



ТЕМПЕРИЛОДЖИСТИКСЕООД  
TEMPERI LOGISTICS LTD



# Anthracite from South Africa

2023

Content



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## Introduction

*The global anthracite market size in 2022 was \$119.04 billion. The Russian-Ukrainian war has undermined the chances of the global economy recovering from the Covid-19 pandemic and at a compound annual growth rate (CAGR) of -0.9%, the anthracite market size is expected to fall to \$117.98 billion in 2023.*

*As a high-grade coal with high carbon content, anthracite is suitable for various industrial applications ranging from power generation to iron and non-ferrous metallurgy applications, and for the production of adsorbents, electrodes, electrocorundum, and microphone powder.*

*In countries such as China and India, anthracite is fed directly into the blast furnace. Anthracite reduces the use of coke, being the best and cleanest alternative, hence global coke shortage and its high price will increase the demand for ultra-low bituminous coal in the future. Utilization of anthracite due to higher carbon and energy content increases the productivity of steel mills, which has significantly increased the market for extraction of this raw material.*

*According to the World Steel Association, about 89% of the energy consumed by blast furnaces and oxygen converter furnaces is from anthracite, 7% from electricity, 3% from natural gas, and 1% from other gases and sources. In the case of the electric arc furnace, the energy input from anthracite is 11%, from electricity 50%, from natural gas 38%, and from other sources 1%.*

*The largest consumers of anthracite today are China, India, Indonesia, Japan South Korea, France, Belgium, Bulgaria, Brazil, and Spain.*

*Coal demand in the European Union increased by 0.9% to 448 million tons in 2022, driven by power generation, offsetting a decline in non-energy use. Coal-fired power generation growth was fueled by high gas prices and a drive to reduce gas use amid declining Russian gas flows, low hydro generation, and temporary outages of the French nuclear fleet. It was the second consecutive year of growth, but as expected, the upturn was short-lived, and a sharp decline is forecast in the coming years due to weak electricity demand and the expansion of renewables.*

*European Union coal demand fell by around 16% in the first half of 2023 and is expected to fall by around 17% for the full year, to around 372 million tons.*

*As for anthracite coal - many European countries have found an alternative to anthracite from Russia, a major anthracite producer, in the form of South African coal producers. South Africa, which produces about three million tons of anthracite per year, exports 60% from the ports of Richards Bay and Durban, with the remaining 40% of the raw material used for domestic use.*

*South Africa exported R215.5bn worth of coal in 2022 and employs 91,000 people in the coal mining industry. The South African region was considered the world's largest anthracite mining market in 2022.*

*This 35-page report provides information on South African anthracite deposits and reserves, producers and coal terminals, price index, and export volumes.*



## 1. Anthracites and their distribution in the world

Anthracite is the most metamorphosed form of coal. It contains more bound carbon (86 percent or more in dry, ash-free terms) than any other form of coal and the least volatile matter (14 percent or less in dry, ash-free terms), and has a calorific value of about 35 megajoules per kilogram (approximately 15,000 British thermal units per pound), which is not much different from the calorific value of most bituminous coals.

Anthracites are black to steel-grey in color and have a lustrous, almost metallic sheen.

Hard and brittle anthracites disintegrate with a rakish fracture into sharp shards. Unlike many bituminous coals, they are clean to the touch. Although anthracites are difficult to ignite, they burn with a pale blue flame and require little attention to keep burning.

In the past, they were used for residential heating because they produce little dust when handled, burn slowly, and emit relatively little smoke.

Anthracite is rarely used for this purpose today because of its limited distribution and relatively high cost, and the availability of other energy sources (e.g., natural gas and electricity) for heating purposes.





Anthracite is divided into several grades: Standard Grade, High Grade, and Ultra High Grade.

Anthracite High Grade and Ultra High Grade are the highest grades of anthracite coal. They are the purest forms of coal, having the highest degree of carbonization, the highest carbon and energy content, and the least amount of impurities (moisture, ash, and volatile matter). Ultra-high-grade anthracite usually has a minimum carbon content of 95%. It burns with a hot, clean flame with low levels of sulfur and volatile matter. Because of these characteristics, anthracite is sometimes used for domestic purposes or other specialized industrial applications requiring smokeless fuel. Standard grades are used primarily in the power generation industry, while high grades (HG) and ultra-high grades (UHG) are used primarily in the metallurgical sector.

Anthracite accounts for about 1% of the world's coal reserves and is mined in only a few countries around the world.

Anthracite is the least common type of coal. The coal region in northeastern Pennsylvania in the United States has the largest known anthracite coal reserves in the world with estimated reserves of 7 billion short tonnes, less than 2 percent of the country's total coal reserves.

China accounts for the majority of global production; other producers include Russia, Ukraine, North Korea, South Africa, Vietnam, the United Kingdom, Australia, Canada, the United States, and the United Kingdom.

Total production in 2020 was 615 million tonnes.

## 2. Coal-bearing areas and anthracite deposits in South Africa

South Africa's major known coal deposits lie, mostly at easily mined depths, beneath Mpumalanga and the northern Highveld of the Free State, there are eleven active ones: ERMELO, HIGHVELD, KANGWANE, KLIPRIVIER, NONGOMA, SOUTPANSBERG, UTRECHT, V-SASOLBURG, VRYHEID, WATERBERG and WITBANK. Coal is mined mainly for export (to East Asia and Europe) and for electricity production.

In the Republic of South Africa and Zimbabwe, where more than 90 percent of the continent's production is concentrated, the American classification is followed, dividing coals with a volatile content of more than 14 percent into three groups: 1) high-grade group - with calorific values of 6,900 kcal/kg and above; 2) low-grade group - with calorific values of 6,500 to 6,900 kcal/kg; 3) low-grade group - with calorific values below 6,500 kcal/kg.

**For anthracites, coal with a volatile matter content of 11% and a calorific value of 7200 kcal/kg is taken as an estimation unit.** The quality of coal in the same seam in the section is variable, in most cases the best is the lower part of the seam, gradually deteriorating upwards. Therefore, taking into account the minimum coal seam thickness of 0.90-0.95 m, excavation is carried out either selectively or at full seam thickness with subsequent enrichment.



On average in South Africa, 39% of coal is used for power stations, 21% for industry and domestic use, 18% for railways, 15% for carbonization and gasification, 5-6% for mines and mines, and 1-2% for exports.

**The Witbank Basin** (57 percent of the country's total reserves) is located south of Pretoria, the capital of the Republic of South Africa. Pretoria. The thickness of the coal-bearing strata in the central and southern parts of the basin is 120-130 meters; due to the uplift of the ancient relief to the north and east, its thickness in these directions is decreasing.

