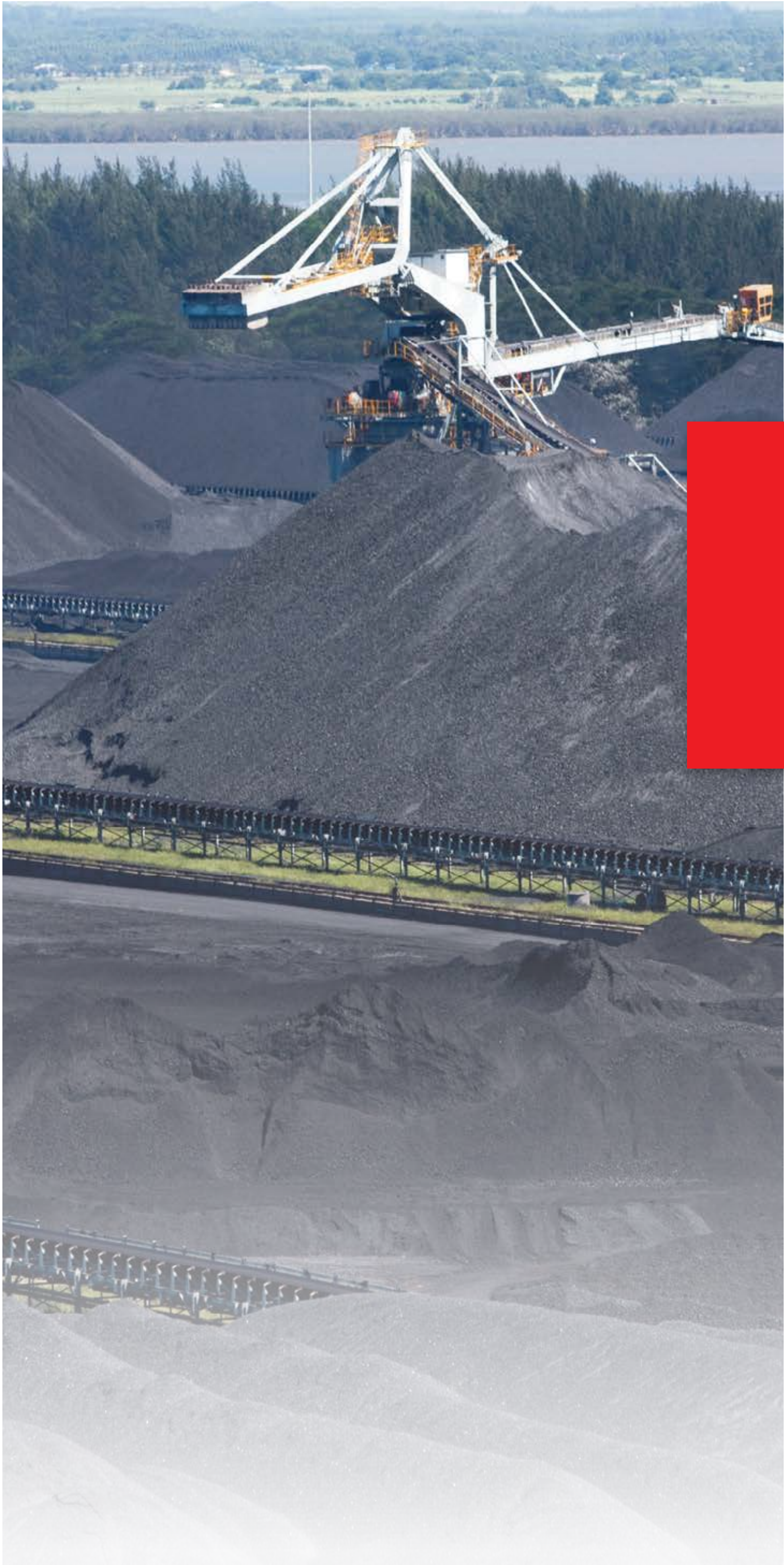


COAL

August **2015**

Published by:

Creamer Media's
RESEARCH CHANNEL
AFRICA

Powertech

A review of South Africa's coal sector

The material in this report was compiled by Mariaan Webb and the Research Unit of Creamer Media (Pty) Ltd, based in Johannesburg.

The information in this report is correct as of July 2015.

Report edited by Sheila Barradas, David Shepherd and Ria Theron.

Ordering information
To subscribe to *Research Channel Africa* or purchase this report contact:
Creamer Media (Pty) Ltd
tel +27 11 622 3744 or
email **subscriptions@creamermedia.co.za**

Cover picture by Duane Daws.

