Total) falling by 32.5 percent year-on-year from R2.3 billion (Mar 11-Moving Annual Total). However, activity in social housing has showed signs of improvement recording an annual increase of 15 percent year-on-year in 2011. The number of low cost housing projects awarded, including hostels, grew to 94 projects from 82 from the previous year. ABSA reported that affordability in the residential market improved slightly as a result of low interest rates.

Non-residential investment recorded an annual decrease of 2 percent to R1.48 billion in 2011. Awarded contract values in the public sector for the non-residential sector amounted to R1.5 billion in 2011 improving from R784 million in 2010. The public sector recorded a 63 percent increase in contracts awarded from R8.54 billion in 2010 to R13.6 billion in 2011.

According to *Industry Insight* total investment in civil construction has increased by 5.8 percent in 2011. Spending on civil construction (excluding spending on machinery and equipment) is estimated to have increased by 6 percent year-on-year, compared to a 39% decrease in 2010.

EMPLOYMENT

The sand and aggregate sector employed 7 086 employees in 2011, an increase of 1.3 percent compared with 2010 (Table 87). Labour productivity decreased by 1.6 percent to 7.4 kt/employee, while revenue generated per employee increased by 3.6 percent to R573 827/employee.

TABLE 87: SOUTH AFRICA'S AGGREGATE AND SAND QUARRIES EMPLOYMENT AND REMUNERATION, 2005 – 2011

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2005	5 210	312 073
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	7 086	737 739

Source: DMR, Directorate Mineral Economics

OUTLOOK

South Africa's construction industry is expected to grow steadily, with real year-on-year (y-o-y) growth forecast at 2.7 percent for 2012. The medium term growth is expected to average 3.8 percent until 2016 taking the construction industry value to R181.6 billion. Furthermore, the South African government's strong policy focus on infrastructure is set to stimulate growth within the aggregate and sand industry with R800 billion committed over the next three to five years for massive infrastructure development projects. With government focusing investment on the manufacturing sector in order to boost economic activity, this will also create possible higher demand for aggregates and sands. Based on key economic variables, investment in residential building is expected to grow by an annual rate of 3.8 percent, while the non-residential investment is expected to average 4.1 percent between 2012 and 2016.

South Africa plans to invest R100-billion on the Renewable Energy Independent Power Producer Programme (REIPPP), which is aimed at diversifying its power supply. Through the REIPPP, the government aims to procure 3 725 MW of capacity, which could be introduced into South Africa's power generation mix between 2014 and 2016. Power utility Eskom is awaiting the approval of its licence application to roll out its 100 MW Sere wind farm project plans near Vredendal in the Western Cape, worth 3 billion. These developments are set to sustain the aggregate and sand industry through the construction of these plants and will create job opportunities in South Africa.

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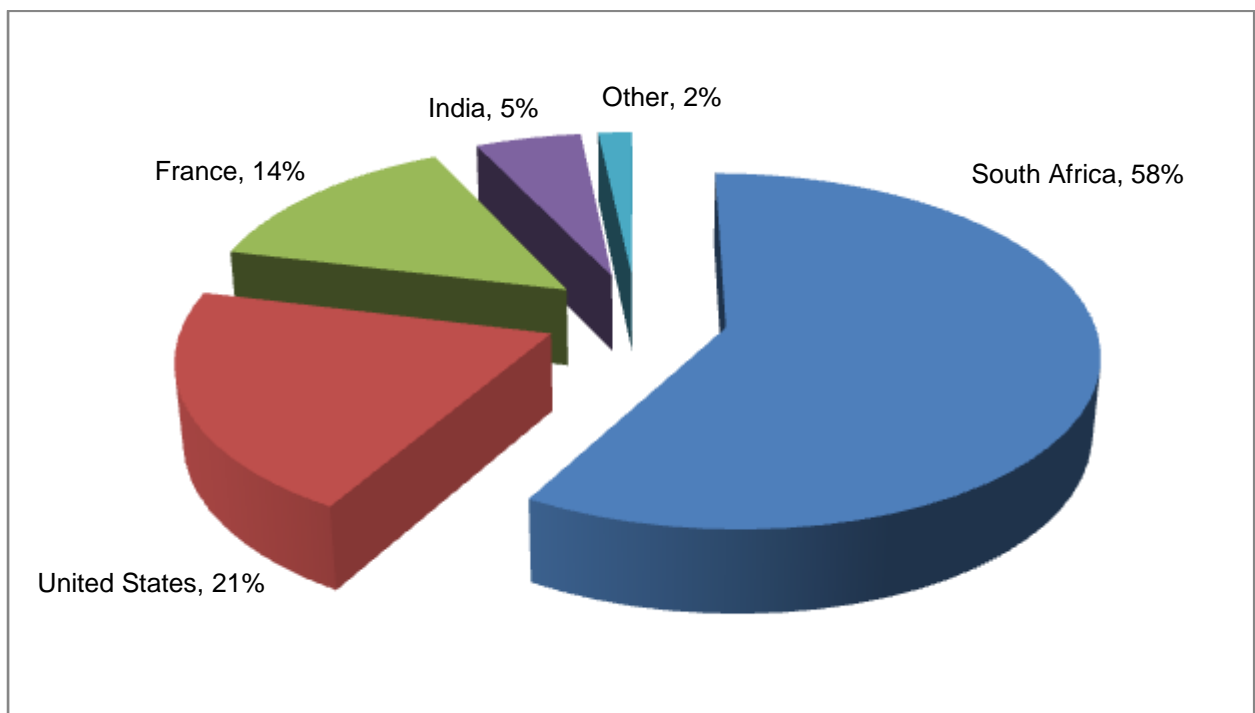
ALUMINO-SILICATES

Mphonyana Modiselle

WORLD SUPPLY

Global production of the three aluminosilicate minerals – namely: andalusite, kyanite and sillimanite – increased by 7.9 percent from 429 kt in 2010 to 463 kt in 2011, owing to the continued demand for refractory minerals. South Africa, at 58 percent, remained the world's largest producer of aluminosilicates, followed by the United States (US) 21 percent and France's 14 percent (Fig. 67).

FIGURE 67: WORLD PRODUCTION OF ALUMINO-SILICATES BY COUNTRY, 2011

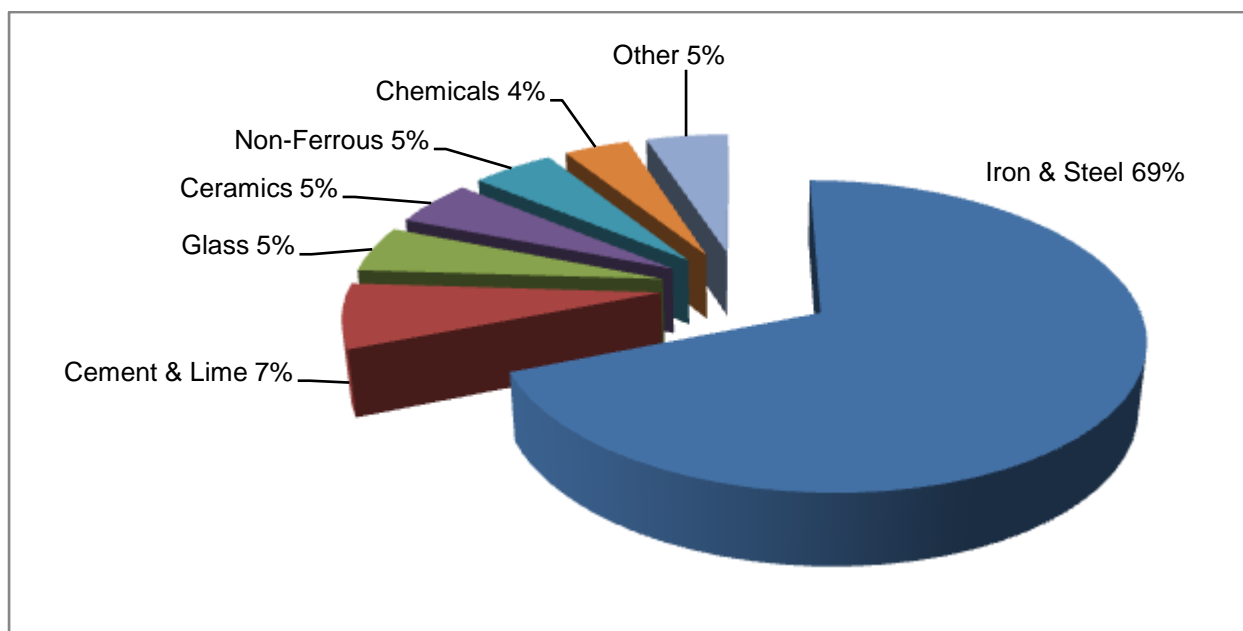


Sources: USGS, 2012

WORLD DEMAND

Demand for aluminosilicates is driven by the manufacturing of refractories. The total world refractories market for refractory minerals was estimated at 24 Mt of which crude steel manufacturing accounted for 69 percent of demand for refractory minerals (Fig. 68). Global crude steel output rose by 6.8 percent year on year in 2011 to 1.5 billion tons. Demand for andalusite will remain high because it has a very low expansion when it converts to mullite at high temperatures in furnaces and can, therefore, be used in the raw state, eliminating the need for energy input into the raw material before use.

FIGURE 68: WORLD REFRACTORIES MARKET BY END-USERS, 2011



Source: Andalusite Resources

WORLD DEVELOPMENTS

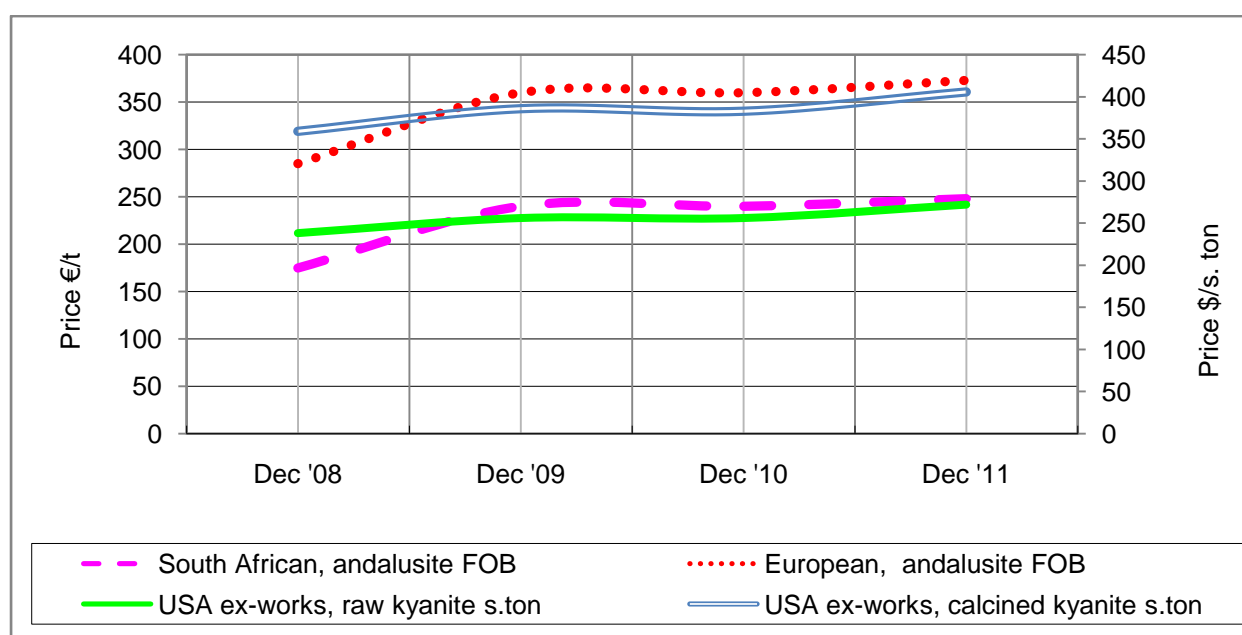
Imerys, the leading global supplier of refractory minerals has commissioned a new andalusite plant in Yilong, China, which will provide high quality products for the domestic market.

Peru's Andalucita S.A., which was established three years ago, announced its expansion from 15 kt per annum of output of andalusite to around 48 kt per annum. This company produces a very high quality product, which is well received in the market.

PRICES

According to the *Industrial Minerals*, general prices increased in 2011. The prices for South African exports (2 000 ton bulk, FOB) of 57-58 percent aluminium trioxide (Al_2O_3) andalusite concentrate were in the range €230-€265/t in 2011, up from €225-€255/t in 2010 (Fig 69). The European FOB prices for 55-59 percent Al_2O_3 andalusite were in the range €345-400/t up from €335-€385/t in 2010. The US prices for raw and calcined 54-60 percent Al_2O_3 kyanite ranged from \$224-\$320/t and \$373-\$439/t, respectively. Prices rose as a result of the strengthening demand for andalusite and kyanite as a substitute for bauxite.

