

# POCKET GUIDE TO SOUTH AFRICA



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## MINERAL RESOURCES

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## MINERAL RESOURCES

South Africa's mining industry has been and remains the bedrock of Africa's economic powerhouse. The mining sector and its related industries are critical to the country's socio-economic development.

South Africa is well endowed with a considerable mineral resource base, estimated by Citibank at US\$2,5 trillion. The country's mining sector contributes about 8% to gross domestic product, which increases further to 18% when taking into account the indirect effect of mining on the economy. South Africa ranks among the top 10 countries in terms of the production of minerals such as manganese, iron ore, gold, chrome, ferrochrome and piped medical gases.

South Africa's mineral wealth is typically found in the following well-known geological formations and settings:

- the Witwatersrand Basin yields some 94% of South Africa's gold output and contains considerable resources of uranium, silver, pyrite and osmiridium
- the Bushveld Complex is known for its platinum-group metals (PGMs) (with associated copper, nickel and cobalt mineralisation), chromium and vanadium-bearing titanium iron-ore formations as well as large deposits of 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, the Free State as well as Limpopo, hosting considerable bituminous coal and anthracite resources
- the Phalaborwa 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.

According to the Chamber of Mines, in 2008 the South African mining sector employed 518 585 employees compared to 495 474 in 2007, representing an improvement of 4,7%. Mining accounted for 6,1% of total non-agricultural formal employment in the economy and 7,8% of total private-sector non-agricultural employment.

## Policy

The Mineral and Petroleum Resources Development Act, 2002 has opened doors for the substantial and meaningful participation of historically disadvantaged South Africans in the exploration and exploitation of mineral resources.

In 2010, the Department of Mineral Resources concluded an assessment of the progress of the industry's transformation against the Mining Charter objectives.

The racial ownership pattern of the country's mining assets had remained largely unchanged, with only 8,9% black ownership attained by 2009 against the target of 15%.

The reviewed Mining Charter, launched in September 2010, seeks to correct this, putting emphasis on 26% of South Africa's mining assets being Black Economic Empowerment-compliant by 2014.

It also provides for the complete elimination of hostels on South Africa's mines by 2014, and introduces a sustainable element, premised on the understanding that the social licence to operate includes the environment, health and safety performance.

Under the charter, companies found not complying could face penalties, which could include the revoking of a mining company's licence.

## Small-scale mining

The Department of Mineral Resources deems the role of small-scale mining in community upliftment, job creation and poverty alleviation as critical.

The department's small-scale mining strategy provides a framework for creating a sustainable sector that is characterised by growth and development, and contributes to rural development, job creation and poverty alleviation through community-linked small, medium and micro-enterprise projects.

Small-scale mining projects that fall within the Presidential poverty nodes will receive special attention. The Department

In April 2011, the Ministry of Mineral Resources launched the online South African Mineral Resources Administration System for applying for prospecting rights, mining permits and mining rights. By February 2012, more than 3 000 applications had been lodged.



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The Northern Cape Diamond Strategy is aimed at diversifying the province's economy from a primary-sector focus to secondary value-addition activities by establishing Kimberley as a Centre of Excellence (CoE) within the Southern African Development Community.



The Kimberley International Diamond and Jewellery Academy is one of the six priority elements of the strategy. Its objectives include:

- responding to skills demands and development opportunities within the sector in a rapid and strategic manner, and engaging proactively with the sector to anticipate skills needs
- providing a mechanism for employers within the sector to formulate skills-development strategies that will increase competitiveness in regional, national and international markets
- providing accredited courses recognised by government and sought after by the industry, with eventual international accreditation
- promoting the empowerment of previously disadvantaged industry workers, including new entrants, through skills-development programmes
- becoming an integral part of the Diamond CoE by promoting and developing skills as a critical component of competitiveness
- operating in a professional and business-like manner
- becoming financially and technically self-sustaining within five years of its establishment.

of Mineral Resources aims to identify and demarcate areas with mineral deposits and foster economies-of-scale by forming community clusters.

Small-scale mining projects and government-supported initiatives are also to be linked with financial institutions.