Picture by Duane Daws

Table of Contents

Abbreviations

AAIC	Anglo American Inyosi Coal
AACSA	Anglo American Coal South Africa
AEMFC	African Exploration Mining & Finance Corporation
AMCU	Association of Mineworkers and Construction Workers Union
AMD	acid mine drainage
Becsa	BHP Billiton Energy Coal South Africa
BEE	black economic empowerment
CIL	Coal India Limited
CO_2	carbon dioxide
CoAL	Coal of Africa Limited
CoM	Chamber of Mines
DMR	Department of Mineral Resources
DoE	Department of Energy
Ebit	earnings before interest and tax
Esop	employee-share ownership plan
G7	Group of Seven
GMEP	Grootegeluk Medupi Expansion Project
HDSAs	historically disadvantaged South Africans
IPP	independent power producer
JV	joint venture
M&A	merger and acquisition
NCC	New Clydesdale colliery
NUM	National Union of Mineworkers
RBCT	Richards Bay Coal Terminal
RoM	run-of-mine
SADC	Southern African Development Community
TCSA	Total Coal South Africa
TFR	Transnet Freight Rail
TNPA	Transnet National Ports Authority
WCA	World Coal Association
WCC	Waterberg Coal Company
WCP	Waterberg coal project

Units of measurement

The distinction between tonne (1 000 kg) and ton (1 016.047 kg) is maintained in this report according to the information that is reported in the public domain by each company.

Picture by Duane Daws

Key developments

January 2015: Glencore announces the closure of some of the coal mining operations of its Optimum Coal subsidiary, which will reduce its South African production by five-million tons a year of saleable coal.

January 2015: The Richards Bay Coal Terminal, in KwaZulu-Natal, reports record coal exports of 71.3-million tons of coal for 2014 and sets a target of exporting 74-million tons in 2015.

February 2015: A coal task team is established to develop a coal policy for South Africa, which will aim, among other aspects, to achieve efficiencies and promote local coal supply.

February 2015: Freight services and shipping group Grindrod announces a capacity upgrade at its Richards Bay coal and magnetite terminal, in KwaZulu-Natal, from 3.2-million tons a year to 4.5-million tons a year, at a cost of R125-million. The project will be completed by the end of 2015.

February 2015: State-owned railways utility Transnet Freight Rail announces its rail coal export target for 2015. The Transnet business unit will aim to transport 76-million tonnes of coal on its export line from Mpumalanga to KwaZulu-Natal.

February 2015: The World Coal Association calls for greater investment in cleaner coal technologies to meet growing global energy demand and reduce carbon dioxide emissions.

April 2015: The Waterberg Coal Company shifts its focus from its ten-million-ton-a-year Eskom-focused Waterberg coal project, in Limpopo, to an export-focused project in the Waterberg coal project area that will produce four-million tons a year by 2020.

May 2015: BHP Billiton Energy Coal South Africa exits from the South African coal scene as BHP Billiton spin-off South32 lists on the ASX, JSE and LSE. BHP Billiton shareholders agreed to the divestment of South32 in early May. The company holds all BHP Billiton's former coal assets in South Africa, as well as assets in other commodities in South Africa and Australia.

May 2015: Coal of Africa Limited obtains a mining right for its flagship Makhado hard coking coal and thermal coal project, in Limpopo, enabling the company to proceed towards developing the mine.

May 2015: Public Enterprises Minister Lynne Brown confirms that State-owned power utility Eskom faces a 17-million-tonne coal shortfall at its coal-fired power plants. The shortfall is expected to affect the Matla, Tutuka and Hendrina power stations in 2015 and the Kriel and Arnot power stations, all in Mpumalanga, in 2016.

May 2015: State-owned African Exploration Mining & Finance Corporation unveils its ambitions to produce three-million tons a year in the next three to five years to supply power utility Eskom's Kendal and Kusile power stations, both of which are situated about 12 km from its Vlakfontein mine, in Mpumalanga. The company's current production is about 1.6-million tons a year run-of-mine.

June 2015: Energy group BP publishes its 'Statistical Review of World Energy 2015' report, detailing how China's coal consumption has stalled in 2015. Until recently, coal had been the fastest-growing fossil fuel, but emerged as the slowest-growing fossil fuel in 2014. BP argues that structural and cyclical factors are behind the performance of the energy mineral.

June 2015: IchorCoal signs a deal to acquire stricken Continental Coal's 1.2-million-ton-a-year Vlakvarkfontein and stalled Penumbra mines, in Mpumalanga, for R128-million. Penumbra is located close to IchorCoal's existing Vunene operation.

June 2015: India flags higher thermal coal imports, owing to insufficient rainfall during the monsoon season. India is a key export market for South African coal producers.

June 2015: Wescoal commits to having black shareholding of more than 50% before December 2016 to qualify for long-term coal business from State-owned power utility Eskom.

July 2015: Coal of Africa Limited's sale agreement for the Mooiplaats colliery, in Mpumalanga, to Blackspear Capital lapses. The company continues discussions with various parties to sell the operation, which it placed on care and maintenance in 2013.

July 2015: Universal Coal secures R525-million from Investec Bank to complete the development of its New Clydesdale colliery (NCC), in Mpumalanga. The company also receives the transfer of ownership for NCC, paving the way for the recommissioning of the project that it bought from Exxaro Resources in 2013.

July 2015: Transnet publishes its 2015 financial year-end results, announcing a 12% year-on-year increase in its export coal rail volumes to 76.3-million tons.

Business environment

Coal plays an important role in the South African economy. It is the primary source for electricity generation and is the feedstock for producing a substantial proportion of the country's liquid fuels. The industry directly employed about 90 000 people and paid about R19-billion in wages in 2014.