FIGURE 69 : WORLD ALUMINO-SILICATES PRICES, 2008 – 2011

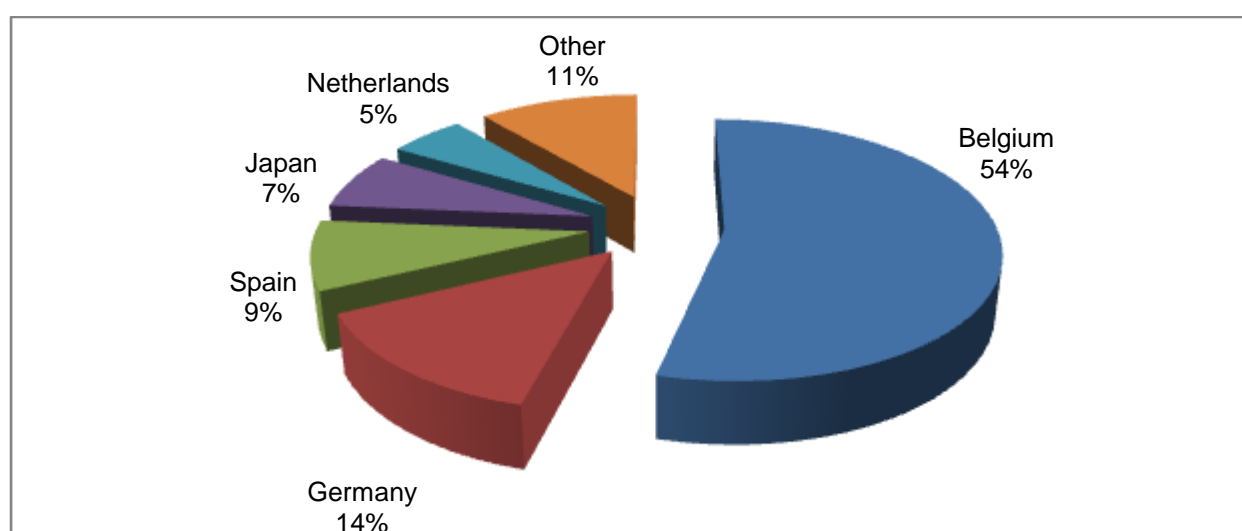


Source: Industrial Minerals

TRADE

Despite price increases, South Africa's exports of andalusite decreased in 2011 owing to a number of factors including financial uncertainty in Europe and muted recovery in construction markets in the Western countries. The major consumers of South African andalusite were Belgium, which accounted for 54 percent of the total export sales followed by Germany at 14 percent and Spain at 9 percent (Fig. 70).

FIGURE 70: SOUTH AFRICA'S EXPORTS OF ANDALUSITE BY DESTINATION, 2011



Sources: DMR, Directorate Mineral Economics

SOUTH AFRICA

Of the three alumina-silicates minerals, South Africa only produces andalusite having ceased the production of sillimanite several years ago in 1998. Andalusite Resources and the Damrec group are the only producers of andalusite in South Africa. Imerys South Africa, the subsidiary of Imerys through parent company Damrec, produces almost 80 percent of the andalusite in the country. Simang Resources, is part of the Black Economic Empowerment (BEE) consortium that holds a 26 percent interest in Andalusite Resources. Damrec (Imerys overseas affiliate) has four mines in South Africa namely: the Annesley mine on the outskirts of Burgersfort in the Limpopo Province, the Havercroft mine in Sekhukhuneland in Limpopo and the Rhino Andalusite mine near Thabazimbi in the Limpopo Province. The fourth mine Krugerpost, owned by Imerys South Africa's subsidiary Samrec, is located near Lydenburg in the Mpumalanga Province.

South Africa's production of andalusite for the past decade increased at an annual rate of 0.2 percent (Table 88). In 2011, the market was stagnant and growth was minimal. The andalusite industry experienced output and quality problems, which made it difficult to maintain growth which led to loss of customers. This resulted in the retrenchment of some senior employees in order to contain costs and keep the company competitive.

TABLE 88: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF ANDALUSITE, 2002–2011

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	kt	R'000	R/t	Kt	R'000	R/t
2002	165	46	48 800	1 051	112	118 064	1 056
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	*	*	*	*	*	*	*

Source: DMR, Mineral Economics

Note: *Data withheld for reasons of confidentiality

Employment in the alumino-silicate industry decreased by 9.1 percent in 2011 compared with 2010 (Table 89).

TABLE 89: SOUTH AFRICA'S ALUMINO-SILICATE MINES: EMPLOYMENT, 2006–2011

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	*

Source: DMR, Mineral Economics

*Total Remuneration figures withheld for reasons of confidentiality

OUTLOOK

The andalusite market is expected to remain subdued in the medium term, due to oversupply. This is likely to lead to further improvements of efficiencies and consolidation wherever possible. In the long run, prospects for andalusite remain very positive. It is one of the few mid- to high-grade alumina-based refractory raw materials that is not under Chinese control. As a consequence, a gradual shift away from Chinese bauxite, mullite etc. to alternatives (e.g. andalusite) is anticipated. However, this could take time, as refractory recipes have to be adjusted, which takes a lot of research and development. South Africa's Andalusite Resources is working closely with refractory engineering consultants in order to assist customers to make the switch to andalusite.

Being the largest consumer of refractories, China is expected to continue to be the driving force of the global market. However, above average growth is expected in India, Eastern Europe, North America and Western Europe due to their large industrial bases. Eastern Europe is enjoying the highest growth rate among these regions, reflecting the area's continued industrialization. Demand for refractories is expected to rise owing to increasing steel production. As steel production recovers, demand for alumino-silicates is expected to strengthen as many refractory customers seek alternative products to refractory bauxite. Further demand for refractories is expected from the cement, ceramics and glass sectors. The full potential of andalusite around the world remains untapped, but there is growing interest from the refractory industry because of its benefits compared to other alternatives. South Africa, with its vast andalusite deposits could expand andalusite production to exploit the anticipated higher demand.

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DIMENSION STONE

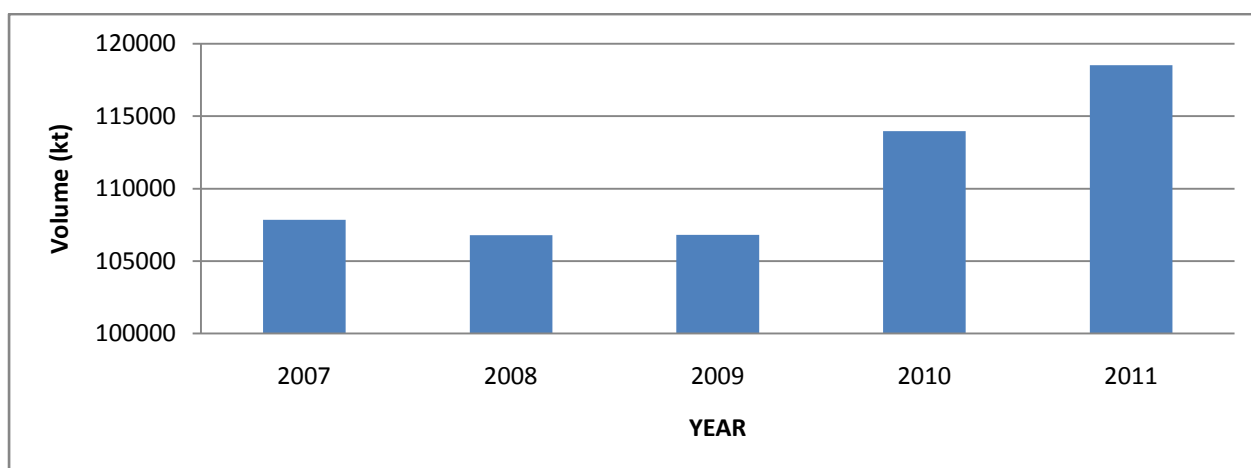
Refiloe Motsie and Marvin Simango

WORLD SUPPLY

World dimension stone production volumes increased by 4 percent from 114 Mt in 2010 to 118.5 Mt in 2011 (Fig 71). The increase was mainly due to production increases in Asian countries, with China leading the way by accounting for one-third of world production. The other six major producers of dimension stone which are India, Iran, Turkey, Brazil, Italy and Spain accounted for 44 percent of world quarry output production, one percent higher than in 2010 and eight percent better than 2005, confirming the trend of new entrants in the markets.

The dimension stone industry demonstrated a unique specific capacity to counteract the effects of the difficult short term economic prospects in the European countries. The European continent sales volumes increased by 8.1 percent to 302 kt of marble and granite, consequently increasing the sales value by 14.5 percent to €2.4 million in 2011. However, export quantities from Italy, which is one of major players in the industry, fell by 2.6 percent in 2011 compared with the previous year. Similarly, Italian imports fell by 4 percent, confirming that recession in the processing sector on the back of weak demand for finished products.

FIGURE 71: DIMENSION STONE PRODUCTION DURING 2007 – 2011

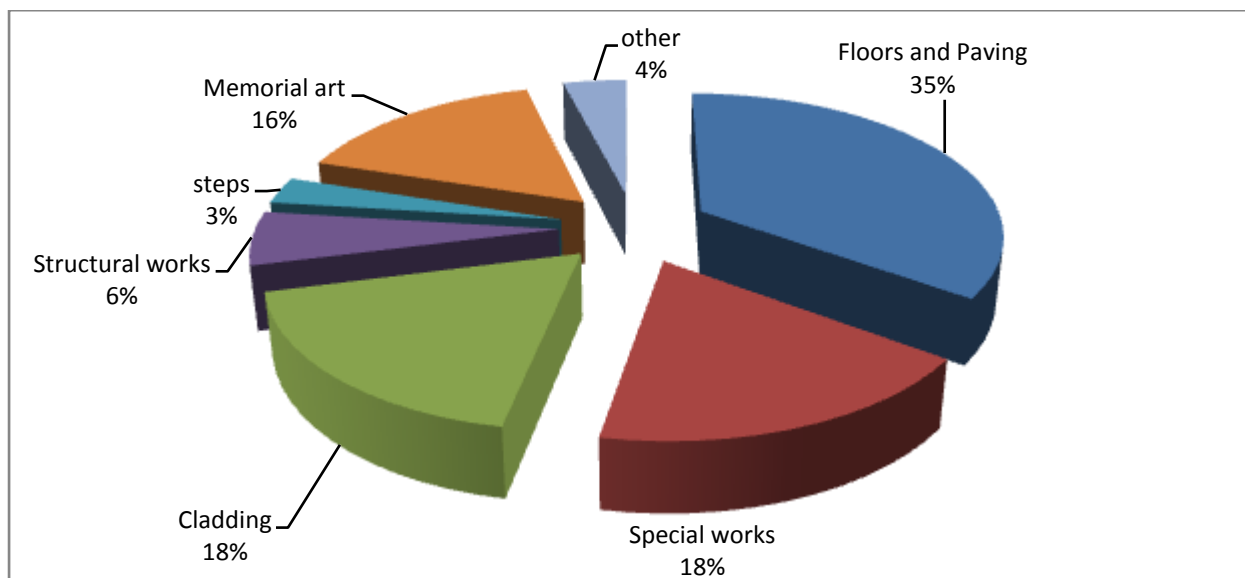


Source: IMM Carrara, 2010
XXIII World Stone Industry

WORLD DEMAND

Demand for dimension stone is mainly driven by activity in the construction industry and real estate markets, which account for over 80 percent, followed by the funerary monumental industry with approximately 15 percent while various special applications account for 5 percent (Fig 72).

FIGURE 72: WORLD CONSUMPTION OF DIMENSION STONE BY SECTOR



Source: Minus273, 2010

SOUTH AFRICA

South Africa's granite industry is dominated by two companies, 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. South Africa's granite industry has established itself as a major player globally owing mainly to the unique gabbros' from the Bushveld not found elsewhere in the world, exporting to four continents. Other types of commercially mined granites include sensu stricto, dolerite, syenite, charnockite and igneous, and these are found over a large part of South Africa. About 600 000 to 800 000 tons of South African granite is conveyed annually from quarries in the Rustenburg, Potgietersrus, Belfast and Springbok districts to Durban, Cape Town and Richards Bay for export to the Far East, South America, North America and Europe.

Local sales volumes decreased by 16.1 percent to 282 kt as demand was subdued within the residential sector. Export sales volumes surged by 70 percent to 111.2 kt in 2012 due to the discovery of new markets in South America (Table 90). The value of local sales increased by 5.1 percent to R237 million due to price increase within the local market while export sales value increased by 24.8 percent to R150 million as the rand weakened in 2011, stimulating exports.

TABLE 90: SOUTH AFRICA'S DIMENSION STONE SALES, 2002–2011

LOCAL SALES				EXPORTS		
YEAR	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	R'000	R/t	kt	R'000	R/t
2002	75.2	37 229	495	630.6	837 332	1 328
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	282.0	248 726	1 009	111.2	150 212	1 350

Source: DMR, Directorate Mineral Economics

OUTLOOK

Global output of dimension stone is expected to be depressed in the short term as global markets continue to be subdued due to the economic conditions in the Eurozone. This has led to low business confidence in European countries, thus reducing European trade substantially.

South Africa's dimension stone production is expected to slow down in the short term as Europe is one of its biggest markets. However, the subdued export conditions will be offset by expected activity in the local construction industry, which has shown signs of recovery. The housing market which is the core driver of dimension stone activity is set to be stimulated by low interest rates. The marginal easing of the lending criteria on the part of banks is also expected to lead to more transactions being approved, encouraging investment within the sector. To remain competitive in the current market conditions, companies will have to differentiate themselves as customers are becoming more selective in terms of their products.