The increase of coal-bearing and the increase of quantity and thickness of seams goes from south to north and from west to east. South of Ladysmith latitude - at Bergville, Senecal, and elsewhere - the Beaufort Series coal seams appear, in some places 5-12 g thick and belonging to **anthracites**. In general, the coal of the Witbank Basin is used almost exclusively as an energy source.

There are six coal seams in the upper and three coal seams in the lower groups with a total seam of 23.7 metres. In the lower group, there is the H seam with a thickness of 3.95 m, the ash content of which varies from 13.5 to 21.5%. It is also characterized by low sulfur content (within 0.7-1.1%), while in other coal seams it is 1.3-4.2%. The heat of combustion of the lower group coals averages 7000 kcal/kg, including the H seam - 7500 kcal/kg, the upper group - from 6000 to 6800 kcal/kg. The reserves of the deposit, estimated by some researchers as 7.4 billion tonnes, are as follows.



The Grootegeluk coal mine was bought and established on the **Waterberg Coalfield** by Iscor (later split into Kumba Resources (now Exxaro Resources) and Mittal Steel South Africa).



The mine is now operated by **Exxaro**. Sasol is also interested in developing the deposit. A joint venture between Australia's Firestone Energy and local coal company Sekoko is also active in the region.

**The Clipp coal-bearing area** (1.9 percent of the country's total reserves), named after the river of the same name that crosses it, extends in the south-western part of the basin, in an almost meridional direction from Ladysmith in the south to Newcastle in the north.

**The Top** seam is the most intensively developed with an average thickness of 1.8 metres. The coals are half **anthracite**, half bituminous, and flaming. The best coals are used for the fleet and are exported, but their reserves are just over 0.25 billion tonnes.

**The Utrecht coal-bearing area** (2 percent of the country's total reserves) near Utrecht lies between the coal-bearing areas of the Transvaal and the Freiheit Basin, which it joins to the southeast. In the part of the basin nearest to Freiheit, the same seams are analogs of the Alfred, Goose, Dundas, and Kocking seams, of which only one, apparently corresponding to the Goose seam, is in working condition.

The productive part of the strata up to 50 m thick contains five formations. Four of them are 0.9-1.8 meters thick and sometimes sulfurous and contaminated. The lowest seam, which corresponds to the Kocking seam and yields the highest quality coal for export, is only 0.6-0.9 meters thick. According to the degree of metamorphism, the coals of the Utrecht area are predominantly gaseous and greasy.

The coals contain ash 10-15%, sulfur 0.8-2.1%, moisture 1.1-3.1%. Elemental composition is as follows: carbon 84.1-87.4 percent, hydrogen 4.5-5.1 percent, nitrogen 2.2-2.4 percent.

Coal from **the Cocking** seam contains 1.2-1.4% moisture, 6-9% ash, 16-22% volatile matter, and has a calorific value of **7,400-8,200 kcal/kg**. Despite the area's reserves of 6.1 billion tonnes, it is underdeveloped compared to other basins in this part of South Africa.

MC Mining Limited (MCM) develops seams in the Utrecht area: the Uitkomst Colliery (metallurgical coal)

- is an export quality, high-grade coal deposit for metallurgical applications, located in the Utrecht coalfields in KwaZulu-Natal province.

#### **Anthracite is mined at the following deposits:**

- **Coal deposit ERMELO.**

Anthracite is mined in the Pit Retief, Ermelo, and Wakkerstrum areas.

- **Coal deposit KLIPRIVIER.**

Two active anthracite mines: Avimori Springlake and one under development: Sesikhona. Owned by Slater Coal (Forbes Manhattan) and Shanduka.

- **Coal deposit VRYHEID.**

Plast Goose. Premium class anthracite.

- **Coal deposit UTRECHT.**



Plast Dundas. Anthracites.

- **Coal deposit NONGOMA.**  
Zululand Anthracite Colliery
  - **Coal deposit Somkele.**  
Somkele Mine develops high-quality anthracite.
  - **Coal deposit Kangwane.**

Three anthracite seams: Lower, Middle, and Upper. One mine in operation: Anthracite Nkomati.



### 3. Anthracite mines and their owners

There are the following anthracite-producing mines in South Africa:

- **Shanduka Resources Group mines: Graspan and others.**
- **Zibulo Mine.**
- **Avimor mine produces** 20,000t/min of anthracite, a reserve base of 2 million tonnes.

Including additional reserves acquired from Anglo Coal, total resources are approximately 20 million tonnes.

Coal quality: CV 30 MJ/kg, ash content 12%, VM 7%, S 2.0%, and FC 78; this coal is used as a charge material for the steel industry.



The mine is owned by Forbes & Manhattan (Coal) Inc in Hotazel.

- **Springlake Mine.**

The Springlake coal mine, in operation for almost 30 years, is the largest producer of anthracite in South Africa. Annual production is 1.1 million tonnes.

Springlake exports calibrated anthracite to Brazil and Europe for metallurgical processes. Springlake has increased its exports to India in recent years and the local anthracite market consumes 900,000 tonnes of anthracite per annum. Springlake is wholly owned by Shanduka Resources.

- **Zululand Anthracite Colliery.**

Zululand Anthracite Colliery is owned and operated by Riversdale Mining Limited, which holds 74% of the shares, with the remaining 26% owned by a consortium of BEE: ZAC Staff Trust, Community Trust, Ungoye Mining & Injobo Business Consortium and Maweni Investments. They have two other mining projects, viz.

- **Riversdale Anthracite Coal Mine**

(6.5 million tonnes resource located about 28 km southeast of Vryheid), which they acquired from Richards Bay Minerals, and a project in Mozambique.

- **Somkhele Coal Mine**

At the end of January 2007, the Somkhele coal plant was commissioned and construction of a coal preparation plant was completed to supply anthracite to the steel, ferrometallic, and titanium markets.

Ownership is distributed as follows: 13.66 percent public listing, 12.2 percent management, 8 percent PSG capital, 14 percent NAMF, with the remainder held by the BEE consortium consisting of Dark Capital Investment, Lebone Resources, Popcru Investments, and Umsobomvu Coal (52.74 percent).

- **Petmin**

The company has announced plans to build a new plant that would double its production capacity to 750,000 tonnes of salable anthracite per year. It transports anthracite by rail from the Teza junction of the Somkhele mine, located 12 km south of Mtubatuba, to the bulk terminal at Richards Bay, approximately 45 km. Under normal market conditions, 60% of production is exported, and 40% is sold domestically.

Yields: 65%, Ash 8%, VM 7%, FC 79%, S 0.7% with low phosphorus content. The anthracite from this stock will be a low ash, sulfur, and phosphorus content product that meets all metallurgical requirements. The calibration fraction will also be exported to Europe. The expected tonnage will be approximately 40 thousand tons per month.