South Africa's coal industry is the largest on the continent by some margin. It boasts Africa's largest recoverable coal reserve and the continent's largest coal production base, making it one of the world's top-ten coal-producing countries.

According to the energy group BP's 'Statistical Review of World Energy 2015' report, published in June, South Africa produced 3.8% of the world total of 8.16-billion tonnes of coal in 2014. At 260.5-million tonnes, South Africa's 2014 production was a 1.6% increase on the 256.4-million tonnes it produced in 2013.

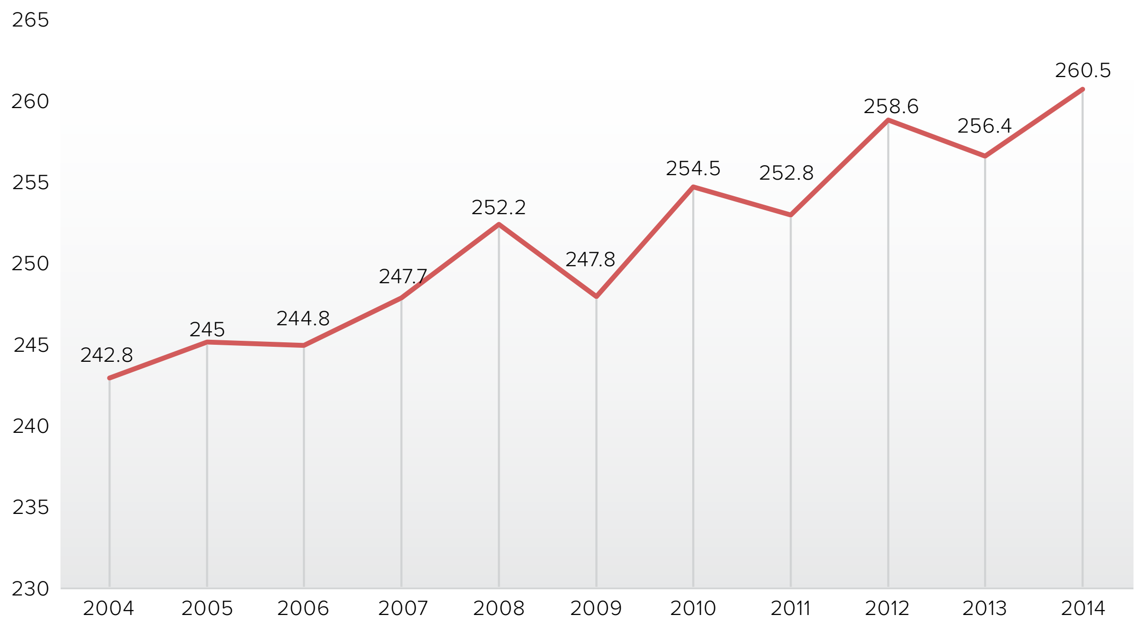
However, the industry is relatively small, compared with countries such as China and the US, which, according to BP, produced 3.87-billion tonnes and 906.9-million tonnes respectively in 2014.

Despite a growing focus on oil and gas, as well as the introduction of renewable-energy sources, the South African energy sector remains dominated by coal, making the country a large consumer of the fossil fuel.

The country's coal consumption in 2014, according to the BP report, was 89.4-million tonnes oil equivalent. This represents a 0.9% increase on the 2013 consumption of 88.7-million tonnes oil equivalent. The increase in South Africa's coal use was slightly higher than the average global consumption growth of 0.4%.

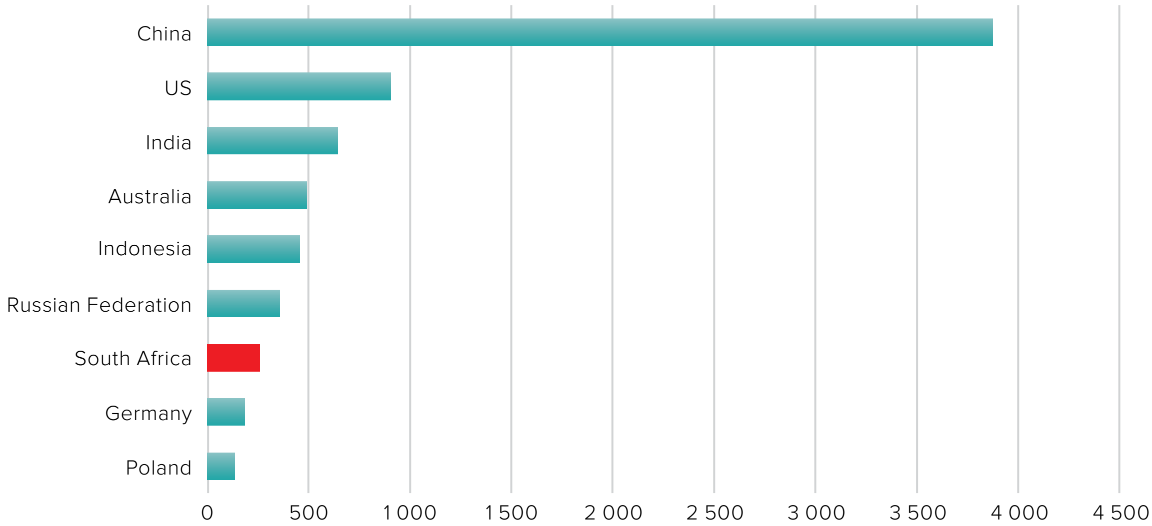
With coal's fortunes closely linked to the industrialisation path in China, a slowdown in demand from the top