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FLUORSPAR

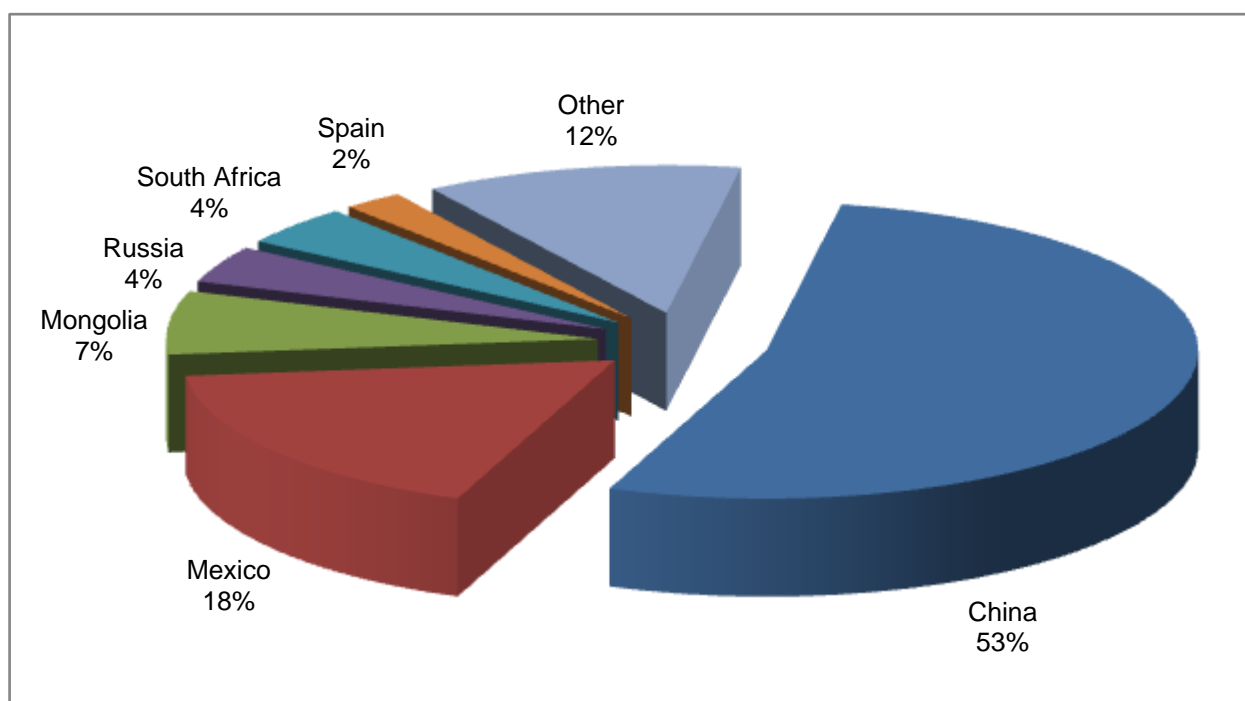
Mphonyana Modiselle

WORLD SUPPLY

Total world production of fluorspar increased by 3.3 percent from 6.01 Mt in 2010 to 6.21 Mt in 2011, owing to the restart of operations by some mines that has been placed on care and maintenance during the 2008 to 2009 recession. China remained the world's leading fluorspar producer accounting for 53 percent of world production followed by Mexico's 18 percent, Mongolia's 7 percent while Russia and South Africa accounted for 4 percent each (Fig.73).

Traditional Chinese supplies of acid grade fluorspar were dwindling as China withheld exports for domestic consumption. This presented a problem for fluorspar consumers, particularly western consumers and created opportunities for new and prospective producers.

FIGURE 73: WORLD FLUORSPAR PRODUCTION, 2011



Source: USGS, 2012

DEMAND

World demand for fluorspar in 2011 was 5.6 Mt per annum with an estimated value of \$2 billion. The value of downstream products including fluorochemicals was estimated at \$112 billion in 2011. Demand is supported by established uses in fluxes in the steel and aluminium industries. However, there is

a growing market for acid grades used in the manufacture of fluorine chemicals including new applications of high-tech and green technology products such as: new generation low-greenhouse gas potential refrigerants, propellants and proppants; fluoropolymers; super-magnets for wind turbines and electric vehicle motors; and lithium battery electrolytes Lithium Hexafluorophosphate (LiPF₆).

Despite the economic stagnation, the market for fluorspar and downstream fluorine chemicals was reportedly tight, owing to the export restrictions imposed by China. Concerns around future supplies have led to a wave of backward integration, which resulted in two major fluorspar consumers, Arkema Inc. (France) and Solvay (Belgium) acquiring equity stakes in fluorspar mining ventures to secure supply.

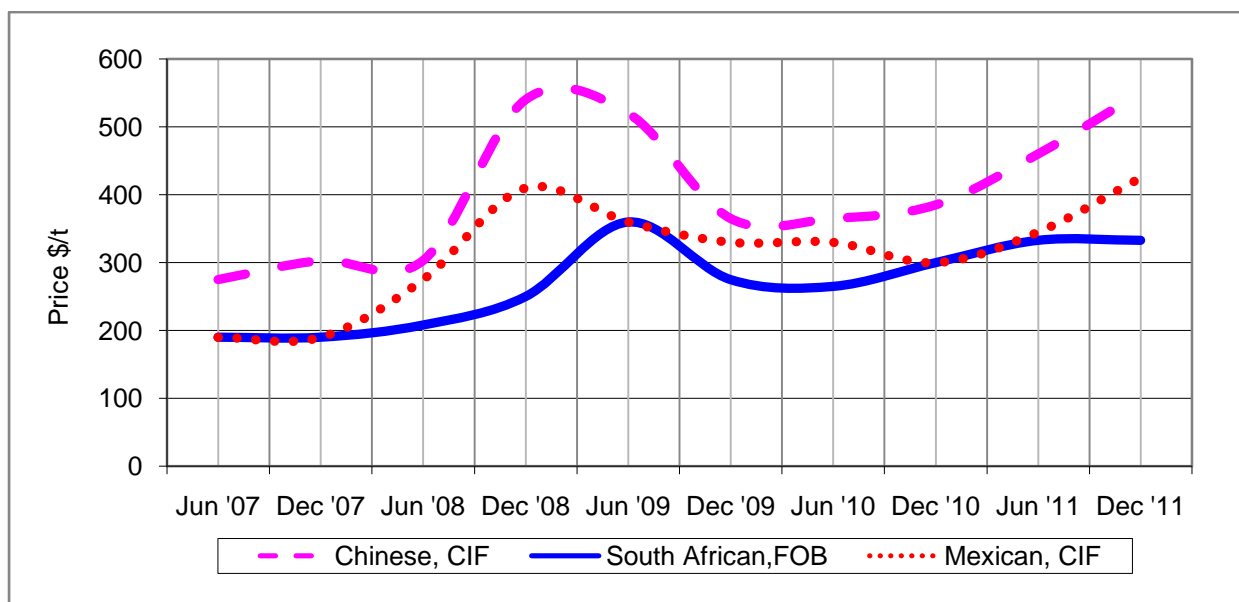
TRADE

China has become the largest global hub for the production and consumption of fluorochemicals. While previously a major source of low-cost bulk commodities, in recent years, China has imposed export restrictions on certain key steelmaking raw materials (including fluorspar) in favour of its domestic industries. These restrictions were the subject of a World Trade Organization (WTO) complaint brought by Europe, Mexico and the US, which in January 2012 was upheld by the WTO's appellate body. Now China will have to align its policies with its WTO obligations - but it remains to be seen what shape China's new export system will take and what effect this will have on fluorspar exports. However, China successfully argued that certain measures relating to export licensing requirements and minimum export prices are not WTO violations. Internationally, most fluorspar is sold on long term contracts or through long-term supply arrangements.

PRICES

Fluorspar prices continued to rise in 2011, with Chinese export (spot) prices reaching \$550/t at the end of the year (Fig 74). All grades of fluorspar registered more price changes when compared to the previous year, as a result of market tightness and the increasing shipping costs. Mexican acidspar price levels increased as producers were sold out. However, South African acidspar prices remained stagnant for the second half of the year.

FIGURE 74: WORLD ACID GRADE FLUORSPAR PRICES, 2007 – 2011



Source: Industrial Minerals, 2011

SOUTH AFRICA

South Africa's fluorspar production increased by 24.8 percent from 157 kt in 2010 to 196 kt in 2011 (Table 91) subsequent to the alleviation of operational bottlenecks encountered by fluorspar producers. The industry faced several operational challenges, which included water shortages, power supply challenges, lower ore grades to the plant as well as maintenance shutdowns in 2010. Local sales volumes increased by 5.5 percent from 18 kt in 2010 to 19 kt in 2011, owing to stronger local demand. Export sales volumes decreased by 2.2 percent to 175 kt in 2011 compared with 179 kt in 2010 due to the Eurozone sovereign debt crisis that placed a damper on markets and demand.

TABLE 91: SOUTH AFRICA'S PRODUCTION OF FLUORSPAR, 2002 – 2011

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	Kt	R'000	R/t	kt	R'000	R/t
2002	227	34	18 423	537	210	205 687	980
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	*	*

Source: DMR, Directorate Mineral Economics

Note: Sales figures withheld for reasons of confidentiality

Labour productivity decreased by 18.9 percent to 0.43 kt per employee in 2011 compared with 0.53 kt per employee in 2010. Average earnings decreased by 10.1 percent to R150 821 per employee in 2011 compared to R167 798 per employee in 2010 (Table 92). The lower average can be attributed to higher employment figures resulting from employment of non-producing contract workers to do plant expansions. Revenue generated per employee is withheld due to confidentiality.

TABLE 92: SOUTH AFRICA'S FLUORSPAR QUARRIES: EMPLOYMENT AND REMUNERATION, 2007-2011

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2007	490	51 608
2008	605	62 027
2009	432	59 128
2010	297	49 836
2011	453	68 322

Source: DMR, Directorate Mineral Economics

RECENT DEVELOPMENTS

Sephaku Fluoride (SepFluor) has announced that it will invest R2.1 billion (\$242 million) in a new fluorspar mine and fluorochemicals facility, at its Nokeng project in Gauteng province. Construction of the mine, located 80 km north of Pretoria, will begin in the fourth quarter of 2012 with the first production scheduled for the second quarter of 2014. Mine construction will cost R900 million (\$104 million) while investment for the fluorochemicals site will total R1.2 billion (\$139 million). The fluorochemicals beneficiation hub will produce hydrofluoric acid, aluminium fluoride and anhydrite from the second quarter of 2014. During construction, an independent economic impact study estimated that the project would generate R660.5 million to Gross Domestic Product (GDP) and create 2 145 employment opportunities.

UK-listed Fluormin rapidly emerged as a serious investor in the African continent in 2011, purchasing a 63 percent stake in Sallies (South Africa) and a 20 percent stake in Kenya Fluorspar Co. (Kenya), to complement its Zriba-Guebli fluorspar project in Tunisia. In March 2012, Fluormin announced it had sold its interest in Kenya Fluorspar for \$13 million in order to concentrate on improving the ore feed grade at the Witkop mine in the North West province of South Africa. Fluormin has engaged financial advisers to undertake a review of Witkop mine, through its subsidiary Sallies. The company has reported rising costs at Witkop, which resumed production in March 2011 following refurbishment and upgrading that was linked to low ore grades, water shortages and power outages. Fluormin has also formed a fluorspar trading company, FluorOne Trading Ltd, taking 49 percent in the joint venture and Mr Jeffery Kofsky, managing director and a leading trader of fluorspar owns 51 percent. FluorOne exclusively represents Sallies for sales of fluorspar outside South Africa, with orders reported in China, Europe, India, Japan and North America.

Eurasian Natural Resources Corp. (ENRC) subsidiary, SA Fluorite, is developing the Doornhoek fluorspar project, which is 150 km from Johannesburg. The company's current drilling programme is focused on proving the substantial shallow opencast resource to indicated category. It has forecast a minimum 20-year mine life, producing around 1.5 Mt per annum ore.

Globe Metals and Mining, which is developing the Mount Muambe REE-Fluorite project in Mozambique, announced in January 2012 that it had extended its fluorspar zone to over 600 metres strike length from the main mineralization zone. In April 2011, Globe entered into a partnership with state-owned East China Minerals Exploration and Development Bureau to assist its ventures in Africa.

OUTLOOK

Global demand for fluorspar is forecast to reach 6 Mt by 2017. Fluorspar demand over the next few years is expected to be boosted by increasing demand for aluminium fluoride, for applications such as electric arc furnaces. Global demand for fluorochemicals is forecast to rise by 3 percent per year to 3 Mt by 2013 valued at \$16 billion.

The fluorspar markets are expected to remain tight. The vertical integration of the fluorochemical industry, which has been rapidly gaining momentum over the last decade, both forward from raw materials producers, and backwards from downstream chemical manufacturers, is expected to intensify.

After the imposition of export restrictions by the Chinese authorities, major investment in fluorspar properties is likely to move to Mexico where there are numerous former operations that could be reactivated. The ongoing uncertainty of future Chinese fluorspar supplies and rising prices could force fluorspar consumers to look outside China for more competitive prices, which could help other suppliers to win back market share previously lost to China. These producers are likely to offer more steady supply on a long term contract basis.

South Africa's beneficiation of fluorspar presents an opportunity for further industrialisation of the economy and growth of the mining and minerals industry. The Fluorochemical Expansion Initiative (FEI), which is intended to ensure that there is a sustained and continuous improvement of existing technologies and development of new cutting edge fluorochemical technologies, is likely to improve the prospects for investment in South Africa's fluorspar industry. South Africa, with its vast fluorspar reserves, presents good opportunities for investors, particularly in local downstream value addition.

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LIMESTONE AND DOLOMITE

Refiloe Motsie and Marvin Simango

SUPPLY

South Africa's production of limestone and dolomite decreased by 3.8 percent to 21.63 Mt in 2011 compared with 22.48 Mt in 2010, as steel production fell by 12.7 percent from 7.67 million tons to 6.7 million tons in the same period. Local sales volume also experienced a 3.7 percent decline from 19 226 kt to 18 519 kt in 2011 (Table 93), but local sales value increased by 14.4 percent to R2.6 million due to price increases.