- **Vryheid Coalfield**

Leeuw Mining acquired the rights to acquire the KZN coal reserves from Anglo Coal in 2002 and to establish a mining operation through a joint venture with Anglo Zimele, with mining commencing in 2004. These reserves consist of small blocks, thin seams, and specialized products suitable for mining. small mining company.

The company has approximately 102 million tons of gold reserves of good-quality bituminous coal and high-grade anthracite.

Reserves and resources will be obtained from the following fields: Koudelager, Mount Sesa, Balgray, Impati, Indumeni, Ingagane, Elandslaagte, Glencalder, and Braakfontein. Anthracite/coking and bituminous coal have all these properties.

- **Kangwane Coalfield**

- **Nkomati Anthracite Mine**

The Nkomati coal mine is owned and operated by Benicon, a subsidiary of Sentula and produces about 10,000 tonnes/min from the underground mine which is exported via Matola. This product is sold to Spain as thermal coal.

It is reported that the recoverable resources are 27 million tonnes and the quality is as follows: yield 65%, ash 15%, VM7%, S0.8%. There are additional reserves such as South Nkomati with resources of >55 million tonnes held by Borneo Mining in a JV with Black Ginger, and north of Nkomati, Siyanda holds resources of approximately 100 million tonnes.



#### **4. Export coal terminals and railway routes to them**

South African coal exporters have three existing export terminals that can be used to export coal.



### Existing coal terminals:

- **Port of Richards Bay:** Richards Bay Coal Terminal (RBCT) (will be discussed in more detail in a separate paragraph);
- **Port of Durban:** Bulk Connections; And
- **Port of Maputo:** Matola Coal Terminal (MCT), Maputo, Mozambique.

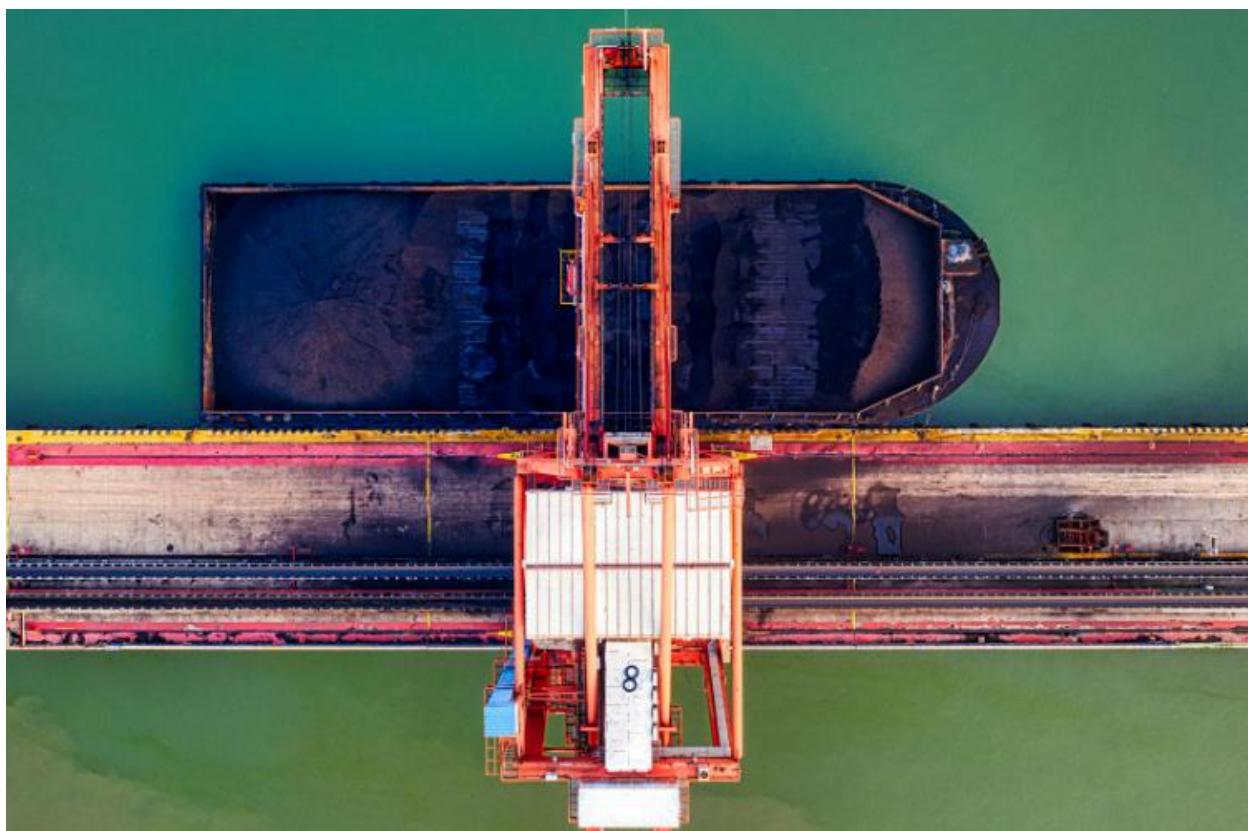
#### Port of Durban

Bulk Connection is a multi-product wholesale terminal. It specializes in the transshipment of degradation-sensitive cargo on Handymax vessels and has a terminal capacity of approximately 3.5 million tons per year.

Container equipment has been uniquely adapted for the export and import of bulk materials. Special storage areas have been created for various goods.

Currently, the terminal exports graded and ungraded coal, anthracite, manganese ore, and copper concentrate.

Metallurgical coke is currently the main import cargo handled. The terminal currently achieves an average loading rate of about 10,000 tons and an average unloading rate of about 5,000–6,000 tons per day.





## Port of Maputo (Matola)

The port services are composed of a variety of operators, each specialized in certain products (sugar, citrus, coal, manganese, petroleum, and aluminum) and tailored to container and bulk cargo at the port of Maputo and bulk cargo at Matola.

Today, Matola Coal Terminals handles the majority of South African cargo exports through the port. It is managed by TCM – Terminal de Carvão da Matola Lda, which is one of the founders of MCLI, and Grindrod owns a 12.5% stake in the port; they operate a coal and manganese plant in Matola.

Grindrod has already increased the capacity of the Maputo coal terminal from two million tons per year to six million tons and is planning a further expansion project to reach a capacity of 16 million tons per year. All current capacity is contracted and CoAL is the largest customer.

There are about 80,000 km of railways in Africa and 22,300 km in South Africa.

The South African coal export line is 978 km long and has three rail routes to the sea, which includes the Waterberg coal line from Lephale in Limpopo to the Mpumalanga mining town of Ogies, which is 438 km long; the coal "highway" from Ogies to Ermelo in Mpumalanga, which is 210 km long; and the rest of the export line from Ermelo to Richards Bay in KwaZulu-Natal, adding another 420 km to the total length:

- **Richards Bay Coal Line (operated by CoalLink)** from Ogis in Mpumalanga to Richards Bay in KwaZulu-Natal.