South Africa coal production 2004 – 2014 (million tonnes)



Compiled from 'BP Statistical Review of World Energy 2015' report, June 2015

Top coal-producing countries 2014 (million tonnes)



Compiled from 'BP Statistical Review of World Energy 2015' report, June 2015

consumer has had a severe impact on the global industry.

China's coal consumption essentially stalled in 2014, growing by only 0.1%, compared with average demand growth of about 6% over the past decade.

The decline in China's demand was partly the result of a generalised slowdown in that country's energy demand and its economic rebalancing, which affected sectors such as iron, steel and construction.

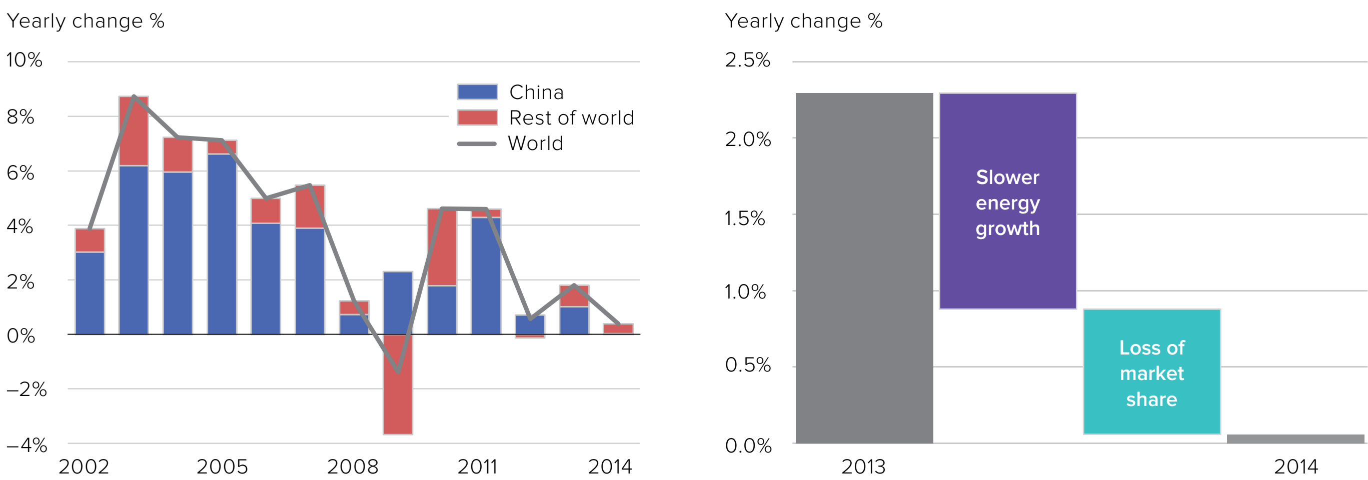
The weak demand from China, combined with stubborn supply, created the weakest global coal market conditions since 2009. Many producers in key producing countries, such as Australia and Indonesia, continued to operate at a loss, while others, primarily in North America, curtailed output.

The poor market conditions have led to a dramatic decrease in the prices of thermal coal and metallurgical coal, also known as coking coal. Prices in 2014 plunged to their lowest levels in five years.

China coal

Global coal growth

Slowdown of China's coal demand growth



Source: BP Statistical Review of World Energy 2015, June 2015

The thermal and metallurgical coal markets continued to be plagued by oversupply in the first half of 2015. Thermal coal prices continued on a downward trajectory in the first six months of the year, in response to surplus supply and lower import demand from China.

South African thermal coal exports have been severely affected by weak prices, with the country having lost about R23-billion in export revenue in 2014. The price of thermal coal exported from Richards Bay, in KwaZulu-Natal, has nearly halved since the beginning of 2011. In the first half of 2015, export coal barely managed to reach $60/t, down from as much as $200/t in the past. However, Richards Bay prices were still higher than other global prices, with increased demand from the Middle East, and Japan having shown greater interest in coal .

The domestic coal market is in a better position than export markets, with electricity utility Eskom paying more for coal than in the past. The cost of delivered coal to Eskom has risen by 20% a year compounded over the past few years, compared with the consumer price index of about 6%.

Eskom on average pays about R230/t of coal. The average cost of its five cheapest contracts is R168/t, while the average cost of its five most expensive contracts is R429/t.

Some commentators have said that Eskom's coal costs are increasing as a consequence of the utility having to source feedstock from black-controlled junior mining companies. Many of these smaller companies' mines are not "mine-to-mouth" suppliers, and coal supplies have to be trucked in.