TABLE 93: SOUTH AFRICA'S PRODUCTION AND LOCAL SALES OF LIMESTONE AND DOLOMITE FOR NON-AGGREGATE USE, 2002– 2011

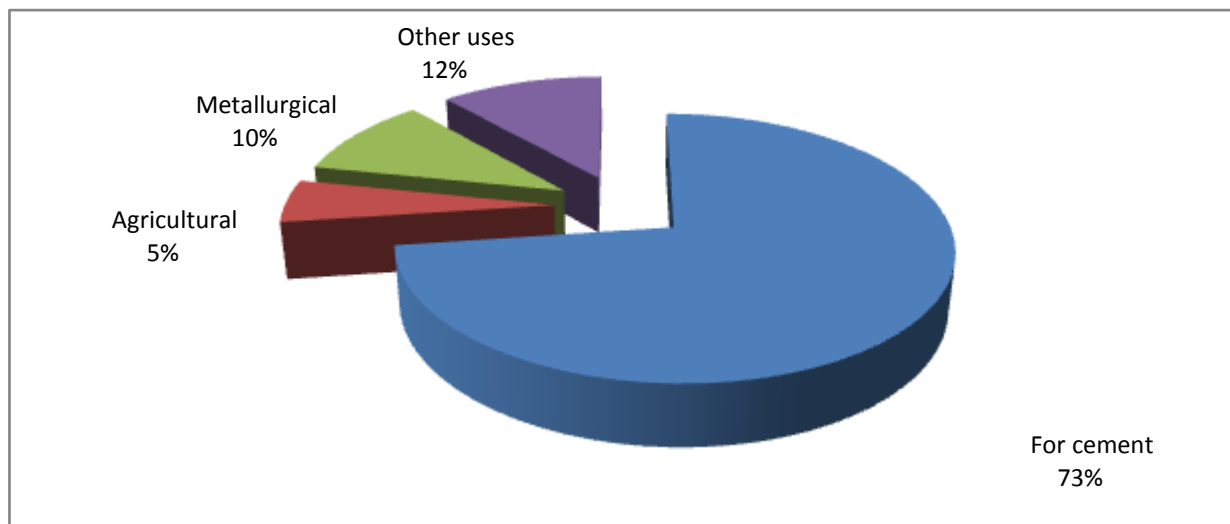
YEAR	PRODUCTION	LOCAL SALES		
		Mass	Value (FOR)	
	kt	kt	R'000	R/t
2002	20 738	16 901	1 055 733	62.5
2003	21 267	17 502	1 198 800	68.5
2004	22 031	17 466	1 227 322	70.3
2005	24 813	18 877	1 306 527	69.2
2006	27 366	20 359	1 517 661	75.0
2007	23 941	20 493	1 698 586	83.0
2008	23 495	19 781	1 899 279	96.0
2009	22 698	20 008	2 105 297	105.0
2010	22 480	19 226	2 271 133	118.0
2011	21 630	18 519	2 591 078	140.0

Source: DMR, Directorate Mineral Economics

DEMAND

Demand for limestone and dolomite products is mainly driven by the construction, agriculture and metallurgical sectors. The principal use of limestone in South Africa is in the manufacture of cement, followed by metallurgical applications (as a fluxing agent in steel making), production of lime and agricultural uses (Fig. 75).

FIGURE 75: DEMAND FOR LIMESTONE BY SECTOR, 2011



Source: DMR, Directorate Mineral Economics

Cement manufacture accounted for 73 percent of limestone and dolomite demand in 2011. Local sales volume of limestone for the manufacture of cement decreased by 8.1 percent to 12.37 Mt in 2011, as growth in the construction industry slowed down (Table 94). Local sales volume of metallurgical grade carbonates decreased by 8.6 percent to 1.75 Mt in compared with the previous year as steel production fell by 12.7 percent from 7.67 million tons to 6.7 million tons in the same period. However local sales volumes of agricultural limestone and dolomite (aglime) increased by 17 percent to 916 kt as a result of increased demand from various fertiliser applications.

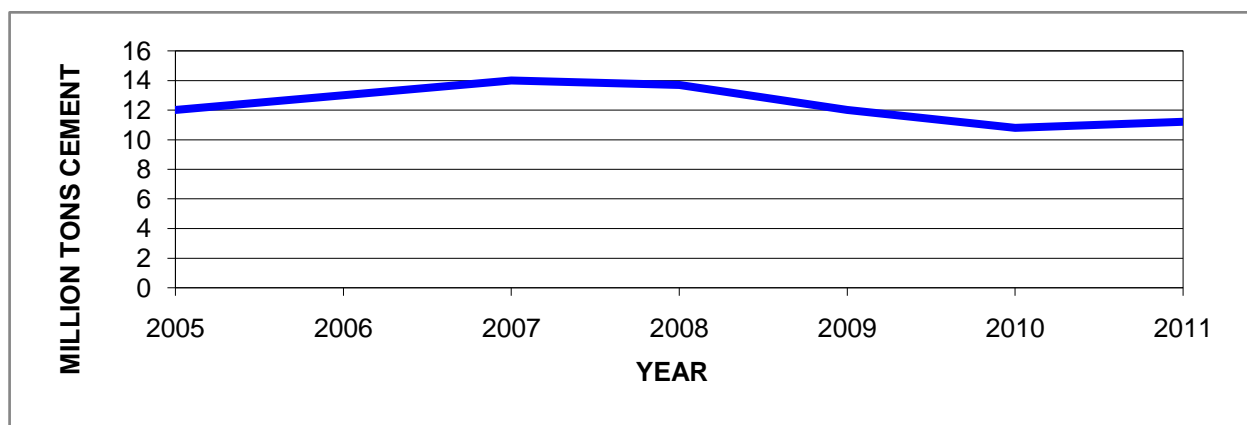
TABLE 94: SOUTH AFRICA'S LOCAL SALES OF LIMESTONE AND DOLOMITE BY APPLICATION, 2002 – 2011

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
2002	11 218	188 653	17	2 088	98 690	47	993	49 281	50	1 017	230 879	227
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	194 458	111	916	104 267	114	1 946	471 378	242

Source: DMR, Directorate Mineral Economics

The market for cementitious products in South Africa is divided into civil engineering and building sectors. South Africa's cementitious sales increased by 3.2 percent to 11.2 Mt in 2011 compared with 2010 (Fig 76), owing to improved demand from the housing market. Lime sales picked up during the last quarter of 2011, on the back of improved demand from exports and the local steel industry.

FIGURE 76: SOUTH AFRICAN CEMENTITIOUS PRODUCT SALES, 2005 – 2011



Source: Cement and Concrete Institute, 2011

EXPANSIONS IN THE CEMENT INDUSTRY

South Africa

Pretoria Portland Cement (PPC) plans to upgrade and increase capacity at its Riebeeck operation and De Hoek operation near Piketberg instead of building a single new factory. The upgrade of the existing plant will increase capacity in the Western Cape by approximately 50 percent by 2016. The upgrade plan will allow PPC to increase capacity with reduced impact on the surrounding communities and the environment and at a lower capital outlay. The new plan requires a budget of R3 billion over the next six years.

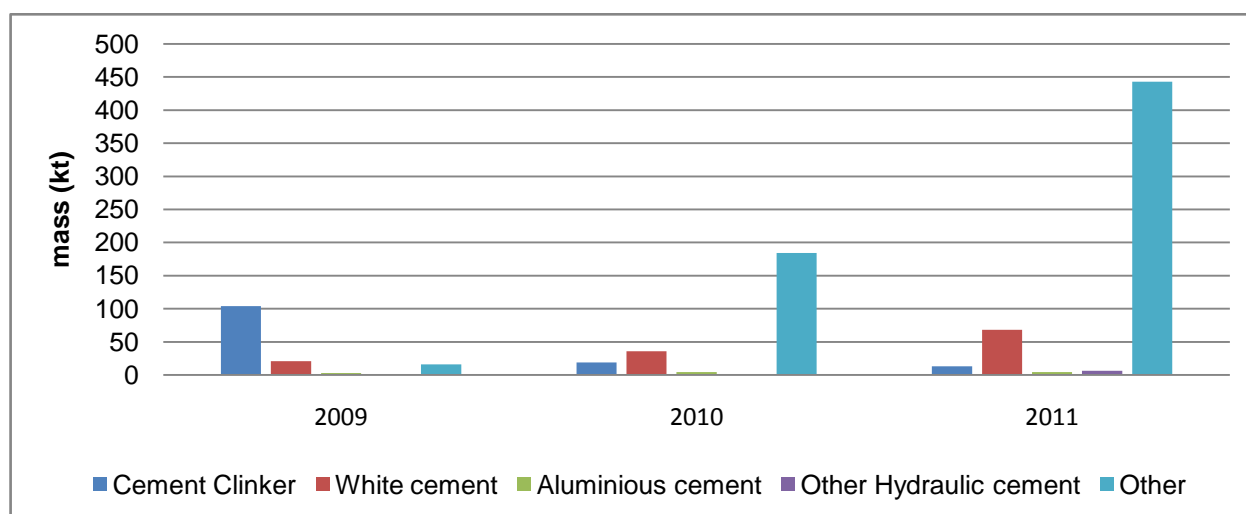
Construction works at Sephaku Cement's Aganang production facility in the North West province are still on track with the workforce expected to increase to 1 500 by January 2013. The project will cost R2.3 billion and will have the capacity to produce 2.5 Mt per annum. Production is scheduled to start in September 2013 after the commissioning of the clinker in August 2013.

CEMENT IMPORTS

South Africa's imports of cement increased by 120 percent to 534 kt in 2011 compared with the previous year (Fig 77). The exponential increase in imports resulted from high demand for other types of Portland cements not produced locally, which increased from 184 kt to 443 kt in 2011. Clinker imports continued on

a downward trend since 2008, recording a decline of 32 percent to 13 kt in 2011. White cement imports increased by 88.9 percent to 68 kt, while aluminous cement imports decreased by 1.2 percent to 4.15 kt.

FIGURE 77: SOUTH AFRICAN IMPORTS OF CEMENT PRODUCTS, 2009 – 2011



Source: South African Revenue Service, 2011

LIME

Lime is an important raw material used in many industrial processes such as pyrometallurgical, water purification and the chemical industry. The local sales volume of lime increased by 19.1 percent to 1.54 Mt compared with the previous year, driven by increased demand for quicklime in the steel and alloys industries (Table 95). The total sales volume of quicklime for pyrometallurgical and chemical applications increased by 20.5 percent to 1.42 Mt, while sales values increased by 25.1 percent to R1.2 billion. Hydrated lime sales for water purification decreased by 1.8 percent to 55 kt, while hydrated lime used for chemical purposes increased by 33.3 percent to 40 kt. Sales values for hydrated lime increased by 13.8 percent to R134 million in the same period.

TABLE 95: SOUTH AFRICA'S LOCAL SALES OF LIME, 2010 – 2011

LIME PRODUCT,	2010			2011		
BY SECTOR USE	Mass	Value (FOR)		Mass	Value (FOR)	
	Kt	R'000	R/t	Kt	R'000	R/t
Quicklime						
Pyrometallurgical	598	503 990	843	700	597 061	853
Chemical	581	479 129	825	721	632 735	878
SUB-TOTAL	1 179	983 119	834	1 421	1 229 796	866
Hydrated lime						
Water purification	56	53 990	974	55	60 561	1 110
Chemical	30	32 102	1 085	40	45 469	1 143
Other	27	32 269	1 180	23	28 626	1 232
SUB-TOTAL	113	118 361	1047	118	134 656	1 162
TOTAL	1 292	1 101 480	853	1 539	1 364 452	1014

Source: DMR, Directorate Mineral Economics

EMPLOYMENT

The limestone and dolomite industry employed 2 761 people in 2011, an increase of 4.7 percent compared with 2010 (Table 96). Labour productivity decreased by 8.2 percent to 7.8 kt/employee, while revenue generated per employee increased by 9.3 percent to R938 456/employee owing to an increase in limestone prices. Average annual earnings decreased by 0.6 percent to R154 657/employee.

TABLE 96: SOUTH AFRICA'S LIMESTONE AND DOLOMITE QUARRIES: EMPLOYMENT AND REMUNERATION, 2007 – 2011

YEAR	EMPLOYEES	TOTAL REMUNERATION
		R'000
2007	2 452	286 461
2008	2 517	321 698
2009	2 490	359 959
2010	2 636	409 973
2011	2 761	427 009

Source: DMR, Directorate Mineral Economics

OUTLOOK

Global markets remain stressed as the debt crisis in Europe continues to unfold with the ripple effect being felt by the South African economy. The downward trend in building activity is likely to keep the housing market weak, with growth expected to remain in single digits in the short term. Although the residential sector remains under pressure, there has been an improvement in demand for housing, specifically smaller more affordable units, which is likely to increase construction investment slightly within the sector.

The construction industry, which is the main driver for cement demand, is expected to grow modestly in the medium term on the back of the state-led infrastructure drive that focuses on development of energy, transport and logistics, schools, hospitals and nursing colleges. Consequently the growth in the construction industry will lead to increased demand for limestone, which is the input raw material for cement production. Demand for limestone in the agricultural sector is expected to continue growing on the back of increased crop production to accommodate the growing population. However, demand for limestone for metallurgical applications is set to decrease in the short term owing to the overcapacity that the steel industry is experiencing.

Investment in non-residential buildings is expected to grow by an annual average of 4.1 percent, while investment in residential buildings is expected to increase by 3.8 percent year-on-year after weakening during 2011.