The line accounts for approximately 96% of South Africa's total coal exports;

- **Maputo railway line**, which has 2 branches; And
- **Durban railway line**, which has several branches.

The key problem is insufficient investment in transport infrastructure, which means that the railway system does not function properly: operating costs are high and the volume of goods transported is insufficient. Regional freight forecasts for 2030 show that it will be very difficult to expand road services enough to meet demand.

Thus, despite the poor and declining performance of rail services over the last 25 years, there is an urgent need for its revival and expansion. To increase volumes and create additional capacity, heavier trains and longer trains closer to the coal source are needed.

Rail transport has two competitive advantages over road transport: lower unit variable operating costs (assuming high asset utilization) and lower rates of fuel consumption (about 25 percent of automobile fuel consumption).



## 5. Port Richards Bay - South Africa's "coal gateway"

International trade in South African coal products occurs through the port of Richards Bay, which is the country's "coal gateway". Built for the export of coal, it has since expanded to be used for the transport of other bulk and bulk cargo. Richards Bay is the main port of South Africa and the most modern.

Founded in the late 19th century as a fishing port, Richards Bay was converted into a deep-sea port in 1976, which quickly became South Africa's second-largest port. Today it handles approximately 1,700 ships a year, representing 55% of South Africa's total maritime traffic. The port specializes in the export of goods, mainly raw materials, steel, and coal. The coal terminal is considered the largest in the world with a capacity of 68 million tons per year.

In addition to the Coal Terminal, the port of Richards Bay has a Dry Bulk Terminal and a Multipurpose Terminal.



The Richards Bay Coal Terminal (RBCT) managed 65.511 mt of export coal in comparison to the year 2010 which was 63.427 mt. Ships involved with the coal trade are handled at six berths (301-306) each 350m in length and with a water depth of 19m and a permissible draught of 17.5m. The adjacent 209 chemical berth is 300m long and has a depth of 14m with a permissible draught of 12.5m.

Dry Bulk Terminal (DBT) is a unique terminal that processes a variety of products through its conveyor system ("conveyor" route over 40 km), approximately 13 million tons of goods per year.

The multi-purpose terminal can logically handle various types of cargo, namely dry bulk, neo-bulk, and containers. The multi-purpose terminal has an annual capacity of 5.6 million tons and has six berths. Other private operators at the port include several wood chip export terminals and a bulk liquids terminal. The port has an extensive rail and belt conveyor system serving the berths of nearby factories and factories.

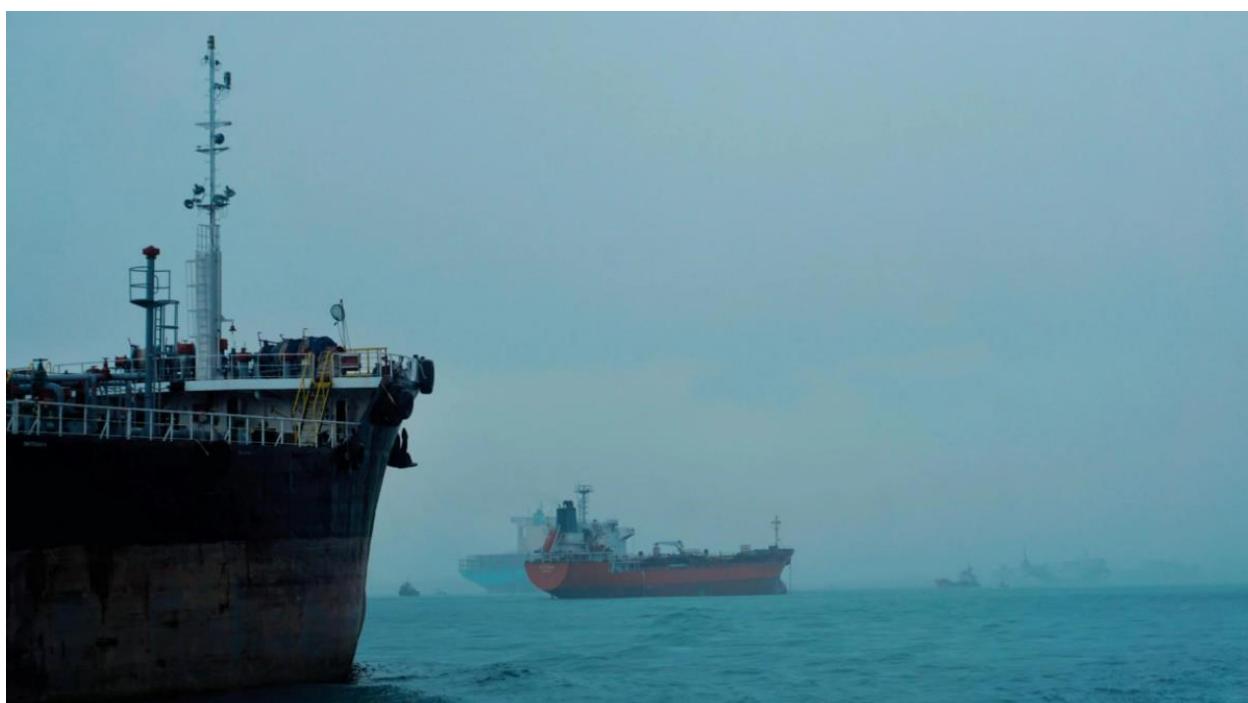


All berths are equipped with cranes. Berth crews are provided by the Transnet National Ports Authority and use of this service is mandatory. There are currently 21 berths in operation, including at the private Richards Bay Coal Terminal, excluding dredge and tug berths. Another coal pier is currently under construction. 80 km of railway tracks have been laid on the territory of the RBCT complex. The port is served by a railway line connecting Gauteng and Mpumalanga, through which most coal exports occur. Trains with an average carrying capacity of 16.8 thousand tons in 200 cars deliver coal to RBKT in a continuous process, 30-35 trains arrive at the terminal per day.

The terminal can store a maximum of 6 million tons of coal. Since its opening, the terminal has handled more than 1 billion tons of coal for export. The Richards Bay Coal Terminal has four ship loaders, two of which have a rated loading capacity of 8,500 t/h, one of 10,000 t/h, and the fourth of 11,000 t/h. Considering the ratio, it can be assumed that RBCT will be able to achieve a total throughput of 77 million tons at this stage.

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In the calendar year of 2006, the Port of Richards Bay handled a total of 1575 vessels. The total volume handled was 86,319,200 tons, of which 81,384,838 tons were bulk cargo and 4,934,362 tons breakbulk.

Exports amounted to 80,050,728 tons of which bulk cargo made up 75,075,617 tons, coastwise 171,803 tons, and breakbulk 4,803,308 tons.