### Reserves

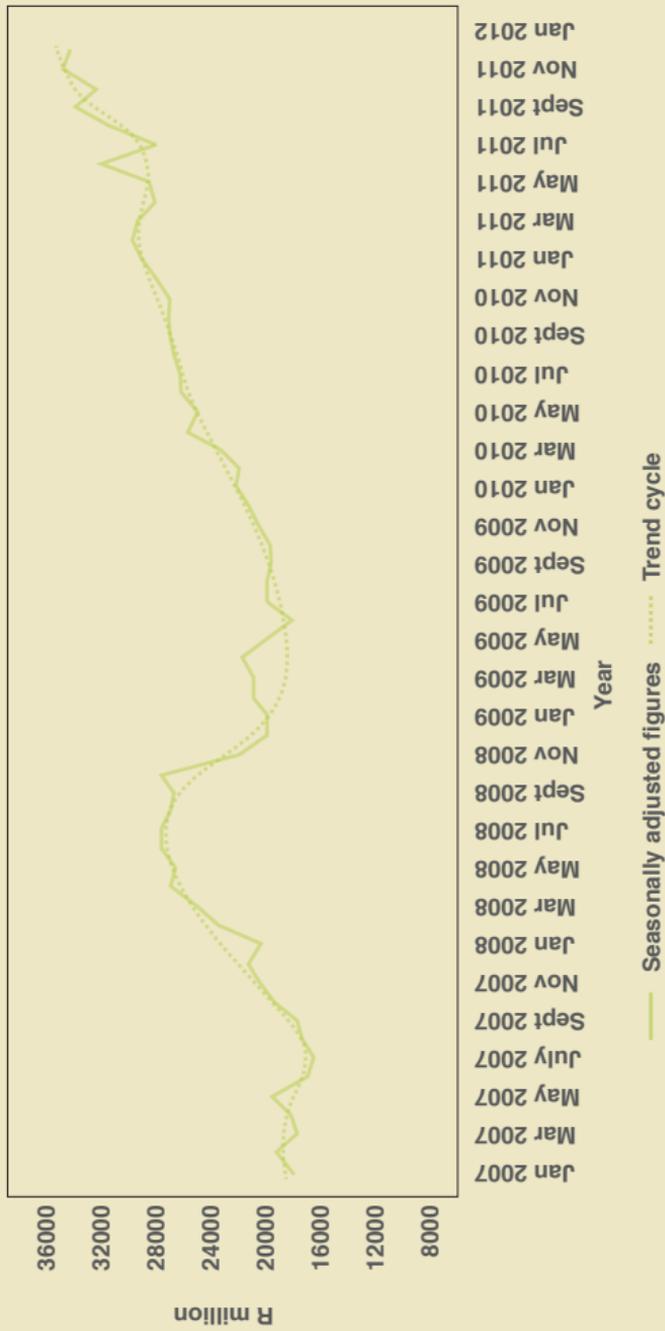
South Africa has the world's largest resources of PGMs (87,7% of world total), manganese (80%), chromium (72,4%), gold (29,7%) and alumino-silicates. South Africa also accounts for over 40% of global production of ferrochromium, PGMs and vanadium.

### Gold

In 2009, total world gold demand increased by 8,4% to 4 264 t. This was the net effect of a 16,3% decrease to 2 417 t in demand for fabrication, a 51,6% fall in gold bar hoarding to 187 t, an increase of 33,3% in implied net investment to 1 429 t and a decrease of 27,8% to 254 t in producer dehedging.

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Mineral sales at current prices



Source: Statistics South Africa, January 2012

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### Silver

South Africa does not have a primary silver mine and the metal is produced only as a by-product of other minerals. Silver was produced as a by-product from 13 gold operations, one uranium mine, two copper mines and two platinum mines in 2008. Despite the vagaries of the global economy, global production was estimated at 718,3 million ounces in 2009.

### Coal

South Africa's saleable coal production declined by a marginal 0,8% to reach 250,6 Mt in 2009 compared to 2008. Local sales declined by 6,2% to 184,7 Mt while export sales declined by 0,2 % to 60,5 Mt. The value of local sales rose by 14,5% to R34,5 billion, while revenue from export sales fell by 30,8% to R30,9 billion.