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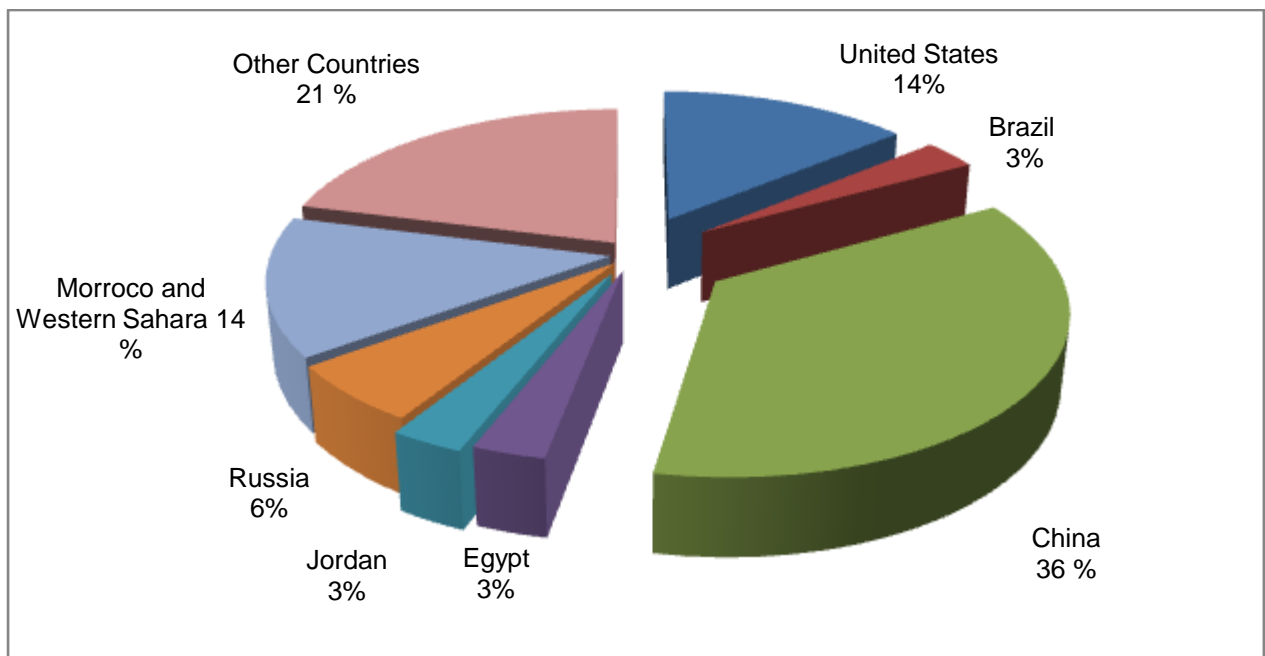
PHOSPHATE ROCK

Munyadziwa Muravha

WORLD SUPPLY

World production of phosphate rock increased by 5.5 percent to 191 Mt in 2011 compared with 181 Mt in 2010 due to increased demand for phosphoric acid in fertilizers. China remained the world's largest phosphate producing country in 2011, accounting for 36 percent of production followed by the United States and Morocco & Western Sahara both at 14 percent. Russia's contribution remained unchanged at 6 percent similar to 2010 (Fig.78). Global phosphate sales expanded by 6 percent in 2011 when compared with 2010.

FIGURE 78: PHOSPHATE ROCK PRODUCTION BY COUNTRY, 2011



Source: USGS, 2012

World production of phosphoric acid (H_3PO_4), measured as P_2O_5 content, increased by 9.7 percent to 40.6 Mt in 2011, compared with 37.0 Mt in 2010, following the sharp rebound of economic activity and tight agricultural commodity markets. South Africa's sole phosphate rock producer, Foskor, is one of the largest suppliers of phosphoric acid to India. Global production of phosphate fertilizers is estimated to have amounted to 40.7 Mt following a full recovery from the economic down turn in 2010.

WORLD DEMAND

The agricultural sector is the principal consumer of phosphate rock, accounting for 80-85 percent of total production. The principal end uses for non-fertilizer phosphates are detergents, food and beverages, metal treatment, water treatment and toothpaste. Phosphate rock demand continues to increase particularly in China and India, where there is an enormous need for fertilizers. In the United States more than 95 percent of the phosphate rock produced was used to manufacture phosphoric acid and super phosphoric acid, which were used as intermediate feedstock for the manufacture of fertilizers and animal feed supplements. The world phosphate market is currently firm due to strong demand.

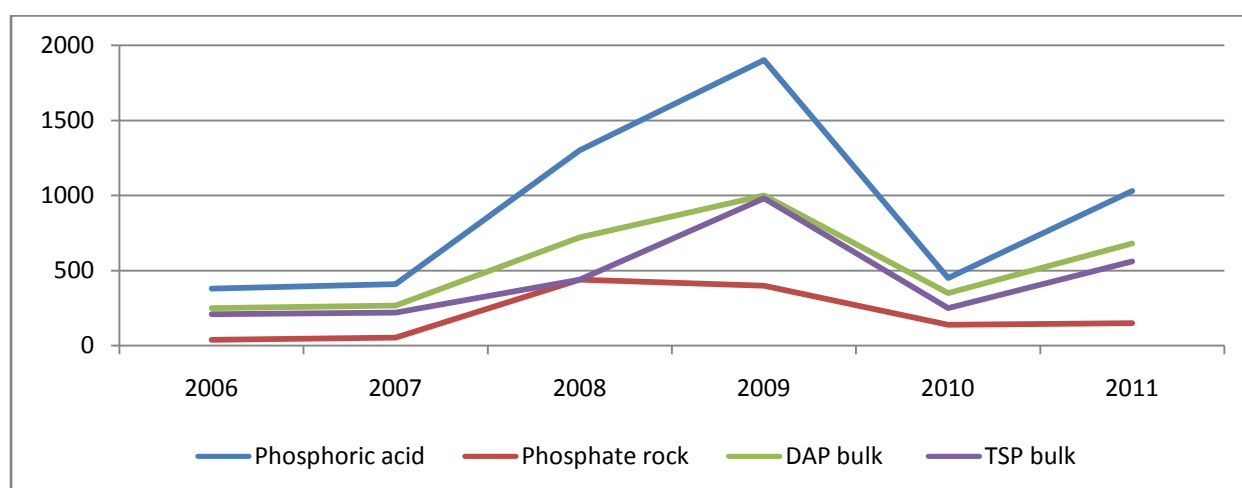
TRADE

World phosphoric acid trade was 15.9 Mt in 2011. The bulk of this volume went to India, Japan, Netherlands and Bangladesh. Morocco is the leading phosphoric acid exporter followed by China whose export volumes remain consistently high despite tariffs. Exports from the USA were subdued as USA producers responded to softening prices by curtailing production.

PRICES

Phosphate rock prices increased by 7.1 percent to \$150/t in 2011 compared with \$140/t in 2010. Phosphoric acid prices surged by 128.0 percent to \$1 030/t in 2011 compared with 450/t in 2010, due to higher demand for fertilizer applications. Diammonium phosphate (DAP) prices declined by 65.1 percent to \$350/t and trisodium phosphate (TSP) prices increased by 94.3 percent to \$680/t in 2011 (Fig. 79). Phosphate products prices began to rise again in 2011 as a result of the return of Indian spot buyers, but still below the levels seen in 2009.

FIGURE 79: PRICES OF PHOSPHATE RESOURCES, 2006 –2011



Source: Fertilizer International, 2011

SOUTH AFRICA

Phosphate rock concentrate is sold locally to fertilizer producers and used as a raw material input to produce phosphoric acid, which is then exported to different countries. South Africa's production of phosphate rock increased by 19.9 percent to 2 575 kt in 2011 compared with 2 148 kt in 2010, as a result of market demand on the back of depleting stock levels (Table 97). Local sales mass increased by 14.6 percent to 2 155 kt compared with 1 880 kt in 2010, due to the stronger demand from phosphoric acid and granular fertilizer producers.

TABLE 97: SOUTH AFRICA'S PRODUCTION AND SALES OF PHOSPHATE ROCK, 2001– 2011

YEAR	PRODUCTION	LOCAL SALES	EXPORTS
	Mass kt	Mass kt	Mass 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

Source: Foskor

Foskor is the sole producer of phosphate rock in South Africa, with a design capacity of approximately 2.8 Mt per year. Foskor embarked on a Pyroxenite Expansion Project (PEP) in September 2008, which was divided into two phases PEP1 and PEP2. PEP 1, involved the construction of a new pyroxenite ore opencast mine together with the installation of a new primary gyratory crusher and an overland conveyor system, which was completed in June 2010. PEP 2 focused on de-bottlenecking the existing Extension 8 plant to improve its throughput rate in order to meet its original design capacity. This was completed in February 2011.

Foskor aims to increase its revenue to R10 billion by 2016 on the back of rising demand for phosphoric acid and granular fertilizer. This will be accomplished by raising the company's production capacity of phosphate rock to 4 Mt per annum. In addition, the phosphoric acid and granulation plants capacities will each be increased to 1 Mt each per annum. The company also plans to locally beneficiate downstream products to produce NPKs (Nitrogen-phosphate-kalium based fertilizers), defluorinated acid and water

soluble fertilizers. The additional revenues will be generated from new product streams that will be developed by 2017.

Farmers World Limpopo, a subsidiary of Meridian International Group, whose main focus is to manufacture and distribute fertilizers, will be taking ownership of the mothballed Sasol Nitro plant in Phalaborwa. The company is currently in the process of finalizing the various transfers with Sasol and plans to bring the plant back to its full production of approximately 300 kt pa P_2O_5 . The company has invested R100 million towards repairs, maintenance and salaries for the start-up period.

OUTLOOK

World phosphate demand remained firm in 2011, consolidating the global phosphate industry recovery experienced in 2010. Consumption of phosphate products rose in almost all consuming countries thus supporting record levels of production. World production is expected to increase to 256 Mt by 2016 as a result of mine expansion projects and development of new mines in several countries. There is unlikely to be any shortage of phosphate concentrate in the medium term if all these projects proceed as planned.

Global phosphoric acid capacity is expected to continue increasing in 2013, owing to the rising global demand for food supplies. The global market for phosphoric acid showed relatively tight conditions in 2011 and these are expected to continue through to 2013 with supply estimated to reach 47.8 Mt P_2O_5 .

World capacity for phosphate fertilizers is forecast to increase by 2013 1.5 Mt P_2O_5 annually to 49.8 Mt P_2O_5 by 2016. The main additions to capacity will occur in Brazil, China, Morocco and Saudi Arabia, with the expansions of DAP capacity accounting for three-quarters of this increase.

The phosphate rock industry fundamentals in South Africa are expected to remain strong in 2013 as a result of growth in the agricultural sector as demand for food, feed and fuel continue to rise. The effect of population growth, food shortages and climate change patterns are expected to continue driving demand for phosphates at an annual compounded rate of 2 to 5 percent per annum. Capacity expansion at Foskor and the re-commissioning of Sasol Nitro Plant in Phalaborwa by Farmers World Limpopo will ensure that there is a sufficient fertilizer for agricultural use.

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SPECIAL CLAYS

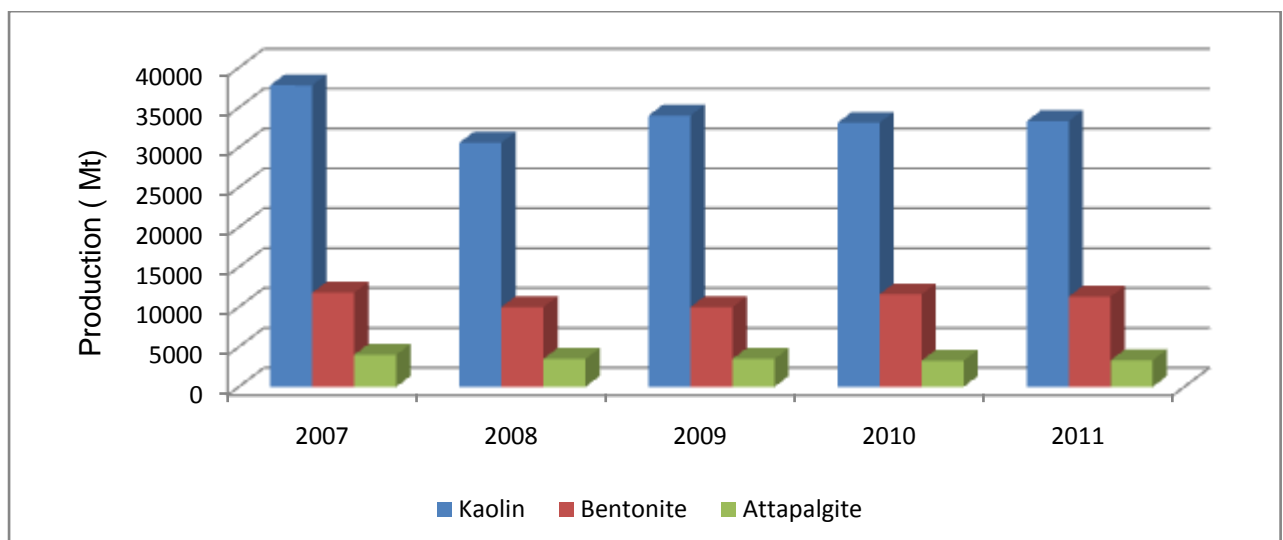
Munyadziwa Muravha

WORLD SUPPLY

Clays are a complex group of naturally occurring fine grained minerals, which shows plasticity through a variable range of water content, and which can be hardened when dried. The term special clays refers to attapulgite, bentonite and kaolin. Bentonite is derived from its decomposition from a lava ash causing a highly variable mineral makeup. Attapulgite is distinguished by its unique colloidal properties, especially resistance to high concentrations of electrolytes. Kaolin has weak bonds between its silicate-gibbsite layers that causes the cleavage and softness of this mineral.

Total world kaolin production increased by 0.6 percent from 33.1 Mt in 2010 to 33.3 Mt in 2011 due to improvement in the paper market and construction activities (Fig.80). The United States (US) and Uzbekistan account for 16.5 percent each of the total world production of kaolin, followed by Germany at 13.5 percent. Bentonite production increased by 6.6 percent from 10.6 Mt in 2010 to 11.3 Mt in 2011 owing to greater demand from the foundry and the oil drilling industries. The US accounts for 43.7 percent of total world bentonite production, followed by Turkey's 13.2 percent, Greece's 7.9 percent and Mexico's 5.3 percent. World attapulgite production increased by 1.3 percent from 3.2 Mt in 2010 to 3.3 Mt in 2011 due to increased demand from the ceramic tile market. The US remained the major primary producer accounting for 62.8 percent of total world attapulgite production, followed by Spain's 24.5 percent and Mexico's 5.4 percent.

FIGURE 80: WORLD PRODUCTION OF SPECIAL CLAYS, 2011



Source: USGS, 2012

WORLD DEMAND

Markets improved slightly for most clays in 2011, due to increase in demand. Kaolin is used in various applications with paper coating and filling accounting for roughly 43 percent of kaolin sales. Its second largest end user market is ceramics, linked closely to construction and residential start-ups, accounting for roughly 28 percent. Demand for kaolin for construction purposes has been weak, due to stricter conditions on mortgage applications in many countries stemming from the 2008 financial crisis. Other end user markets for kaolin include fibreglass, refractories, rubber and paints.