Eskom has said that domestic coal prices are unsustainable, considering that electricity prices are regulated, and has warned coal producers that other sources of energy will become more attractive if coal is deemed uncompetitive.

Analysts contend that Eskom's coal costs are increasing as a result of coal supplies having to be trucked in

Picture by Duane Daws

Despite a firmer domestic coal market, weak export coal prices and uncertainty about when they will strengthen, coupled with difficulties in meeting Eskom's recently introduced black empowerment procurement requirements, have deterred investment in big coal projects. Most of South Africa's large-scale coal mines will reach the end of their lives by 2020.

Government has directed Eskom, the country's biggest user of coal, to procure the bulk of its feedstock from mining companies with a 50%-plus-one-share black ownership by 2018, despite the requirement contradicting the Mining Charter, which requires that mines have 26% black ownership.

The result is that large multinational companies, such as Anglo American, are considering exiting the domestic coal market.

However, smaller miners often find it difficult to finance their projects, which has led to Eskom's resolving to establish an emerging black miner strategy, the main pillar of which is a proposed R1-billion mining development fund. The fund will be independent from Eskom and initially had a targeted launch date of late 2014. However, the utility has withdrawn its support for the fund, owing to its own financial challenges. Eskom had intended to contribute R100-million seed capital towards the mining development fund.

Investments in new projects are also slow to materialise, owing to a lack of infrastructure where new coal deposits are situated. Government has identified the coal-rich Waterberg as a priority infrastructure region and intends to address infrastructure shortages in the northern mineral belt through one of its 18 Strategic Infrastructure Projects.

The coal task team, which Mineral Resources Minister Advocate Ngoako Ramatlhodi announced in February 2015, will also consider the industry's infrastructure requirements among other aspects, including promoting competitive local coal supply. The task team was formed under the auspices of the Mining Industry Growth, Development and Employment Task Team Plus, to develop a coal policy for the country.

The Department of Mineral Resources estimates that a minimum investment of R100-billion is needed in the short to medium term to develop South Africa's coal resources.

A minimum of R100-billion is needed in the short to medium term to develop South Africa's coal resources

Picture by Duane Daws

South Africa is one of the world's leading countries in terms of coal reserves. Most of the coal is found in the Waterberg, in Limpopo; and in the Witbank, Highveld and Ermelo coalfields, in Mpumalanga. Smaller coalfields are located in Sasolburg, in the Free State, and the Springbok Flats, in Limpopo.

The Council for Geoscience estimates that South Africa had a run-of-coal reserve of 66.7-billion tonnes in 2011, compared with 55.3-billion tonnes in 1987, despite 7.5-billion tonnes having been extracted in the Mpumalanga coalfields over the period. The increase is owing to new estimates for the Waterberg and Soutpansberg coalfields, in Limpopo. The Waterberg reportedly accounts for 48.3-billion tonnes, or 72%, of the total estimated coal reserve. However, commercial aspects, such as coal quality and transport costs from the Waterberg coalfield to export terminals and Eskom's power stations, in Mpumalanga, could have an impact on future coal mine developments in the area. Eskom is conducting tests to determine what impact the use of Waterberg coal will have on its power stations.

Main participants

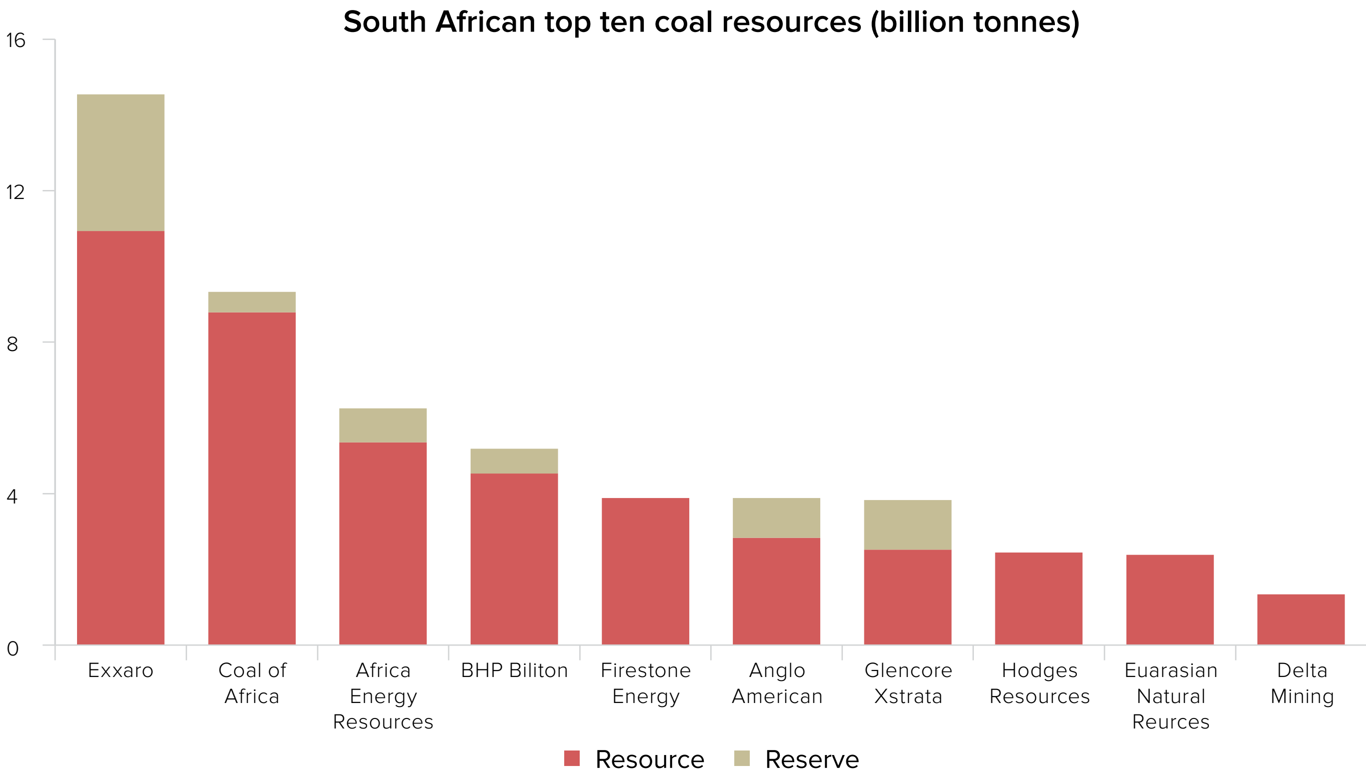
South Africa's coal industry is dominated by a small number of large operators. The top five coal producers – Anglo American Coal South Africa, Glencore, Sasol Mining, Exxaro Resources and South32 – produce the bulk of South Africa's coal production, despite efforts to develop the junior coal mining industry.

