

Pocket Guide to South Africa 2016/17
Mineral Resources



Mining plays a pivotal role in South Africa's socio-economic development objectives and remains one of the Government's strategic tools for the economic emancipation of its people.

The Department of Mineral Resources (DMR) continues to focus, among other things, on ensuring the best utilisation of mineral resources, monitoring mining rights, and ensuring compliance with safety and environmental legislation, all of which in turn, contribute towards promoting investment in South Africa, as well as contributing more broadly to an equitable and inclusive economy.

Specific initiatives include promoting investment in the minerals and upstream petroleum sector include research on shale gas; assisting small, medium and micro enterprises (SMMEs); marketing and providing information, and licensing.

In the medium term, the department planned to focus on accelerating transformation and empowerment in the mining sector by: eradicating barriers to the socio-economic development of mining communities; providing technical support to beneficiation projects; increasing the participation of small-scale miners; and fostering greater value chain integration.

Further focus areas include ensuring the health and safety of miners and mining communities, protecting and rehabilitating the environment, ensuring the best use of mineral resources, and attracting investment in the minerals and upstream petroleum sectors.

The department aims to eradicate illegal mining through stakeholder forums established in Mpumalanga, Free State, Gauteng, Northern Cape and Limpopo. The purpose of stakeholder forums (which include miners, the Chamber of Mines, workers and government representatives) is to implement a segmented approach to enforcement, and efforts to ensure compliance. These measures include:

- promoting legitimate mining activities; sealing off holes and old mining shafts; policing and law enforcement;
- conducting training workshops for all stakeholders; and rehabilitating illegal mining sites.

Mineral wealth

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

- the Witwatersrand Basin yields some 93% of South Africa's gold output and contains considerable uranium, silver, pyrite and osmiridium resources.

- the Bushveld Complex is known for platinum group metals (PGMs) (with associated copper, nickel and cobalt mineralisation), chromium and vanadium-bearing titanium-iron ore formations and industrial minerals, including fluorspar and andalusite.
- the Transvaal Supergroup contains enormous deposits of manganese and iron ore.
- the Karoo Basin extends through Mpumalanga, KwaZulu-Natal, the Free State and 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 near Aggeneys in the Northern Cape.

Mining Qualifications Authority

The future of mining in the country depends largely on the successful implementation of skills development initiatives.

Particular focus is placed on artisan and artisan aid as well as other technical skills. Capacity building within the DMR and associated institutions has also been prioritised in respect of identified critical areas of skills shortage and necessary interventions have been introduced, which include learnership programmes and bursary schemes.

The Mining Qualifications Authority was established as a sector education and training authority, and facilitates the development of appropriate knowledge and skills in the mining, minerals and jewellery sectors.

Petroleum Agency South Africa

The Petroleum Agency South Africa regulates exploration and production activities, and is the custodian of the national petroleum exploration and production database. The agency funds its activities from the sale of data and reserves accumulated from its exploration work.

As the custodian of South Africa's petroleum data, the agency will conduct research, source data, and enhance and store such data on a world-class data management platform. The platform ensures that quality data is accessible for potential and existing operators. The agency will evaluate

South African oil and gas reserves (including shale gas) to determine prospects, and attract oil and gas investment into South Africa.

Shale gas exploration

The potential of shale gas exploration and exploitation provides an opportunity for South Africa to begin exploring the production of its own fuel and marks the beginning of the re-industrialisation of the economy.

Reserves

Gold

There are 35 large-scale gold mines operating in South Africa, including the record setting TauTona mine, which extends 3,9 km underground. TauTona means “great lion” in Setswana. South Africa accounts for 11% of the world’s gold reserves.

Coal

The coal sector is important for the South African economy. The accelerated demand for coal, accompanied by an increase in international coal prices, has invariably changed the buying patterns and structure of the local coal export industry.

In the national energy plan, coal remains an important component of the country’s future energy mix and requirements.

Platinum group metals

Platinum, palladium, rhodium, osmium, ruthenium and iridium occur together in nature alongside nickel and copper. Platinum, palladium and rhodium, the most economically significant of the PGMs, are found in the largest quantities.

The remaining PGMs are produced as co-products. South Africa is the world’s leading platinum and rhodium producer, and the second-largest palladium producer after Russia. South Africa’s production is sourced entirely from the Bushveld Complex, the largest known PGM-resource in the world.

Platinum

South Africa accounts for 96% of known global reserves of the PGMs.

The Merensky Reef, stretching from southern Zimbabwe through to the Rustenburg and Pretoria regions, is the centre of platinum mining in South Africa, playing host to companies such as Rustenburg Platinum Mines and Bafokeng Rasimone Platinum Mines.

Amplats is the industry leader in the mining, marketing, and distribution of platinum. Amplats produces 40% of the world's total platinum group metals.

Other key platinum mining companies in South Africa include BHP Billiton and Impala Platinum.

Palladium

South Africa is the world's second-largest palladium producer. All of South Africa's production is sourced from the Bushveld Igneous Complex, which hosts the world's largest resource of PGMs.

Palladium, together with platinum, is more abundant than any of the other PGMs. It has the lowest melting point (1 554°C) of all the PGMs. Its most remarkable property is its ability to absorb enormous amounts of hydrogen at room temperature.

Ferrous minerals

It is the largest new investment in the manganese industry in the country and supports government's drive to increase the beneficiation in South Africa.

The furnace is designed to produce 120 000 kt of High Carbon Ferro Manganese a year, and includes improvements to ensure increased reliability, availability and also improved pollution control during the production process.

Copper

Palabora, a large copper mine, smelter and refinery complex managed by the Palabora Mining Company in Limpopo is South Africa's only producer of refined copper.

Producing about 80 000 t per year, it supplies most of South Africa's copper needs and exports the balance.

Useful byproduct metals and minerals include zirconium chemicals, magnetite and nickel sulphate as well as small quantities of gold, silver and platinum.

Manganese

South Africa has significant proven manganese reserves, but exploitation of the mineral has not reflected its development potential.

Diamonds

South Africa plans to process a greater proportion of its gems locally to keep more profit in the country.

Government wants to cut and refine 70% of the diamonds mined in South Africa by 2023.

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 (brickmaking), 40 limestone and dolomite, 79 dimension stone, 28 salt and 20 silica producers.

Bulk consumption of industrial minerals is realised in the domestic market, as most are low-priced commodities and sold in bulk, making their economic exploitation highly dependent on transport costs and distance to markets.

Geology

South Africa has a long and complex geological history dating back more than 3 700 billion years.

The preservation of so much Archaean geology, dating back more than 2 500 million years, has resulted in the Archaean Witwatersrand Basin, as well as several greenstone belts, being preserved.

By end of 2016, the Council for Geoscience – whose principal mandate is to develop and publish world-class geoscience knowledge products, and to provide geoscience related services to the South African public and to industry – was collaborating with the Mine Health and Safety Council in a project which sought to bridge the gap in the monitoring of mine seismicity within South Africa between the underground mining networks and the South African National Seismograph Network.