### Platinum-group metals

South Africa's PGM production decreased by 1,6% to 271,3 t in 2009 from 275,8 t in 2008. Production of platinum and palladium fell by 3,7% to 140,7 t and by 0,5% to 75,1 t, respectively, while production of rhodium increased marginally to 20 t. However, despite a significant increase of 12,5% to 250,9 t in the export sales mass, revenue from such sales decreased by 31,3% to R53,5 billion, mainly due to low PGM prices in 2009 caused by the global economic crisis.

### Non-ferrous minerals

Production of primary non-ferrous metals and minerals, excluding titanium and zirconium minerals, decreased slightly by 0,41% to 207,7 kt in 2009, compared to 2008, while total sales declined by 26,2% to R8,8 billion. Local sales volume decreased by 2,5% to 99,6 kt, while exports declined by 5,9% to 105,5 kt. Domestic sales revenue decreased by 27,9% to R4 billion, while export revenue decreased by 24,8% to R4,9 billion in 2009. Total sales of non-ferrous metals and minerals (primary and processed), excluding titanium minerals, zirconium minerals and aluminium, declined by 25,5% to R10,2 billion in 2009. During the same period, domestic sales decreased by 26,1% to R5,3 billion, while export sales declined by 24,9% to R4,9 billion.

Acid rock drainage occurs owing to reactions between sulphide minerals, oxygen and water, catalysed by bacteria. Key problem areas have been identified, including the Witwatersrand Gold Fields (the gold-mining areas of Gauteng and the Free State), various coalfields in Mpumalanga and the Okiep Copper District in the Northern Cape. Other areas are still being investigated.



In response to this threat, government is constructing a number of canals in problem areas, including Grootvlei and the Klipspruit area between Florida Lake and the Fleurhof Dam. A task team, led by the Council for Geoscience, drafted a report with recommendations that included pumping and treating the water in the western, central and eastern basins, which was actioned by government.

In 2011/12, R208 million was allocated to meet the needs associated with acid mine damage in the Witwatersrand Basin.

## Ferrous minerals

Ferrous minerals are produced from some 32 mines and 23 ferroalloy smelters. Total sales of ferrous minerals amounted to R61,8 billion in 2009, contributing 25,6% to South Africa's primary and processed mineral sales. Ferrous minerals' export sales accounted for R53,4 billion, which is 30,4% of South Africa's export sales. At R36 billion, primary ferrous minerals contributed 14,5% to the revenue generated by the country's minerals industry.

Over the last decade, increasing portions of the production of chrome, manganese and vanadium ore have been processed to value-added alloys in line with the drive for beneficiation, whereas the bulk of growth in iron ore production has been exported.

## Industrial minerals

There are some 680 producers of industrial minerals in South Africa, of which almost half are in the sand and aggregate sector.

There are some 153 producers of clays (brick-making and special), 40 limestone and dolomite, 79 dimension stone, 28 salt and 20 silica producers. Sales of primary industrial minerals in South Africa grew steadily at an annualised compound growth rate of 15% from 2005 to 2009.

Industrial minerals contributed 4,6% of the total revenue from South African mineral sales during 2009, of which R10 billion was from local sales and R1 billion from exports.

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From 2005 to 2009, sales of primary industrial minerals grew at an annualised compounded rate of 15%. However, total revenue decreased from R13,6 billion in 2008 to R11,1 billion in 2009, owing to the depressed economic conditions, which resulted in weak demand for commodities in most sectors.

### **Processed minerals**

Total sales revenue of processed minerals decreased by 45,6% from R86,1 billion in 2008 to R46,8 billion in 2009, and export sales accounted for 80% of total sales. The value of local sales of processed mineral products decreased by 53% from R17,4 billion in 2008 to R9,4 billion in 2009. The largest contributors to total sales were classified commodities at 48,7% as well as chromium alloys at 38,7%. Total production of processed minerals decreased by 18,5% to 6,6 Mt in 2009.

### **Mine health and safety**

The safety track record in the South African mining industry is a matter of great concern to the Department of Mineral Resources, although the mining industry recorded a year-on-year reduction in fatalities from mine accidents from 2009 to 2010. In total, 127 mine employees died in 2010, compared to 168 fatalities in 2009. Fall-of-ground accidents remain the largest accident category and the predominant cause of fatalities, followed by transportation and machinery respectively. An amount of R145,8 million was allocated towards health and safety programmes in 2011/12.