



## Minerals and mining

South Africa's mineral wealth is staggering. Some of the country's most important minerals are:

- gold – the unique Witwatersrand Basin yields some 96% of South Africa's gold output
- diamonds – the country is among the world's top producers
- titanium – heavy mineral-sand occurrences containing titanium minerals are found along the coasts
- manganese – enormous reserves of manganese are found in the sedimentary rocks of the Transvaal Supergroup
- platinum-group metals (PGMs), chrome and vanadium – more than half of the world's reserves occur in the Bushveld Complex in Mpumalanga, Limpopo and North West
- coal and anthracite beds occur in the Karoo Basin in Mpumalanga, KwaZulu-Natal, Limpopo, Free State and Eastern Cape
- copper phosphate, titanium, iron, vermiculite and zirconium are found in the Phalaborwa Igneous Complex in Limpopo.

### Reserves

South Africa's reserves of the following commodities are the biggest in the world:

- manganese
- chromium
- PGMs
- gold
- vanadium
- alumino-silicates.

### Gold

World demand for gold increased by 4,9% to 4 036 tons (t) in 2005. The average gold price traded at US\$445 oz.

World mine supply increased by 49 t to 2 519 t, but South African gold production fell by 13,4% to 294,8 t in 2005. Provisional data for 2005 indicates that total gold sales decreased by 14,9% to US\$3,87 billion.

## Fact:

In May 2006, the gold price broke through the crucial US\$700 a troy ounce level for the first time since 1980.

Platinum also reached a new all-time high, rising nearly 4%, to trade at US\$1237 an ounce.

### South Africa's mineral exports, 2005

Commodity	Unit	Mass	%	World ranking
Aluminium	Kt	611	3	8
Alumino-silicates	Kt	168	44	1
Antimony	Kt	4 762		
Chrome	kt	513	11,4	4
Coal	Mt	68	8,9	4
Copper	Kt	29	0,5	18
Fluorspar	kt	211	9,6	3
Gold	t	343		
Iron ore content	Mt	25	3,9	5
Lead	kt	32	1,6	12
Manganese Kt	kt	2 403	20,2	2
Nickel		18		
Phosphate rock	Kt	268	0,8	9
Platinum-group metals	Kg	259 716		
Silicon metal	kt	46	7,6	5
Silver			72	
Titanium minerals	Kt			
Uranium	t			
Vanadium	Kt	11		
Vermiculite	Kt	178	95	1
Zinc	Kt	16	0,2	24
Zirconium	Kt			

Mt=megaton, Kt=kiloton, t=ton, n/a=not available, Kg=Kilogram

Source: Minerals Bureau

## **Coal**

In 2005, South African mines produced 245 million tons (Mt) of coal. Of this figure, 174 Mt was used locally, at a value of R14,69 billion, with export sales totalling 71,4 Mt at a value of R21,17 billion. South Africa has around 28,6 billion tons of recoverable coal reserves, making it the seventh-largest holder of coal reserves in the world.

## **Platinum-group metals**

South Africa's PGM production increased by 9,6% to 302,9 t in 2005, while PGM revenue increased by 16,8% to US\$ 6,04 billion. The average platinum price for 2005 was 6,0% higher at US\$8 97/oz, while the average palladium price was 12,6% lower at US\$2 01/oz. World demand for platinum increased by 1,8% to 208,7 tin 2005.

## **Non-ferrous minerals**

Refined copper, nickel, cobalt, titanium and zirconium concentrates dominate this sector, with support from zinc, lead and arsenic concentrates. The sector contributes some 12% and 4% respectively to total primary local sales and total primary export sales. About 44% of total revenue is from local sales for further added-value operations.

## **Ferrous minerals**

This sector consists of manganese and chrome, and is dominated by iron ore. It has been a leading performer in the primary minerals industry in recent years, with revenue in dollar terms growing at about 10,3% annually. Demand depends on the fortune of the world's steel and stainless steel industries.

Export earnings from ferrous minerals increased by 70,45% from R4,84 billion in 2004 to R8,25 billion in 2005, despite the fact that higher dollar earnings were severely discounted by a much higher average rand-dollar exchange rate ratio for 2005. Higher prices also affected total ferrous sales, which rose by 45,2% to R11,63 billion.

## Fact:

In the 10 years since the Mine Health and Safety Act, 1996 was introduced, there has been a significant decrease in fatalities at mines. In 1995, there were 533 fatalities and 7 717 injuries. By the end of 2005, fatalities stood at 202 and injuries at 3 961. The fatality rate for mines dropped by 16% from 0,25 fatalities per million hours worked in 2004, to 0,21 in 2005. The injury rate decreased by 8% in the same period.