Demand for bentonite strengthened throughout 2011 driven by the foundry and specialities sectors, while demand from the civil engineering markets offset a decline in the pet litter grade. The rise of oil and gas exploration has resulted in an increased demand for bentonite for use in drilling mud for wells used for deep water drilling which increased considerably in 2011. 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.

PRICES

The kaolin price for No 1 paper coating grade increased by 3-5 percent by the end of 2011 compared with 2010, while No 2 paper coating grade, ex-works USA remained stable for 2010 and 2011 (Table 98). The prices for 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 \$70-100/s.ton in 2010 to \$78-120/s.ton by the end of 2011. The Iron Ore Pelletising (IOP) grade also increased from a range of \$48-55/s.ton in 2010 to 55-60/s.ton in 2011. The Indian, crushed, dried, loose, in bulk, cat litter grade price remained constant for the period 2010 and 2011.

TABLE 98: WORLD PRICES OF KAOLIN AND BENTONITE, 2010-2011

KAOLIN	2010	2011
No 1 paper coating grade	\$146-185/s.ton	\$150-195/s.ton
No 2 paper coating grade	\$95-147/s.ton	\$100-155/s.ton
BENTONITE	2010	2011
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	€50-75
American Petroleum Institute (API) grade, bagged, railcars, ex-works Wyoming	\$70-100/s.ton	\$78-120/s.ton
Foundry grade, bagged, railcars, ex-works Wyoming	\$90-115/s.ton	\$90-115/s.ton
Iron Ore Pelletising (IOP) grade, crude, bulk, ex-works Wyoming	\$48-55/s.ton	55-60/s.ton

Source: Industrial Minerals

SOUTH AFRICA

South Africa's production of kaolin declined by 49.1 percent in 2010 to 15.2 kt in 2011 due to weaker local demand that resulted in some mines not producing for several months (Table 99). Furthermore, production was affected by increased operational costs. Local sales mass decreased by 20.7 percent to 22.4 kt but local sales value increased by 4.2 percent to R10.4 million in 2011 compared with the previous year owing to higher unit values. Kaolin imports declined by 28.2 percent to 13.0 kt in 2011 owing to competition from cheaper ceramics in the market which do not contain kaolin.

TABLE 99: 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

Source: DMR, Directorate Mineral Economics

Source: # RSA, Commissioner for South African Revenue Services, 2001-2011

Notes: Import figures also include "other kaolinitic clays"

Bentonite production increased by 46.2 percent from 82.3 kt in 2010 to 120.4 kt in 2011, due to increased demand for iron ore pelletising and civil applications (Table 100). The persistent demand for the pelletising application was driven by ferrochrome production and civil applications. The local sales volume increased by 42.1 percent to 177.0 kt in 2011 as a result of increased demand for bentonite from two new customer plants that became operational in 2011, while local sales value increased by 44.2 percent to R118.3 million. Export sales volumes decreased by 87.2 percent from 1.3 kt in 2010 to 165 t in 2011, 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 (attapulgate) in relatively small volumes.

Ecca Holdings will continue to be the supplier of bentonite to Eskom's Medupi project after the completion date was moved to 2013. Bentonite is used in civil engineering as a support fluid, which aims to support the sides of panel excavations for diaphragm walls. The location and the low value of bentonite continue to pose challenges to the producers who try to keep the price affordable to the customers without impacting on their profits.

TABLE 100: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF BENTONITE, 2001-2011

YEAR	PRODUCTION	LOCAL SALES			EXPORTS		
		Mass	Value (FOR)		Mass	Value (FOB)	
	Kt	Kt	R'000	R/t	Kt	R'000	R/t
2001	108.3	51.8	19 793	382	0	-	-
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 34	669	0.2	255	1 551

Source: DMR, Directorate Mineral Economics

South Africa's production of attapulgit decreased by 74.9 percent to 14.4 kt in 2011 and local sales volume decreased by 74.8 percent to 14.4 kt in 2011 as a result of replacement products such as silica gel and low demand for cat litter (Table 101). Sales of attapulgit were serverly affected by the closure of a major attapulgit consumer. The local sales value declined by 62.6 percent to R6.6 million in 2011 compared with 2010. The main demand for attapulgit is for cat litter and as a carrier for pesticides.

Attapulgit, like most industrial minerals, is faced with the challenge of being a high bulk-low value product. As a result distance and transport is a critical issue. Producers have tried to minimize the effects, some successfully doing so by adding value to attapulgit. Consequently, the industry has never been successful with overseas exports, but is making sales of drilling mud in Africa, a market that seems to be growing.

TABLE 101: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF ATTAPULGITE, 2001-2011

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	-	-

Source: DMR, Directorate Mineral Economics

OUTLOOK

The kaolin industry continues to be an important product particularly in the paper and ceramics industries. Although the paper and fibreglass markets have improved, the ceramics market is expected to remain weak. The current fragile economic recovery has led to a decrease in the number of consumers in applications such as sanitary ware. Although production continues to decline due to the anaemic demand, South Africa's kaolin output is expected to rise from 2013 as demand from construction industry strengthens.

Global production of bentonite is expected to increase by approximately 2.5 percent per annum to 17 Mt by 2016. The US and China will remain the world's leading producers of bentonite, and are expected to account for 30 and 24 percent, respectively, of the global output by 2016. South Africa's production of bentonite is forecast to continue increasing until 2013 then decline after the completion of Eskom's Medupi project. Production is expected to remain flat thereafter as there are no major plans announced to boost consumption. The continuing influx of imports is expected to put some downward pressure on local prices, as competition for customers increases.

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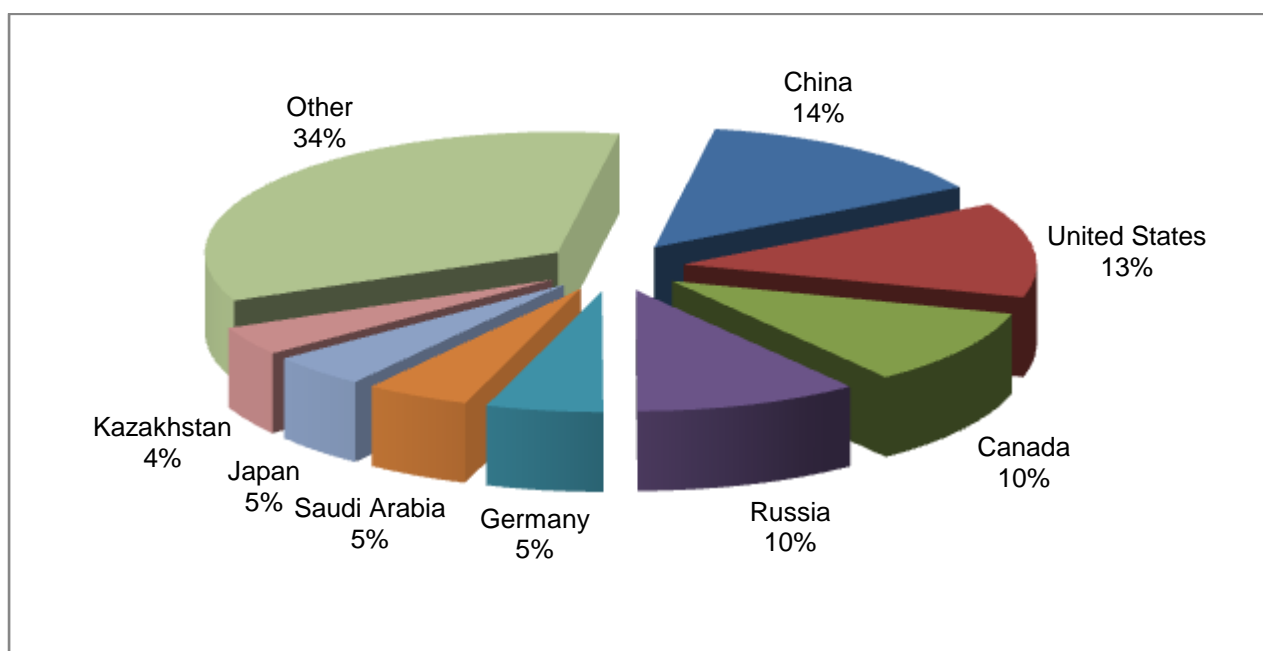
SULPHUR

Mphonyana Modiselle

WORLD SUPPLY

World production of sulphur in all forms (SAF) increased by 900 kt to 69.1 Mt in 2011 from 68.1 Mt in 2010. Domestic phosphate rock consumption was higher in 2011 than in 2010, resulting in increased demand for sulphur to process the phosphate rock into phosphate fertilizers. China was the largest producer of sulphur accounting for 14 percent, followed by the United States (US) at 13 percent, Canada and Russia at 10 percent each (Fig. 81). Global output of elemental sulphur increased by 6.1 percent to 53.7 Mt in 2011 compared with 50.6 Mt in 2010.

FIGURE 81: WORLD PRODUCTION OF SULPHUR BY COUNTRY, 2011



Source: USGS, 2012

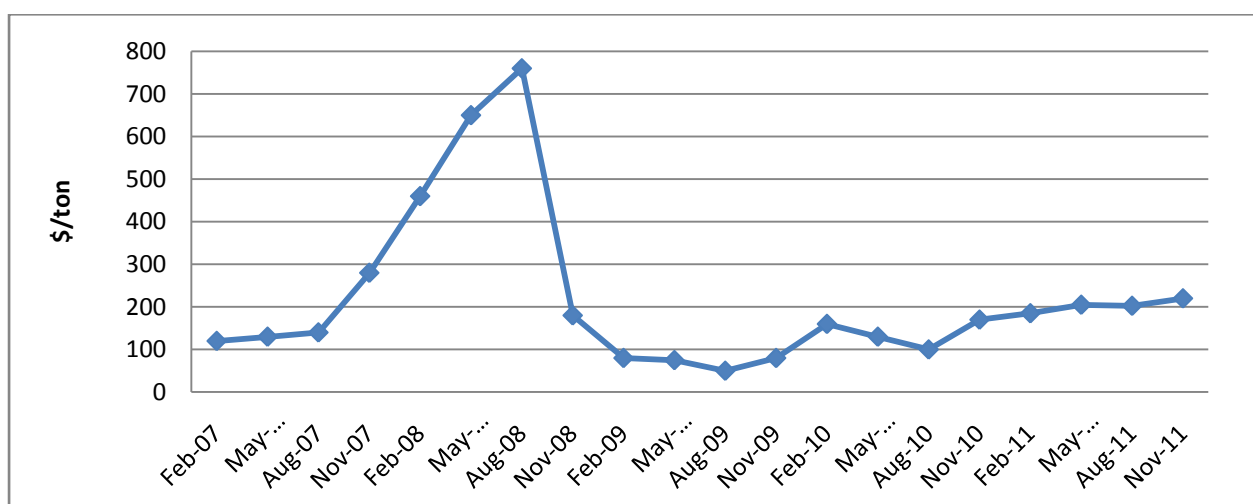
WORLD DEMAND

Strong demand from end-user sectors particularly agrochemicals, petroleum refining and metal mining pushed world demand of SAF to an estimated 71.8 Mt in 2011. About 90 percent of sulphur was consumed in the form of sulphuric acid. Agricultural chemicals, primarily fertilisers account for 68 percent of sulphuric acid consumption followed by petroleum refining with 24 percent and metal mining's 5 percent. The remaining 3 percent is used in a range of other industrial applications.

WORLD PRICES

The South African fertiliser industry pricing of raw materials and final products is linked to international prices, both through international procurement and pricing mechanism. In addition to being dependent on phosphate-based fertiliser prices, sulphur prices depend largely on swings of sulphur production. The industry has, therefore, been alternating between periods of shortage and excess during the last few years with a dramatic impact on prices. In 2010, sulphur prices started increasing and reached \$160/t in February (Fig. 82). From February until August sulphur prices dropped and most refiners were forced to pay for the removal of excess sulphur from their plants. However, prices started to pick up in November 2010. Prices stabilized in 2011 ranging from \$185/t in February to \$220/t in November amid thin trading, as China continued to lower the export taxes for phosphate fertilisers and also in response to high energy prices and strong worldwide fertiliser demand driven by rising crop prices.

FIGURE 82: INTERNATIONAL SULPHUR PRICES, (US\$/TON SPOT, FOB VANCOUVER), 2007-2011



Source: Various sources, 2007-2011

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. Sulphur was recovered as a by-product from one oil refinery/ synthetic fuels producer, one gold mine, seventeen platinum mines, two zinc mines and one copper mine in 2011.

South Africa's production of SAF decreased by 10.0 percent to 338 kt in 2011 compared with 375 kt in 2010 due to closure of the Vaal River operations and Zincor (Table 102). Sulphur recovery from synthetic fuels registered a 20.7 percent decrease to 163 kt in 2011 owing to plant inefficiency related issues. The protracted shutdown at the Engen refinery also contributed to the reduction in production. Sulphuric acid from iron pyrite from gold mining was zero in 2011 owing to the closure of the Vaal River gold mine. Sulphuric acid production from Palabora Mining Company's (PMC) copper mine surged by 98.0 percent to

97.5 kt in 2011 because of increased anode copper production and the easing demand constraints in the sulphuric acid markets. Sulphuric acid production from zinc mines decreased by 28.1 percent to 40.5 kt in 2011 owing to the closure of Exxaro Base Metals' Zincor refinery in the later part of 2011. The move was part of Exxaro's strategic plan to divest from its zinc assets, because of the difficult conditions in the zinc market, including its cyclical nature, low margins as well as the significant impact of higher electricity prices and the exchange rate. Sulphuric acid production from PGM mines increased by 8.7 percent to 37.1 kt in 2011, owing to added extra facilities by Anglo Platinum.