Imports amounted to 6,268,335 tons of which breakbulk made up 130,917 tons and bulk cargo 6,137,418 tons. Of the bulk cargo landed, 316,850 tons were coastal. The transshipment of cargo totaled only 137 tons.

For the 2006/07 financial year, 63,540,607 tons of coal, 3,728,948 tons of woodchips, and 2,798,517 tons of ferrous- alloys were exported. Most of the imports were made up of aluminum (1,560,662 tons) and coal (1,661,533 tons).

During the 2019 calendar year ending 31 December 2019, Richards Bay handled a total of 1,855 ships with a gross tonnage of 70,572,266 tons (2017: 1,850 ships/72,207,967 gross), of which an average of 700 ships per year are dedicated to RBCT. The port handled 98.699 million tons of cargo, including 10,206 TEU (2017: 99.984 tons / 15,241 TEU).

The Richards Bay Coal Terminal exported 72.1 million tons of coal in 2019, down from the 73.47 million tons exported in 2018 and the 76.47 million tons exported in 2017. Coal exports through the Richards Bay Coal Terminal reached a record 76.47 million tons in 2017, surpassing the previous highest of 75.4 million tons handled in 2015 and 72,573 tons handled in 2016. In 2010, RBCT handled 63,427 tons, and in 2011 - 65,512 tons.

In 2016, Transnet Freight Rail supplied RBCT with a total of 72,588 tons of coal (73,925 tons in 2015). In 2016, the number of SKR trains unloaded at RBKT was 9,022. Every day, up to 200-car trains deliver coal to RBKT, the average payload of each is up to 16.8 thousand tons. Plans have been announced to introduce 100-ton capacity carriages, which will increase the maximum train load to 20,000 tons. The terminal can store a maximum of 6 million tons of coal. 80 km of railway tracks have been laid on the territory of the RBKT complex. Since its opening, the terminal has handled more than 1 billion tons of coal for export.

In 2022, Richards Bay's largest export destinations were India (ZAR 49.6 billion), Netherlands (ZAR 35.1 billion), South Korea (ZAR 24.3 billion), China (ZAR 22.3 billion), and the USA (ZAR 19.3 billion).

In 2022, the following coals were exported through the port of Richards Bay: Non-agglomerated bituminous coal (178 B ZAR), Coal other than anthracite or bituminous, code 270119 (12.8 B ZAR). (Current South African Rand (ZAR) exchange rate: USD 1 = 18.81 ZAR (as of 12/03/2023)) In August 2023, ZAR 8.98 billion worth of coal products were exported through the Richards Bay Coal Terminal. Export destinations: India (ZAR 3.9 billion), China (ZAR 2.72 billion), Netherlands (ZAR 1.5 billion), South Korea (ZAR 1.42 billion) and Japan (ZAR 1.42 billion).



## 6. Global and South African exports of Coal Briquettes and Anthracite

The global trade volume of Anthracite in 2018, according to the online platform The Observatory of Economic Complexity (OEC), was \$3.26 billion / 0.017% of the total world volume.

In 2018, the largest exporters of Anthracite were Russia (\$2.4 billion/73.6%), China (\$329 million/10.1%), Belgium (\$139 million/4.28%), South Africa (\$105 million/3.21%) and Peru (\$45.9 million/1.41%).

In 2018, the countries that had the largest trade value in exports than in imports of Anthracite were Russia (\$2.4B), South Africa (\$102M), Belgium (\$81.1M), Peru (\$45.8M), and Egypt (\$25.1M).

In 2018, the countries that had the largest trade value in imports than in exports of Anthracite were South Korea (\$538M), Japan (\$407M), Germany (\$339M), Ukraine (\$255M), and China (\$184M).

Exports of Coal Briquettes (2701 Coal; briquettes, pellets, and similar solid fuels derived from coal (1992 Harmonized System for 4-digit figures)) from SA in 2021 amounted to \$6.72 billion, which made it the fifth largest exporter of coal briquettes in the world.



The main export destinations of Coal Briquettes from South Africa were in 2021:

India (\$2.22 billion), Pakistan (\$1.1 billion), China (\$583 million), South Korea (\$365 million) and Sri Lanka (\$227 million), Germany ( 173 million dollars), Italy (61.4 million dollars), Turkey (19.3 million dollars), Belgium (8.05 million dollars), France (7.95 million dollars), Great Britain (4.62 million dollars), Switzerland (5.36 million dollars), Bulgaria (3.93 million dollars), Spain (2.04 million dollars), Sweden 966 thousand dollars.)



South Africa's coal exports in 2022 increased by 11% compared to 2021, with India accounting for the largest share. South Africa's coal exports are expected to grow at a CAGR of 0.67% between 2022 and 2026.

South Africa's leading coal producers are Exxaro Resources, Glencore, Anglo-American, South32, and African Rainbow Minerals. Over 2020-2021, Exxaro Resources' production fell by 10%, Glencore's production fell by 3%, and Anglo American's production fell by 35%.

In August 2023, South Africa's Coal Briquettes exported ZAR 10.4 billion and imported ZAR 589 million, resulting in a trade surplus of ZAR 9.77 billion. Between August 2022 and August 2023, exports of Coal Briquettes from South Africa decreased by ZAR13.7 billion (-56.9%) from ZAR24.1 billion to ZAR10.4 billion.

In August 2023, the year-over-year decline in Coal briquette exports was primarily due to lower exports to China (ZAR-682M or -99.1%), Pakistan (ZAR-102M or -10.7%), and the United Arab Emirates. (ZAR-30.8M or -97.2%).

In August 2023, Coal Briquettes were exported mainly to India (ZAR 3.82 billion), South Korea (ZAR 1.3 billion), Taiwan (ZAR 1.12 billion), Mozambique (ZAR 647 million) and Bangladesh (ZAR 345 million).

The heading Coal Briquettes includes anthracite, non-agglomerated (code 270111 (1992 Harmonized System for 6-digit digits)), or Anthracite under Classification 503221 for Standard International Trade Classification (SITC).

In 2021, the largest exporters of non-agglomerated anthracite were Russia (\$3.07 billion/53.9%), Australia (\$1.07 billion/18.8%), China (\$375 million/6.58), Vietnam (260 million dollars) and Indonesia (\$223 million). South Africa exported \$97.8 million/1.72% of \$5.69 billion in global exports of non-agglomerated anthracite, which is comparable to Ukraine's exports of this commodity item, which amounted to \$96.7 million (1.73%).

## 7. Coal market players

The five largest coal mining companies account for about 85% of all production. These are **Anglo American plc, BHP Billiton Energy Coal South Africa, Seriti, Sasol Mining, Glencore, and Exxaro**.

Major companies involved in the South African coal sector also include **Thungela Resources Ltd and Eyesizwe**.

### **BHP Billiton Energy Coal South Africa (BECSA)**

BHP Billiton Energy Coal South Africa (BECSA), a subsidiary of BHP Billiton, was founded in 1963 and operates three coal mines in Witbank Coalfield, Mpumalanga. The company's activities include anthracite mining.