Eight megamines, with capacities exceeding ten-million tons a year, produce most of the thermal coal for export and domestic markets.

Seven of these mines are located in the Central basin, in Mpumalanga, which is South Africa's main coal producing area and where the majority of the power stations are located. One megamine is located in the Waterberg, in Limpopo.

Five coal producers produce the bulk of South Africa's coal production

Picture by Duane Daws



Source: Metal Economics Group via Exxaro Resources

The KwaZulu-Natal coalfields have smaller mines producing anthracite, which is mainly used in the metallurgical industry. The only mine producing hard coking coal is located in the Soutpansberg coalfield, in Limpopo.

Major producers

South Africa's top five coal producers	
Anglo American Coal South Africa	FY 2014 (December) **55.79-million tonnes**
Glencore	FY 2014 (December) **46.1-million tonnes**
Sasol Mining	FY 2014 (December) **41.5-million tonnes**
Exxaro	FY 2014 (December) **39.15-million tonnes**
South32 (formerly BHP Billiton Coal South Africa)	FY 2014 (June) **30.38-million tonnes**

Source: Compiled from companies' financial reports

Anglo American Coal South Africa (AACSA), which forms part of diversified mining major Anglo American, is South Africa's largest thermal coal producer, with operations in Mpumalanga. The group's South African coal business produces thermal coal mainly for domestic use, with a portion being supplied to the export market.

In the financial year ended December 2014, AACSA produced 37.58-million tonnes of coal for the domestic market (2013: 39.56-million tonnes), and 18.21-million tonnes for the export market (2013: 17.03-million tonnes). The company ships its export coal through the Richards Bay Coal Terminal (RBCT), in which it holds a 23.2% stake.

AACSA wholly owns and operates seven mines – Goedehoop, Greenside, Kleinkopje, Landau, New Denmark and Isibonelo, in Mpumalanga, and New Vaal, in the Free State.

It also has a 73% interest in black economic-empowerment (BEE) company Anglo American Inyosi Coal (AAIC), which owns the Kriel and Zibulo mines, as well as three greenfield projects – New Largo and Elders, in Mpumalanga, and Heidelberg, in Gauteng. AAIC has a 50:50 joint venture (JV) with South32, which is a new company into which BHP Billiton unbundled its South African assets. AACSA further has a 50% interest in a JV with diversified mining group Exxaro Resources.

Anglo American has indicated that it might sell its South African domestic coal business, but that it plans to retain its export coal business. Its decision to exit the domestic coal business is reportedly owing to government's demands that new coal mines supplying power utility Eskom have 51% black ownership. The black ownership rule has delayed the start-up of the New Largo mine, which is to supply about 570-million tonnes of coal over a 47-year period to the 4 800 MW Kusile power station. AAIC is 27% black-owned by Inyosi Consortium, which means that New Largo meets South Africa's mining legislation requirements, but not the Eskom BEE procurement requirements. Anglo American has said that it will decrease its ownership in New Largo to below 50%.

The South Africa coal business earned the Anglo American group $2.08-billion in revenue in the year ended December 2014 (2013: $2.19-billion). Underlying earnings before interest and tax (Ebit) amounted to $350-million in 2014 (2013: $356-million). Strong operational performance, lower costs and favourable currency movement mitigated a 10% reduction in realised export prices.