TABLE 102: SOUTH AFRICA'S PRODUCTION OF SULPHUR IN ALL FORMS, 2010-2011

SOURCE	2010		2011	
	Mass		Mass	
	t	%	t	%
Oil refineries / Synthetic fuels	205 411	55	162 884	48
Gold mines	30 309	8	0	0
Copper mines	50 159	13	95 955	28
Zinc refinery	56 373	15	40 522	12
PGM mines	34 097	9	37 075	11
	375 422	100	337 972	100

Source: DMR, Directorate Mineral Economics

Local sales mass of SAF, which includes elemental sulphur and sulphuric acid, decreased by 15.2 percent to 217 kt in 2011, while local sales value declined by 30.9 percent to R116.7 million. A reduction in sulphuric acid sales was attributed to the closure of PMC's phosphoric acid plant and the Zincor plant. Export sales mass of SAF rose by 25.0 percent to 120 kt in 2011 (Table 103). Export sales value rose by 308.7 percent to R199.4 million, owing to increased demand in the global acid market resulting from the buoyant fertilizer and metals demand.

TABLE 103: 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	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	116 739	538	120	199 436	1 658

Source: DMR, Directorate Mineral Economics

South Africa's imports of crude sulphur increased by 38.1 percent to 906 kt in 2011 compared with 656 kt in 2010 (Table 104). South Africa imports crude sulphur mainly from Canada, United Arab Emirates, Saudi Arabia, Kuwait and Iran.

TABLE 104: SOUTH AFRICA'S IMPORTS OF SULPHUR, 2007 – 2011

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

Source: RSA, Commissioner for South African Revenue Service, 2007 – 2011

Notes: All forms of sulphur other than those specifically referred to

OUTLOOK

World sulphur production is forecast to increase at an average annual rate of 6.7 percent to 95.4 Mt in 2016. A significant increase in production is expected from sulphur recovery at liquefied natural gas operations in the Middle East and expanded oil sands operations in Canada. Approximately 60 percent of this growth is expected to come from the global natural gas processing sector. Global consumption is expected to grow at 4 percent per annum to reach 96.8 Mt by 2016, as a result of sustained growth in the use of sulphuric acid in the manufacture of fertilizers and firm industrial demand, particularly for ore leaching.

The sulphur market remains difficult to forecast as sulphur regularly alternates between periods of surplus and deficit. Global economic uncertainty is expected to delay new projects coming on stream, thus affecting some sulphur markets particularly fertiliser manufacturing, which had returned to pre-crisis levels during 2011, and metal ore leaching.

South Africa's local fertiliser industry is exposed to international markets and the uncertainty of the exchange rate. The agricultural value chain contributes between 17 to 24 percent to Gross Domestic Product (GDP). In 2011, the country became the net importer of over 60 percent of fertiliser products in a bid to satisfy its local demand. In order to reduce the reliance on imports many smaller blending plants and companies are being set up to change the complexion within the local fertiliser industry, which will ensure a long term sustainable conducive business environment and long-term investments into the South African fertiliser industry.

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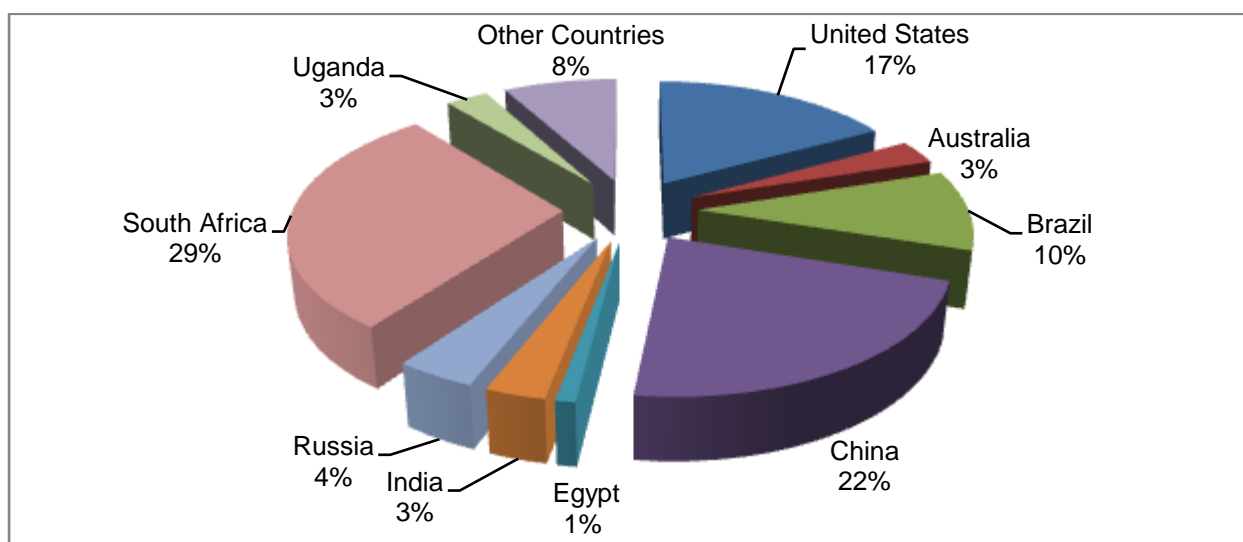
VERMICULITE

Munyadziwa Muravha

WORLD SUPPLY

World vermiculite production increased by 8.2 percent to 580 kt in 2011 compared with 536 kt in 2010. The increase in world output was attributed to several new projects coming online and existing companies ramping up their production capacity. Ugandan Gulf Industrials started production in September 2011 while Brasil Minerios and Xinjuiang Weili Xinlong Vermiculite Company increased their capacities significantly. South Africa is still the world largest vermiculite producer, accounting for 29 percent of total world output, followed by China's 22 percent and the United States' 17 percent (Fig. 83).

FIGURE 83: WORLD PRODUCTION OF VERMICULITE BY COUNTRY, 2011



Source: USGS, 2012

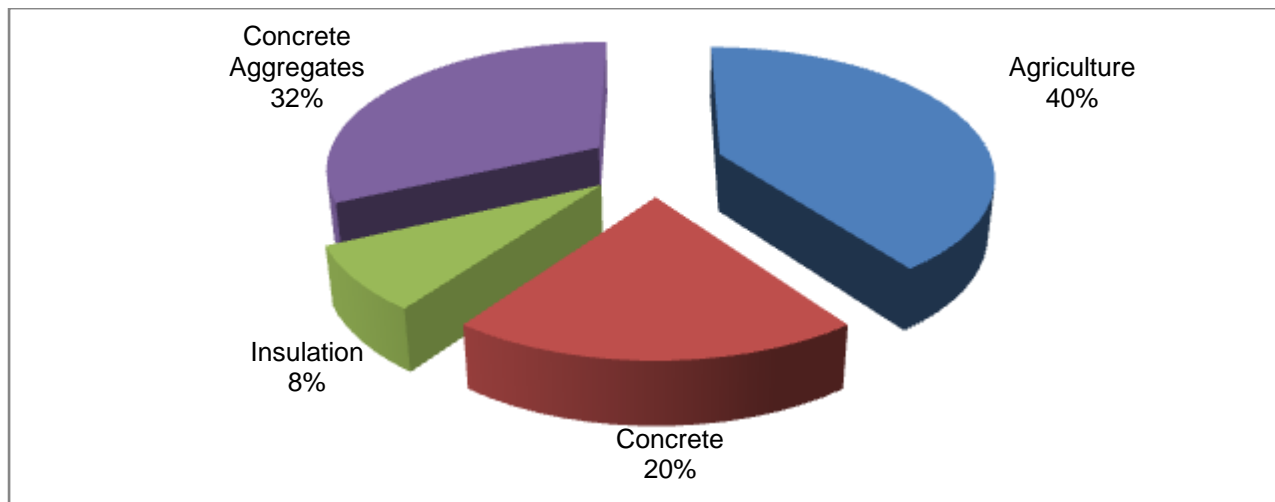
Palabora Mining Company (PMC), a member of the Rio Tinto group, is South Africa's sole producer of vermiculite and the largest producer in the world, followed by China's Xinjuiang Weili Xinlong Vermiculite Company and Virginia Vermiculite in USA. Other significant producers are Gulf Industrials and Basil's Minerios Ltd.

DEMAND

Globally vermiculite is consumed by the construction industry for light concrete aggregates (Fig. 84). It is also used for loose fill fireproof insulation and for horticulture in the agricultural sector. Demand levels for vermiculite in the construction sector have recovered well in recent years after the global economic

slowdown, and with countries like the USA experiencing occasional supply shortages, it is evident that the markets have now recovered.

FIGURE 84: VERMICULITE CONSUMPTION BY SECTOR, 2011



Source: USGS Commodity Summaries 2012

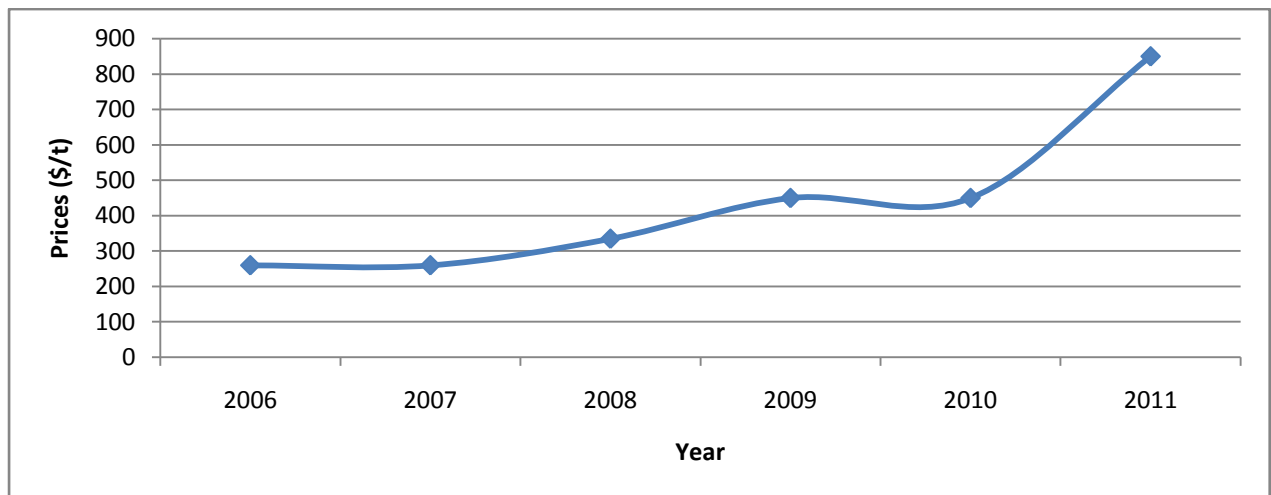
TRADE

South Africa, China and Brazil are the major exporters of vermiculite. South Africa's export volumes amounted to 162.4 kt in 2011 (Table 106), with Europe and North America accounting for about 96 percent of the country's exports.

PRICES

Tight supply conditions have been the driver of the rocketing vermiculite prices. Vermiculite prices depend largely on size, with coarser grades demanding much higher prices. The price of unprocessed vermiculite concentrate has almost doubled since 2008, reaching \$400-850/t FOB Antwerp in mid-2011 (Fig 85), as a result of limited supply of coarse grades. However, vermiculite supply from new producers could ease the current market tightness and limit further price rises in the medium to long term.

FIGURE 85: VERMICULITE PRICES, 2006-2011



Source: Various editions of *Industrial Minerals Magazine*

SOUTH AFRICA

PMC reports that reserves at its Phalaborwa mine deposit amount to approximately 23.4 Mt, at an average grade of 17.8 percent vermiculite.

South Africa's production of vermiculite decreased by 16 percent to 165.0 kt in 2011, compared to 196.3 kt the previous year (Table 105

), as a result of unscheduled operational maintenance performed to improve safety and the impact of wet weather on ore feed in the first quarter. The upgrade of the furnace refractory maintenance plan also affected production for two-and-a-half weeks. In the fourth quarter, lower ore feed grades and excessive ore moisture resulting from wet weather affected production further.

Local sales tonnages decreased by 7.6 percent to 9.6 kt in 2011 compared with 10.4 kt in 2010, while local sales values increased by 28.2 percent to R165.7 million in the same period, due to a surge in prices. Export volumes decreased by 2.4 percent to 162.4 kt in 2011 compared with 166.4 kt in 2010, owing to lower production volumes, logistical constraints and the shift in global demand from the coarser grades to the finer grades. Export sales values increased by 52.1 percent to R329 million in 2011 from R216.3 million in 2010, owing to higher prices and the weaker rand in the second half of 2011. PMC's mix of vermiculite has shifted towards the fine and superfine grades due to grade constraints and lower recovery rates from the open pits.

TABLE 105: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF VERMICULITE, 2002 – 2011

YEAR	PRODUCTION		LOCAL SALES		EXPORTS SALES		
	Mass	Mass	Value (FOR)		Mass	Value (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2002	210.0	6.5	4 498	692	170.0	205 681	1 208
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

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

Global supply is expected to increase in the medium to long term as producers continue to raise capacity, in line with the recovery in the construction industry. Demand for coarser grades continues to dominate the vermiculite market. However, demand is expected to shift to finer grades, as consumers try to contain cost.

Vermiculite prices, particularly for coarse grades are expected to fall in the short term as a result of additional supplies from Uganda and China. 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 militate against significant decrease in prices.

South Africa's production is forecast to increase on the back of PMC's plans to raise current production capacity, supported by government's continued infrastructural development programmes which could stimulate the construction industry and strengthen vermiculite demand further.

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STATISTICS FOR OTHER INDUSTRIAL MINERALS

Refiloe Motsie and Marvin Simango

NOTE: The following applies to all tables.