BHP Billiton, a major mining company, was formed in 2001 as a result of the merger of the Australian Broken Hill Proprietary Company Limited (BHP) and the Anglo-Dutch Billiton plc.



BECSA produced about 31.7 million tons in 2008/2009, 48 million tons in 2007/2008, and 51.6 million tons in 2006/2007.

The company is one of the largest suppliers of thermal coal, which is sold to Europe, the Far East, India, Africa, and South America by sea.

In its 2009 annual report, the company said it sold 73% of its output to local African utility Eskom. The remainder is exported through the Richards Bay coal terminal, in which the company holds a 24 percent stake.

**Contacts:**

<https://www.bhp.com/>

**Seriti Resources Holdings Proprietary Limited**

Seriti Coal operates six large open-pit and underground coal mines supplying coal to Eskom's Kriel, Tutuka, Lethabo, Kendal, and Duvha power stations, as well as some export markets.



Seriti Resources Holdings Proprietary Limited operates as a coal mining company co-owned by four major shareholders: Masimong Group, Thebe Investments, Zungu Investments (Zico), and Community Investment Holdings (CIH). The company ensures the operation and development of large coal mining enterprises.

Seriti Resources serves clients in South Africa.

On 1 June 2021, Seriti acquired the operations of SA Coal Holdings Proprietary Limited (SAEC) from South32, which included the Khutala, Klipspruit, Middelburg, and Wolvekrans mines, which supply coal to Kendal and Duwha power stations and also export coal through the coal terminal Richards Bay.

Seriti is currently Eskom's largest supplier of black coal (about 32% of annual supplies).

The Klipspruit mine produces 2.4 million tonnes per annum of bituminous thermal coal for Eskom, 35 million tonnes per annum for the domestic market, and approximately 5.1 million tonnes of bituminous thermal coal for the export market.

Coal is transported by rail to the Richards Bay Coal Terminal (RBCT) and then exported mainly to European markets.

Coal production is expected to rise from 2022, with Eskom supplying 34.3 million tonnes of thermal coal annually (producing about 32% of South Africa's electricity) and about 6.7 million tonnes to the export market.

**Contacts:**

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### Anglo American plc

The world's third largest exporter of thermal coal for metallurgical production worldwide.

South Africa has more than halved its thermal coal production in recent years to focus on export markets, supplying about 17 million tons of thermal coal a year to customers, mainly in Asia.



Anglo-American's South African exports are produced from three wholly owned and operated mines – Goedehoop, Greenside, and Khwezela; Zibulo (owns 73%); and also from Mafube Coal Mine, a 50:50 joint operation.

These mines produce high-quality thermal coal.

About 10 million tons of thermal coal are produced annually for sale on the domestic market. The company divested its thermal coal operations in South Africa in 2021 through the demerger of Thungela Resources Limited.

Supply agreements have been concluded with a global customer base, including several well-established counterparties such as the American Archer Daniels Midland Company, **the German BayWa AG**, the Brazilian Cibra, IFFCO (from the UAE), Wilmar Group (Singapore) and Muntajat (Qatar).



### Thungela Resources Limited

Leading South African thermal coal exporter with export production of 16.5 million tons in 2020.





Thungela has interests in thermal coal and produces it primarily from seven mining operations. In terms of calorific value, these are some of the highest-quality coal mines in South Africa.

Export of thermal coal mainly to the markets of India, Asia, Southeast Asia, the Middle East and North Africa

1. Zibulo Coal Mine was established in 2010 and operates as a company in which the Group, through AAIC, owns 73% of the shares, and the remaining 27% is owned by Inyosi Coal, a B-BBEE consortium. Zibulo produces premium products for sale in the export market.

2. Greenside Coal Mine produces coal for export and domestic markets.

3. Goedehoop Coal Mine, Goedehoop North operates a coal preparation plant producing a single product for the export market.

4. Khwezela Coal Mine produces coal for both export and domestic markets.

5. The Mafube coal mine consists of several open pits, with mining currently concentrated at the Nooitgedacht pit.

Coal is crushed and sorted and then transported by land conveyor to a coal processing and beneficiation plant with a processing capacity of 6 million tons per year to produce export-quality products, middlings, and waste. The intermediate product can be sold to the export market. The marketable product is transported to the railway terminal via a 14 km long land conveyor for transport to the port.

Two other mines supply coal to the domestic market.

[+27 \(0\) 11 638 9300](tel:+27116389300)

[www.thungela.com](http://www.thungela.com)

### Glencore plc

Glencore plc is a Swiss multinational commodity trading and mining company. As of July 2022, it is the world's largest commodity trader and supplies metals, minerals, crude oil, refined products, coal, natural gas, and agricultural products to international customers in the automotive, energy, steel, and food industries.

**GLENCORE**

Along with several other major coal producers, Glencore is also a major shareholder in globalCOAL, an online platform for trading physical coal. globalCOAL's board of directors includes several shareholders from energy companies.

In October 2012, BBC News reported that Glencore had more ships than the British Royal Navy. Glencore's operations in 40 countries account for 3% of global oil consumption. Xstrata employs 70,000 people in more than 20 countries. On May 2, 2013, the merger with Xstrata was completed.



## Glencore in South Africa

Four coal mines are located in the coal-rich province of Mpumalanga:

The Goedgevonden Complex (GGV), a joint venture with ARM Coal, is an open-pit mine operated by Goedgevonden Coal Ltd (74%), a joint venture between Glencore and African Rainbow Minerals (ARM (26%)). It produces an average of 7 million tons per year near Ogies, in Emalahleni, Nkangala, Mpumalanga Province, South Africa. Produces both export and domestic thermal coal.

The iMpunzi complex is a large thermal coal export facility located 110 km east of Johannesburg.

The Tweefontein complex is a thermal coal mining complex near Johannesburg.

Umcebo, Zonnebloem

The company is one of the world's largest producers and exporters of thermal and coking coal transported by sea. About 85% of the coal produced is exported, most of it to countries where coal continues to play a leading role in electricity generation, the rest of the coal produced is used to generate electricity in Australia and South Africa.

**In 2022:** 78.4 million tons of thermal coal sold through Glencore's marketing business (buying goods and products from its global supplier base and selling to customers around the world: transporting goods by sea, rail, and road, storing, processing and delivering them to time, quality and according to customers' requirements).

The volume of South African thermal coal production (for export) is 12.7 million tons.