### South Africa's mineral reserves, 2005

Commodity	Unit	Mass	%	World ranking
Alumino-silicates	Kt	51	37,41	1
Antimony	t	250	6,4	3
Chrome ore	Kt	5 500	72,4	1
Coal	Mt	28 559	6,0	7
Copper	Kt	13	1,4	14
Fluorspar	Mt	80	16,7	2
Gold	t	36 000	40,1	1
Iron ore	Mt	1 500	0,9	9
Lead	Mt	3 000	2,0	
Manganese ore	Kt	4 000	80,0	1
Phosphate rock	Kt	2 500	5,0	n/a
Platinum-group metals	Kg	70 000	87,7	1
Silver	t	10	1,8	9
Titanium minerals	Kt	244	29,8	2
Uranium	t	298	9,6	4
Vanadium	Kt	12 000	27,0	1
Vermiculite	Kt	80	40,0	1
Zinc metal	Kt	15	3,3	6
Zirconium minerals	Kt	14	19,4	2

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Source: Minerals Bureau

## South Africa's mineral production, 2005

Commodity	Unit	Mass	%	World ranking
Aluminium	Kt	866	2,9	10
Alumino-silicates	Kt	235	38,0	1
Antimony	t	4 967	3,2	3
Chrome ore	Kt	7 645	44,5	
Coal	Mt	243	5,2	5
Copper	Kt	103	0,8	18
Fluorspar	Mt	365	–	5,0
Gold	t	341	13,8	1
Iron ore	Mt	39,3	3,3	
Lead	Mt	38	1,3	13
Manganese ore	Kt	4 282	14,8	
Nickel	Kt	40		
Phosphate rock	Kt	2 735	1,9	–
Platinum-group metals	Kg	286 157	57,8	1
Silver	t	72	0,4	
Titanium minerals	Kt	–	–	–
Uranium	t	887	2,1	4
Vanadium	Kt	23	48,0	1
Vermiculite	Kt	197	41,0	1
Zinc metal	Kt	32	0,4	22
Zirconium minerals	Kt	–	–	–

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## Industrial minerals

This sector comprises a wide variety of mineral products, from which over 85% of revenue is local sales. In dollar terms, domestic total sales increased by 19% to US\$ 925 million. In rand terms, local sales increased by 17% to R6 billion and export sales decreased by 5% to R1 billion.

During 2005, 83% of local sales comprised aggregate and sand (38%), limestone and lime (22%), phosphate rock concentrate (data withheld) and sulphur (4%).

Exports were dominated by dimension stone (26%), vermiculite (19%), andalusite (19%), fluorspar (22%) and phosphate rock concentrate (data withheld).

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## Processed minerals

Ferro-alloys and aluminium dominate this sector, with solid support from titanium slag, phosphoric acid, vanadium, zinc metal and low-manganese pig-iron. Through investment in beneficiation, it has been the outstanding performer in the mineral industry over the last 20 years, with revenue in dollar terms growing by 6,3% annually.

International prices of processed minerals surged strongly during 2004 on the back of vigorous growth in demand in China and the East. As a result, export sales earnings were at an all-time high of US\$4,096 billion in 2004, up 48% from US\$2,762 billion in 2003.

### *Other minerals*

This sector is dominated by diamonds, with support from hydrocarbon fuel, uranium oxide and silver. Revenue from these minerals increased by 6,5% to R125,2 billion in 2004.

Eskom's Klipheuwel, just north of Cape Town, is the first large wind turbine facility in sub-Saharan Africa. The pilot phase of the Klipheuwel research and demonstration project ran from August 2002 to the end of 2005. This wind farm has a maximum capacity factor of 34%.

As far as decisions on future wind projects are concerned, the uptake of renewable energy in Eskom's mix forms part of its Integrated Strategic Electricity Planning process. Future installation decisions would be made based on the commercial feasibility of the proposed project.

In August 2006, the City of Cape Town signed a 20-year agreement to buy 'clean' electricity from Darling Wind Farm. Local and foreign investors, government and the community of Darling will collaborate to get South Africa's first commercial wind farm venture operational.

## **The industry**

Mining continues to play an important role in the national economy. Preliminary figures for 2005 indicate that South Africa's mining contributed R94,3 billion or 6,9% gross value added, an increase of R6,83 billion from the previous year. The trend where foreign revenue earnings are dominated by PGMs at US\$3,8 billion, followed by gold at US\$5,3 billion, also continued in 2005.

Over the last few years, South African mining houses have transformed into large, focused mining companies that include Anglo Platinum, AngloGold, De Beers, Implats and Iscor. The Chamber of Mines represents 85% of mining production.

Including suppliers and considering the multiplier effect, many millions rely on the industry for their livelihood.

## **Policy**

The Minerals and Petroleum Resources Development Act, 2002 aims to:

- recognise that mineral resources are the common heritage of all South Africans
- promote the beneficiation of minerals
- guarantee security of tenure for existing prospecting and mining operations
- ensure that historically disadvantaged people (HDP) participate more meaningfully
- promote junior and small-scale mining.

In terms of the Act, new order rights may be registered, transferred and traded, while existing operators are guaranteed security of tenure. Mining rights are valid for a maximum of 30 years and renewable for another 30 years, while prospecting rights are valid for up to five years and renewable for another three.

An empowerment charter for the industry, which is supported by mining houses and labour, targets:

- 15% ownership of mines by HDP within five years
- 40% of junior and senior management positions to be held by HDP within five years
- 26% ownership within 10 years
- 10% participation by women within five years.

Government is committed to helping junior and small-scale miners upgrade their operations into economically viable units. The first step is to legalise these mines.

The South African Small-Scale Mining Chamber was launched in July 2005 in Kimberley in the Northern Cape.