** Withheld for reasons of company confidentiality

* Nil

1. NATURAL ABRASIVES

TABLE 106: SOUTH AFRICA'S IMPORTS OF NATURAL ABRASIVES, 2002–2011

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2002	1 590	7 695	4 840
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

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

2. BARYTES

TABLE 107: SOUTH AFRICA'S PRODUCTION AND LOCAL SALES OF BARYTES, 2002–2011

YEAR	PRODUCTION		LOCAL SALES	
	Mass	Mass	Value (FOR)	
	t	t	R'000	R/t
2002	*	470	183	391
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	*	319	189	592

Source: DMR, Directorate Mineral Economics

TABLE 108: SOUTH AFRICA'S IMPORTS OF BARYTES, 2002–2011

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2002	2 925	5 329	1 822
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

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

3. DIATOMACEOUS EARTH (KIESELGUHR)

TABLE 109: SOUTH AFRICA'S IMPORTS OF DIATOMACEOUS EARTH, 2002–2011

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2002	4 788	20 406	4 262
2003	5 002	14 975	2 994
2004	4 594	10 670	2 323
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

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

Note: Production statistics are not published because there is only one producer

4. FELDSPAR

TABLE 110: WORLD PRODUCTION OF FELDSPAR, 2011

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, 2012: www.usgs.gov

TABLE 111: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF FELDSPAR, 2002–2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES ⁺		
		Mass	Value (FOR)		Mass	Value (FOB)	
	kt	kt	R'000	R/t	kt	R'000	R/t
2002	66.6	61.0	26 334	432	0.5	822	1 591
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
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	101.5	98.9	61 031	617	*	*	*

Source: DMR, Directorate Mineral Economics

Note: ⁺ Exports are largely of the potassium type and consist almost entirely of ground material

5. GRAPHITE

TABLE 112: SOUTH AFRICA'S IMPORTS OF NATURAL GRAPHITE, 2002–2011

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2002	1 533	7 751	5 056
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

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

6. GYPSUM

TABLE 113: WORLD PRODUCTION OF GYPSUM, 2011

COUNTRY	Mass		
	kt	%	Rank
Australia	3 500	2	9
Canada	2 300	2	10
China	47 000	32	1
France	2 300	9	11
Iran	13 000	2	2
Italy	4 100	4	8
Japan	5 700	4	6
Mexico	5 800	8	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, 2012: www.usgs.gov

TABLE 114: SOUTH AFRICA'S PRODUCTION, LOCAL SALES, AND CONSUMPTION OF NATURAL GYPSUM, 2002–2011

YEAR	PRODUCTION	LOCAL SALES			CONSUMPTION FOR CEMENT ⁺⁺
		Mass	Value (FOR)		
		kt	kt	R'000	R/t
2002	422	438	20 014	46	369
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	36831	114	***

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 115: SOUTH AFRICA'S IMPORTS OF GYPSUM AND GYPSUM PLASTERS, 2002–2011

YEAR	GYPSUM			GYPSUM PLASTERS		
	Mass t	Value (FOB)		Mass T	Value (FOB)	
		R'000	R/t		R'000	R/t
2002	1 861	2 909	1 564	4 893	7 021	1 435
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	1678

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

7. MAGNESITE

TABLE 116: SOUTH AFRICA'S PRODUCTION AND LOCAL SALES OF MAGNESITE AND DERIVED PRODUCTS, 2002–2011

YEAR	PRODUCTION kt	LOCAL SALES		
		Mass Kt	Value (FOR)	
			R'000	R/t
2002	87.2	113.6	25 379	223
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	31.9	68.7	61 484	895

Source: DMR, Directorate Mineral Economics

Note: # Exports amounting to 4 798 tons valued at R30 044 868 were recorded

TABLE 117: SOUTH AFRICA'S IMPORTS OF MAGNESITE AND MAGNESIA, 2002–2011

YEAR	MAGNESITE			MAGNESIA		
	Mass kt	Value (FOB)		Mass kt	Value (FOB)	
		R'000	R/t		R'000	R/t
2002	13.4	18 243	1 363	46.4	95 144	2 052
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	3376

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

8. MICA

TABLE 118: WORLD PRODUCTION OF MICA, 2011

COUNTRY	Mass		
	kt	%	Rank
Canada	15	1	7
China	750	69	1
Finland	70	6	3
France	20	2	6
Korea	28	3	5
Russia	100	9	2
United States	64	6	4
Other		4	
Total	1 090	100	

Source: USGS Mineral Commodity Summaries, 2012: www.usgs.gov

TABLE 119: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF SCRAP AND FLAKE MICA, 2002–2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	t	Mass	Value (FOR)		Mass	Value (FOB)	
		t	R'000	R/t	t	R'000	R/t
2002	880	390	**	**	481	**	**
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	**	**

Source: DMR, Directorate Mineral Economics

TABLE 120: SOUTH AFRICA'S IMPORTS OF MICA, 2002–2011

YEAR	Mass		Value (FOB)	
	t	R'000	R/t	
2002	270	1 286.0	4 763	
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	

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

9. MINERAL PIGMENTS

TABLE 121: SOUTH AFRICA'S PRODUCTION AND SALES OF MINERAL PIGMENTS, 2002–2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value		Mass	Value	
	t	t	R'000	R/t	t	R'000	R/t
2002	282	1 023	446	435	*	*	*
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	*	*	*

Source: DMR, Directorate Mineral Economics

10. POTASH

TABLE 122: WORLD POTASH RESERVES AND PRODUCTION, 2011

COUNTRY	RESERVES			PRODUCTION		
	Mt K ₂ O	%	Rank	kt K ₂ O	%	Rank
Belarus	750 000	8	3	5500	15	3
Brazil	300 000	3	4	400	1	11
Canada	4 400 000	46	1	11200	30	1
Chile	130 000	1	7	800	2	8
China	210 000	2	4	3200	9	5
Germany	150 000	2	5	3300	9	4
Israel	40 000	0.4	8	2000	5	6
Jordan	40 000	0.4	8	1400	4	7
Russia	3 300 000	35	2	7400	20	2
Spain	20 000	0.2	11	420	1	10
UK	22 000	0.2	10	430	1	9
USA	130 000	1	6	1100	3	8
Other	50 000	1		-		
Total	9 542 000	100		37 000	100	

Source: USGS Mineral Commodity Summaries, 2012: www.usgs.gov

TABLE 123: SOUTH AFRICA'S IMPORTS OF POTASH, 2002–2011

YEAR	POTASSIUM CHLORIDE		POTASSIUM SULPHATE		POTASSIUM NITRATE		TOTAL	
	kt	R'000	kt	R'000	kt	R'000	kt	R'000
2002	304.9	362 295	25.3	55 835	39.0	101 411	369.2	519 541
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	0.68	3 497	318.4	1 090 320

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

Note: Up to 10 percent of the imports were probably for non-fertiliser uses

11. PYROPHYLLITE

TABLE 124: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF PYROPHYLLITE, 2002–2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	t	Mass	Value (FOR)		Mass	Value (FOB)	
		t	R'000	R/t	t	R'000	R/t
2002	**	**	22 965	**	**	14 584	**
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	**	**	45 266	**	**	15 837	**

Source: DMR, Directorate Mineral Economics

12. SALT

TABLE 125: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF SALT, 2002–2011

YEAR	PRODUCTION		LOCAL SALES		EXPORTS		
	kt	Mass	Value (FOR)		Mass	Value (FOB)	
		kt	R'000	R/t	kt	R'000	R/t
2002	429	450	82 770	184	<1	23	860
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	381	441	140 438	318	*	*	*

Source: DMR, Directorate Mineral Economics

13. SILICA

TABLE 126: SOUTH AFRICA'S PRODUCTION, LOCAL SALES AND EXPORTS OF SILICA, 2002–2011

YEAR	PRODUCTION		LOCAL SALES		EXPORT SALES		
	kt	Mass	Value (FOR)		Mass	Value (FOB)	
		kt	R'000	R/t	t	R'000	R/t
2002	2 251	2 253	158 964	71	1 038	1 742	1 679
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	2 722	3 052	489 727	160	3 882	5 154	1 328

Source: DMR, Directorate Mineral Economics

14. TALC

TABLE 127: SOUTH AFRICA'S PRODUCTION AND SALES OF TALC, 2002–2011

YEAR	PRODUCTION	LOCAL SALES			EXPORT SALES		
		Mass	Value (FOR)		Mass	Value (FOB)	
	t	t	R'000	R/t	t	R'000	R/t
2002	2 511	12 395	4 552	367	*	*	*
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	*	*	*

Source: DMR, Directorate Mineral Economics

TABLE 128: SOUTH AFRICA'S IMPORTS OF TALC, 2002–2011

YEAR	Mass	Value (FOB)	
	t	R'000	R/t
2002	5 522	2 519	456
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

Source: RSA, Commissioner for South African Revenue Service, 2002–2011

PART THREE: GENERAL INFORMATION

DIRECTORATE: MINERAL ECONOMICS RECENT PUBLICATIONS

(Updated 20/12/2012)

REVIEWS

South Africa's Mineral Industry 2009/2010— (General Overview of SA Mineral Industry including commodity summaries for precious metals and minerals, energy minerals, ferrous, non-ferrous & industrial minerals)

Invest in an Intense and Diverse Mineral Industry, 2011 (Explanatory booklet about investment in South Africa)

INFORMATION CIRCULAR

MB Bulletin Trimester publication (Mineral related articles of current and future trends)

STATISTICS

Mineral Production and Sales Statistics (Monthly and Annually)

BULLETINS

B1/2012: Minerals - South Africa: Statistical Tables 1980-2011

REPORTS

R39/2010: Investment in South Africa's Mineral Sector

R40/2006: Possible Financial Sources for small-to-junior Mining Companies in SA

R42/2005: An Overview of South Africa's Primary Industrial Mineral Imports and Exports

R43/2003: A Review of the Dolomite and Limestone Industry in South Africa

- R44/2004: The Silica Industry in the Republic of South Africa
- R45/2008: An Overview of the South African Iron, Manganese and Steel Industry during the period 1986-2006
- R46/2005: Bentonite, Pyrophyllite and Talc in SA
- R47/2005: The Kaolin Industry in South Africa, 2005
- R48/2005: South African Ferrous Minerals Production Trends, 1994-2003
- R49/2005: Limestone & Dolomite in SA: Supply and Demand
- R50/2006: South Africa's Mineral Production and Sales, 1985-2004
- R51/2012: An Overview of Current Platinum-group Metal Exploration Projects and new mine Developments in South Africa
- R52/2006: South African Ferroalloy Production Trends, 1995-2004
- R53/2006: Review of the Dimension Stone Industry
- R54/2006: An Analysis of the impact of a third player on SA Manganese Industry 2006
- R55/2008: An Overview of South Africa's Vanadium Industry during the period 1997-2006
- R56/2007: Provision of Export Facilities for BEE's at the Richards Bay Coal Terminal
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- R60/2007: The Impact of Chrome Ore Exports on the Local Ferrochrome industry, 2007
- R61/2007: Historical Diamond Production (South Africa)
- R62/2007: Structure of the Salt industry in South Africa

R63/2007:	An Overview of SA Zircon Industry and the role of BEE
R64/2007:	Mineral Abrasives in SA
R65/2007:	Nepheline Mineral Production in SA
R66/2007:	An Overview of Value Systems of Selected Ferrous Mineral Commodities 2007
R68/2010:	An Overview of South African Gold Exploration projects & new mine developments in South Africa
R69/2008:	Overview of South African Mineral Based Fertilizer Industry
R71/2008:	An Overview of SA's Titanium Mineral Concentrate Industry
R73/2008:	An Overview of South Africa's Clay & Brick Industry
R74/2009:	Overview of the Nickel Industry in South Africa, 1997-2006
R75/2009:	Supply Demand Dynamics of Base Metals versus prices, 1997—2006
R76/2009:	The future role of the Waterberg Coalfield in SA coal industry
R77/2009:	Growth Prospects of SA's Coal exports and the effect on black economic empowerment companies
R78/2009:	Developments in the Economic contribution of Hydrocarbons, Natural Gas and Coal
R80/2009:	Special Clays Industry in SA
R81/2009:	Status of Fluorspar Industry in SA
R82/2009:	Gypsum in SA
R83/2009:	Structure of the Andalusite Industry in SA
R84/2010:	Value Chain System of SA Heavy Minerals Industry
R85/2009:	Lime Industry in SA

- R86/2009: Chromium Industry Developments, 1997-2008
- R87/2010: Ceramic Industry in SA
- R88/2010: Overview of the Cobalt Industry in SA, 2000-2009
- R89/2010: Refractory Clays in RSA
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- R91/2012: The future role of the Catalytic Converters Industry in the Downstream Value Addition to SA's Platinum Group Metals
- R92/2012: South Africa's Ferroalloys Production Trends, 2001-2010
- R93/2011: Structure of the Salt Industry in the Republic of SA
- R94/2012: Review of the South African Sand and Aggregate Industry
- R95/2012: Review of the Fluorspar Industry in the Republic of SA
- H1/2012: South African Ferroalloy Handbook
- H2/2009: Precious Metals Trade - General Information Handbook
- H3/2011: South African Steel Producers Handbook

DIRECTORIES

- D1/2012: Operating Mines and Quarries and Mineral Processing Plants in the Republic of South Africa)
- D2/2012: Operating and Developing Coal Mines in the Republic of South Africa
- D3/2011: Operating Gold Mines and Recovery Plants in the RSA
- D4/2010: Salt Producers in the Republic of South Africa
- D5/2012: South African Mineral Beneficiators

D6/2012:	Platinum-group Metal Mines in South Africa
D7/2012:	South African Diamond Handbook and Operating Diamond Mines Directory
D8/2011:	Ferrous Mineral Commodities Produced in the Republic of South Africa
D9/2012:	Producers of Dimension Stone in South Africa
D10/2012:	Producers of Nonferrous Metal Commodities in South Africa
D11/2010:	Producers of Industrial Mineral Commodities in South Africa
D12/2010:	Operating and Developing Black Empowerment Mining Companies in the Republic of South Africa
D13/2009:	African Mining – Mining Companies Government Department and Related Organizations
D14/2009:	Producers of Sand and Aggregate in the RSA

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