110 million tons of coal produced from Glencore's assets (26 mines in 21 mining complexes in Australia, Colombia, and South Africa, supported by marketing offices in 19 countries)

<https://www.glencore.com/>

### ***Glencore's main partners:***

***Coal terminal Richards Bay Coal Terminal Company Limited South Africa 19.3% interest.***

***Topley Corporation B.V.I. Ship owner/Shipowner***

***Subsidiary Access World Group, Switzerland – Logistics services*** ***Основные партнеры Glencore:***

Access World in Africa:

The regional freight division, based in Durban and with key partnerships with the world's major shipping lines, provides extremely competitive freight rates.

Project Forwarding and Handling has a rich history of successfully providing services to both EPCM and mining operations in Africa.

Clearing and forwarding services and more.

7 main ports with services covering 7 main corridors with their facilities: Vlissingen (Netherlands), Rotterdam (Netherlands), Bilbao (Spain), Trieste (Italy), Livorno (Italy), and Dubai (UAE).



5,000+ annual orders for export and import of TEU containers.

12,000,000+ tons are handled annually.

From 31.12.2022 Access World AG was acquired by Global Capital Merchants Ltd.

#### **Contacts:**

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#### **Sasol Mining**

Sasol Limited is an integrated energy and chemicals company based in Sandton, South Africa.



Sasol employs more than 30 thousand people in 33 countries.

Sasol has exploration, development, production, marketing, and sales activities in 31 countries, including Southern and the Rest of Africa, the Americas, Europe, the Middle East, North Asia, Asia, South East Asia, the Far East, and Australasia.



Sasol Mining operates six coal mines that supply feedstock to the Secunda (Sasol Synfuels) and Sasolburg (Sasolburg Operations) complexes in South Africa and produces low ash thermal coal for the export market from the Twistedraai Export Plant preparation plant to international energy consumers.

Sasol exports approximately 3.3 million tons of coal through the Richards Bay Coal Terminal (RBCT), in which Sasol is one of the shareholders.

In 2006, ownership of Twistedraai was transferred to a new Black Economic Empowerment (BEE) company, Igoda Resources, created as a joint venture between Sasol Mining (65%) and Exxaro Resources (35%).

The new company also inherits Sasol Mining's export share through the Richards Bay coal terminal and plans to produce approximately 3.6 million tons of export-quality coal per year, as well as up to 4 million tons per year of middlings for sale to Sasol. Sasol Mining, which produced 46.2 million tons of coal across all its operations up to June 2006, will act as the mining contractor for Igoda Coal and will handle the company's export marketing.

#### **Contacts:**

<http://www.sasol.com/>

#### **Exxaro Resources**

Exxaro Resources (formerly part of Kumba Resources) is a large coal and heavy minerals mining company in South Africa. The company has production facilities and offices in Africa, Asia, Europe and Australia.



The main activity is the production of thermal, semi-soft coking, and metallurgical coal, as well as supplying Eskom and other domestic markets. The coal mining business is structured across five legal entities, all managed by Exxaro, as well as a joint venture to produce Mafube and an interest in Richards Bay Coal Terminal Proprietary Limited (RBCT).

The Grootegeuk mine is a critical source of both export grade A grade (6000 kcal/kg) coal and power station coal that feeds Eskom's Medupi and Matimba power stations. The life of the field is estimated at 45 years, and annual production is 1.7 million tons.

Leeuwpan mine with a capacity of 3.65 million tons of thermal coal per year. The main consumers in the domestic market are metallurgy and energy, with 2.5 million tons per year. Leupan has coal reserves of about 52.9 million tons and resources (inclusive) of about 128 million tons. Belfast Coal produces grade A primary products (6,000 kcal/kg) and secondary intermediate products (21.5 MJ/kg). The coal shipments form part of Exxaro's RB1 export output, which is transported by rail to the Richards Bay Coal Terminal (RBCT). Total mine capacity 2.7 million tons per year for 17 years.



Grootegeluk produces 26 million tons of finished coal products. The mine's estimated recoverable coal reserves are 3,261 million tons and its total measured coal reserves are 4,719 million tons, which can be used to produce semi-soft coking coal, thermal coal, and metallurgical coal.

Grootegeluk produces 2.5 million tons of semi-soft coking coal per year, most of which is supplied directly by Mittal SA under a long-term supply agreement. Approximately 1 million tons of semi-soft coking and thermal coal per year is exported through the Richards Bay Coal Terminal or sold domestically.



The Matla mining complex supplies coal to Eskom's Matla power station and includes three mines producing 14 million tonnes of coal per year. In the second half of 2021, Exxaro, among other international mining companies seeking to sell local coal assets, sold Exxaro Coal Central (ECC), owner of the Dorstfontein, Forzando and Tumelo mines, to private mining operator Overlooked. Exxaro retained all rights to export coal through the Richards Bay Coal Terminal as part of the deal. Overlooked plans to double coal production from its existing portfolio of 2.4 million tons to 4.8 million tons by 2022.

**Contacts:**

<https://www.exxaro.com/>



## 8. Anthracite coal price index

Anthracite coal price in November 2023 and forecast (see chart)

- North America: \$0.26/kg, down -7.1%.
- Europe: \$0.37/kg, down -5.1%.
- Africa: US\$0.26/kg, down -7.1%.
- Northeast Asia: US\$0.23/kg, unchanged.
- Australia: US\$0.22/kg, unchanged.

The graph shows the dynamics of anthracite prices by region and provides a summary of changes in the anthracite coal price index since 2018.

Anthracite coal price movements are expressed as a price index over time in US dollars, converted to current exchange rates at that time.

Anthracite price index movements are calculated from several separate data sources to ensure statistical accuracy.

The source of data is exclusively public non-confidential sources.

Data is a combination of contract and spot prices.

## 9. Conclusions and forecasts

Globally, more than 40 percent of the world's electricity comes from coal, which remains an economical and reliable source of energy, especially for countries where energy poverty has not yet been addressed. The international coal market will grow slowly over the next ten to fifteen years, at a rate of about one percent, energy experts suggest.

Demand is expected to increase in the global coal market. According to forecasts, its consumption will grow by 12.5% in the world until 2040. Moreover, if for European countries a more than two-fold drop in demand is predicted until 2040, for China - stagnation and a gradual decline in demand after 2025, then the developing countries of Asia (without China) by 2040 should increase coal consumption by more than 32%.

Global energy agencies expect global coal demand to grow by an average of half a percent per year. The main driver of demand is India, with coal consumption increasing by an average of 3.3% per year.

Today in developing countries, up to 50 percent of energy generation is provided by coal. This is a reliable foundation for demand for it. Among all developing countries, the Asia-Pacific region looks the most promising. Forecasts for this region show that a new wave of economic growth is emerging there, driven by countries seeking to catch up with the "Asian tigers." However, they have a poor energy supply to the population, so they strive to implement reliable and cheap energy solutions - mainly using coal.

As a result, Asian markets are expected to experience strong growth in coal demand and imports over the next decade.



The growth in coal imports until 2027 could amount to 65 million tons for India, 44 million tons for Vietnam, and Malaysia, Thailand, and the Philippines will import 10–15 million tons more per year.

