

Mineral Resources



The Department of Mineral Resources (DMR) assumes the custodianship of all mineral resources in South Africa on behalf of its citizens. To this end, the DMR promotes and regulates the Minerals and Mining Sector for transformation, growth and development as well as ensures that all South Africans derive sustainable benefit from the country's mineral wealth.

Various specialised divisions of the DMR and associated institutions are responsible for the administration of the mining and regulations and for promoting the development of the industry. The platinum and gold sectors had been negatively affected by the persistent global economic market environment, which had an adverse bearing on their long-term viability.

Platinum and gold were among the largest sectors of South Africa's mining industry in terms of employment, investment and revenue generation.

The strategic goals for the DMR are to:

- promote and facilitate an increase in mining activity and in value added to mineral resources extracted in South Africa
- implement transformation policies that redress past imbalances through broader participation in the mineral sector
- provide a framework for managing health and safety risks, enforce compliance and promote best practice in the mineral sector
- promote sustainable resource management, contribute to skills development and the creation of sustainable jobs in the mining sector
- contribute to a reduction of the adverse impacts of mining on the environment
- attract, develop and retain appropriate skills and ensure the optimal utilisation of resources
- implement risk management strategies and promote corporate governance.

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

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.

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.

The proposed regulations on petroleum exploration and exploitation prescribe good international petroleum industry practices and standards, which enhance safe exploration and production of all petroleum and will further ensure that petroleum exploration is conducted in a socially and environmentally balanced manner.

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 (brick-making and special), 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.

Stability in the mining sector

In July 2013, mining companies, trade unions and government departments met to sign the Framework Agreement for a Sustainable Mining Industry, which is aimed at resolving problems in the industry, rooting out unrest and restoring investor confidence in the sector.

Geology

South Africa has a long and complex geological history dating back more than 3 700 billion years. Significant fragments of this geology have been preserved, and along with them mineral deposits.

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.