Anglo American Coal South Africa	
Physical address: 44 Main street Johannesburg 2001	**Telephone:** +27 11 638 9111 **Website:** http://southafrica.angloamerican.com

Source: Anglo American website

Glencore gained substantial coal assets in South Africa when it merged with diversified mining company Xstrata in March 2013. The company is South Africa's largest coal exporter and also a significant supplier to Eskom.

Glencore owns shareholdings in four mining complexes and three midtier operations in Mpumalanga. The group owns the Goedgevonden mining complex, with black-owned African Rainbow Minerals as 51% partner, the Optimum mining complex; the iMpunzi mining complex and the Tweefontein mining complex. Its midtier operations include the Middelburg, Umcebo and Koornfontein mines.

Glencore produced 46.1-million tonnes of coal at its South African operations in the year ended December 31, 2014 (2013: 43.5-million tonnes).

Glencore's thermal coal production for export increased to 23.4-million tonnes in 2014 (2013: 20.6-million tonnes), while its thermal coal production for the domestic market remained flat at 22.7-million tonnes (2013: 22.9-million tonnes).

The higher overall production reflects the benefits of the ramp-up of the newly commissioned Tweefontein optimisation and Wonderfontein thermal coal projects, in Mpumalanga, which helped to offset the closure of certain higher-cost production.

The R8.21-billion Tweefontein optimisation project has delivered a low-cost, long-life brownfield expansion that has elevated the operation to a modern, predominantly opencast operation that mines the rich pillar reserves left behind in discontinued underground workings.

The South African thermal coal business earned Glencore $2.08-billion in total revenue in 2014 (2013: $2.35-billion). Glencore reported adjusted earnings before interest, tax, depreciation and amortisation of $450-million for 2014 (2013: $693-million) and Ebit of $52-million (2013: $52-million).

In response to weak coal markets, Glencore has earmarked certain mines at its Optimum operation for closure, which will lower its production by five-million tonnes a year.

Glencore's Tweefontein optimisation project, in Mpumalanga

Picture by Duane Daws

The mine closures will result in the retrenchment of between 600 and 700 employees. The National Union of Mineworkers has threatened legal action over the retrenchments. The union alleges that the company has failed to comply with its social and labour plan regarding severance packages, a claim which Glencore has denied.

Optimum produces ten-million tonnes a year of coal from opencast and underground mines, with Eskom buying half and the other half being exported.

As Glencore sees no real long-term prospect for Optimum as a producer of export coal, the company is reportedly in negotiations with Eskom about the supply of export-grade thermal coal from its Optimum mine, a move which has attracted criticism that the cash-strapped utility will pay too much for the export-quality coal.

Mining Weekly reports that Optimum has the coal beneficiation infrastructure needed to process the raw, run-of-mine (RoM) coal previously washed as export coal, to the lower specifications required by Eskom – at a much cheaper price. Eskom will have the advantage of procuring coal that would otherwise not be produced and having it specifically processed to the required quality for its power stations. Power stations that receive the optimal quality coal can operate with less downtime and at higher load factors.

The Optimum operation supplies the Hendrina power station, in Mpumalanga, and is strategically positioned to supply a number of other power stations.

Glencore	
Physical address: First floor, 23 Melrose Boulevard Melrose Arch Melrose North 2196	**Telephone:** +27 11 772 0600 **Website:** http://www.xstratacoal.com

Source: Glencore website

Sasol Mining is a wholly owned subsidiary of petro-chemicals giant Sasol and owns six coal mines, which supply coal to Sasol's coal-to-liquid plants in Secunda, in Mpumalanga, and Sasolburg, in the Free State.

The coal is used mainly as gasification feedstock, while some is used to generate electricity. The company also exports coal.

In the financial year to the end of June 2014, Sasol Mining's Bosjesspruit, Brandspruit, Middelbult, Syferfontein, Twistdraai and Sigma mines delivered combined output of 41.5-million tonnes of coal (2013: 40.1-million tonnes).

Saleable production in the first six months of the 2015 financial year was 19.9-million tonnes (H1 2014 18.9-million tonnes).

Sasol Mining's operating profit for the 2014 financial year was R2.45-billion (2013: R2.21-billion).

Some of Sasol Mining's mines, particularly Twistdraai, Brandspruit, Middelbult and Syferfontein, are approaching the end of their useful lives and new developments are under way to ensure continued supply. The company is nearing the tail end of a R15.3-billion mine replacement project, which will secure 42-million tonnes a year of production for the Sasol Synfuel operations, in Secunda.

As part of the replacement project, the Secunda area will be transformed into one of the largest underground coal complexes in the world.

The Twistdraai mine will be replaced with the Thubelisha mine, the Brandspruit operation will be replaced with the Impumelelo mine and the Middelbult operation will be expanded to create the Shondoni mine. The Optimum operation supplies the Hendrina power station, in Mpumalanga, and is strategically positioned to supply a number of other power stations.

Sasol Mining	
Physical address: 1 Sturdee avenue Rosebank 2196	**Telephone:** +27 11 441 3111 **Website:** http://www.sasol.com

Source: Sasol website

Exxaro Resources is one of South Africa's largest diversified resources groups and a significant producer of coal. The company's coal operations are mainly situated in the Waterberg coalfields of Limpopo, and in Mpumalanga, and comprise commercial and tied-coal operations.