There are currently almost 600 coal-fired power plants in the planning and construction stages in Asia and Africa. An increase in installed coal generation capacity has been announced in almost all Asian countries. For example, China should introduce another 139 GW of coal-fired generation by 2027, India - 65 GW, and Vietnam - over 14 GW. On the other hand, due to a reorientation from coal to other energy sources and protectionist measures, a decrease in coal imports to China is expected (by 40 million tons by 2020 and by 70 million tons by 2027).

Continued decarbonization policies, low economic growth in most countries, and energy efficiency measures could lead to a reduction in coal demand in Europe and the Middle East by 27 million tons over the next decade.

The main trends in global coal markets - growing self-sufficiency in China and India, weak economic prospects, strong import demand in Europe, and a very limited supply of high-calorific value coal - will continue into 2023.

South Africa is one of the world's top ten coal producers, ranking 7th after China, India, the USA, Australia, Indonesia and Russia.

The Republic of South Africa today is the most economically developed country in Africa.

The country has rich domestic resources, a developed agricultural sector, a good energy base, and a developed transport system.

In the industry of the Republic of South Africa, the main one is the mining industry, which brings in about 10% of the value of GDP.

The energy system of South Africa has reached a fairly high level of development. It generates about 70% of all electricity in the southern African continent.

South African deposits are unique in terms of the volume of minerals located on the territory and the mining conditions. The development of the entire industry of South Africa began precisely with the mining industry, which to this day is the leader and brings good profits to the state treasury.

The mining industry is the most important for the development of the economy and industry of the state. The country produces about 50 types of minerals: iron, copper manganese ores, gold, coal, and other resources.

More than half of exported products come from the mining industry. A lot of coal is mined, which is used to produce electrical energy within the country, and approximately 2% is exported to other countries.

Most of the country's electrical energy is generated at thermal power plants, the main raw material for which is coal.



Over the past few years, there have been significant changes in trade patterns caused by European sanctions on Russian coal. South African coal exports to the European Union rose to 15.8 million in 2022 from 2.0 million tons in 2021 and became the second largest destination for South African coal after India, with a 24.2% share.

One of the main ports in Europe for ships carrying coal from South Africa is the port of Rotterdam in the Netherlands. Other important ports include Antwerp in Belgium, Hamburg in Germany, Marseille in France, Barcelona in Spain, Bristol in the UK, and Riga in Latvia.

The main ports in Spain receiving anthracite coals from South Africa include Algeciras, Cadiz, Barcelona, and Bilbao.

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*Meanwhile, the UK has cut taxes on imports from developing African countries under the Developing Countries Trade Scheme (DCTS).*

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The Netherlands, Germany, Poland, Denmark, France, Italy, and Ukraine are among the European countries that have imported growing volumes of coal from South Africa.



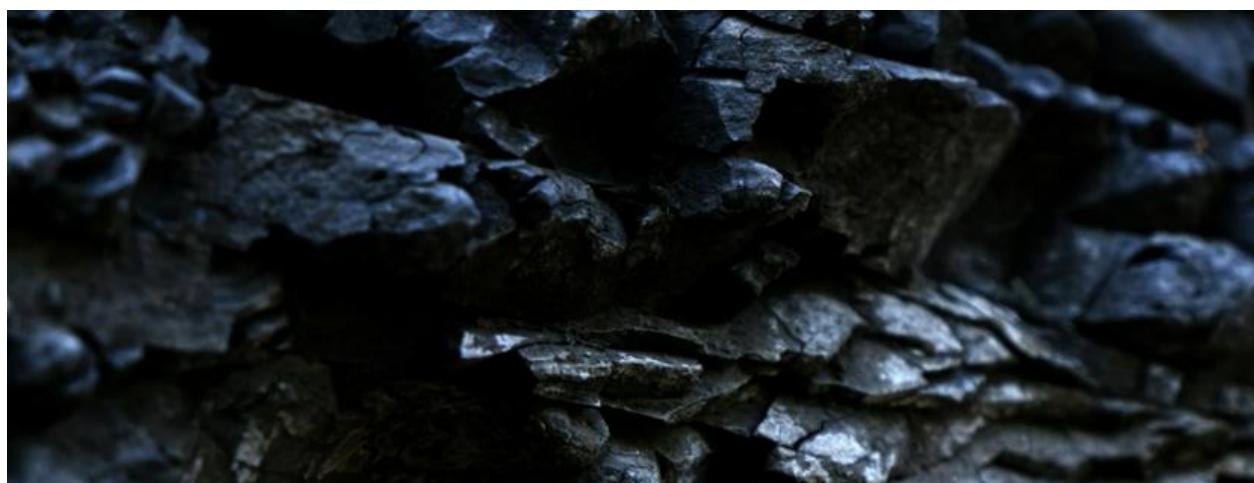
Western European countries, which are major importers of South African coal, have embarked on a path to phase out coal over the medium term. Seven small EU countries have already abandoned coal: Belgium, Cyprus, Luxembourg, Malta, and the Baltic countries. France and Sweden planned to phase out coal by 2022.



The UK and Italy have announced a coal phase-out by 2025, and the same is true for Denmark and Austria (CAN, 2016c; Jacobsen, 2014; Rudd, 2015). The Netherlands, Portugal, and Finland have announced 2030 as a phase-out date (CAN, 2017). A less advanced phase-out of coal in Germany by the 2040s is currently being discussed. Other Western European countries (such as Denmark, Spain, etc.) are also following a similar path, reducing coal demand in the medium term (Agora Energiewende and Sandbag, 2017). As a consequence, South Africa's exports to Europe, as well as the Netherlands' role as a European coal import hub, are likely to decline. The second storyline concerns some Eastern European states (primarily Poland, the Czech Republic, and some countries in the Balkans). These countries, apparently contrary to all climate change mitigation goals, continue to pursue a policy of promoting coal-fired power and heating to support domestic coal production (Frantál, 2016; Korski, Tobór-Osadnik, & Wyganowska, 2016; Manowska, Osadnik, & Wyganowska, 2017). As a consequence, coal mining companies, under economic pressure due to the sharp decline in global coal prices, receive government subsidies or undergo renationalization (CAN, 2016a; Widera, Kasztelewicz, & Ptak, 2016). This limits the ability of South African imports to penetrate these markets. Large domestic reserves of coal and lignite suggest the need for more research into the future role of coal in these countries (Jonek Kowalska, 2015).

Moving further east, investors in Turkey are planning to build several new coal-fired power plants that could become potential new customers for South African coal exports. Another country that has increased its demand for coal in recent years is Israel.

However, South African coal will have to compete with local suppliers in these countries, as well as supplies from the US, Australia, China, Indonesia, and Russia, and therefore needs more careful assessment and additional material.



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