Exxaro, which boasts the country's largest coal resource base, produces thermal and metallurgical coal from six managed mines, including Arnot, Leeuwpan, Matla, Inyanda and the North Block Complex (consisting of the Glisa and Strathrae mines), in Mpumalanga, as well as Grootegeluk, in Limpopo. Grootegeluk is currently the only producing mine in the coal-rich Waterberg and is adjacent to Eskom's existing Matimba power station and the new Medupi power station.

Production ended at the Tshikondeni mine, in Limpopo, in September 2014, and production is ramping down at Inyanda, which will reach the end of its mine life in the third quarter of 2015.

The company also has a 50% interest in the Mafube opencast JV with Anglo American, in Mpumalanga.

In the 2014 financial year ended December, Exxaro produced 39.15-million tonnes of coal (2013: 38.80-million tonnes). Thermal coal comprises more than 90% of its output, with 36.88-million tonnes produced in 2014.

The coal division achieved revenue of R16.18-billion in 2014 (2013: R13.36-billion) and reported net operating profit of R3.30-billion (2013: R2.77-billion). The improved net operating profit was attributed to higher volumes, favourable exchange rate movements and lower allocated corporate costs.

The group has completed the brownfield expansion of its Grootegeluk Medupi Expansion Project (GMEP), in Limpopo, in 2014. The project will supply 14.6-million tonnes a year of coal to the new Eskom power station and should achieve steady-state output in 2018. Eskom informed Exxaro in January 2014 that it would not be able to begin offtake on the agreed date of February 1, 2014, owing to construction delays at the Medupi power station. Exxaro and Eskom subsequently amended their supply and offtake agreement.

The project delivered its first coal to the power station in July 2014. Total coal supply from the GMEP to Medupi amounted to 3.1-million tonnes in 2014.

The group's other projects include the Belfast mine, in Mpumalanga, and the Thabametsi mine, in Limpopo.

Most of Exxaro's coal is fed into the domestic power generation industry, with exports constrained by its limited allocation at the RBCT. The company will double its RBCT export capacity to eight-million tonnes a year when it completes the acquisition of Total Coal South Africa (TCSA), which has a four-million-tonne-a-year allocation at the terminal. Exxaro announced in July 2014 that it would buy TCSA for $472-million.

Exxaro Resources	
Physical address: Roger Dyason road Pretoria West 0183	**Telephone:** +27 12 307 5000 **Website:** http://www.exxaro.com

Source: Exxaro Resources website

South32 is a BHP Billiton spin-off company established in 2015 and has large South African energy coal resources. South32 owns a 90% interest in four operating energy coal mines in the Witbank region of Mpumalanga. These mines previously belonged to BHP Billiton Energy Coal South Africa (Becsa). A BEE consortium, led by Pembani Group, owns 8% of the mines, with the balance owned by employees, through an employee share ownership plan. About 55% of the coal South32 produces in South Africa is sold domestically and the remainder exported through the RBCT, in which South32 has a 21% interest.

In the financial year ended June 2014, the Khutala, Klipspruit, Wolwekrans and Middelburg mines, now part of the South32 stable, produced 30.38-million tonnes of coal (2013: 31.63-million tonnes). Production in the first half of the 2015 financial year was 16.53-million tonnes (H1 2014:14.97-million tonnes). The energy coal division reported sales revenue of $1.25-billion in the 2014 financial year (2013: $1.46-billion) and revenue of $683-million in the first half of the 2015 financial year (H1 2014: $639-million).

South32 is considering two potential energy coal projects: the Klipspruit extension, a life extension project for the Klipspruit export-oriented mine; and the Khutala life extension, which will replace underground volumes at the existing Khutala colliery, with production from one or more surface mines.

South32	
Physical address: 6 Hollard street Johannesburg 2001	**Telephone:** +27 11 376 9111 **Website:** http://www.south32.net

Source: South32 website

Smaller producers

African Exploration Mining & Finance Corporation (AEMFC) is a State-owned mining company, established in 1944, but revived from dormancy in 2007, to secure South Africa's energy supply through the mining and supply of coal for electricity generation. AEMFC owns and operates the Vlakfontein mine, in Mpumalanga, and provides Eskom with about 500 000 t/y of coal.

The Vlakfontein mine's current RoM production is about 1.6-million tons a year and AEMFC aims to increase the RoM output to about 2.2-million tons by the end of the 2015/16 financial year. Over the next three to five years, AEMFC aims to increase Vlakfontein's production to about three-million tons of RoM coal to supply Eskom's Kendal and Kusile power stations, which are situated near the mine. To meet the target of increasing production, the company is undertaking a R155-million Phase 2 expansion project at Vlakfontein. The expansion is scheduled to be completed by the end of 2016.

AEMFC is also expanding its project portfolio and is developing two projects in Mpumalanga, which it aims to have on stream by late 2017.

AEMFC is cash positive and recorded an operating profit of R33.5-million during the 2014 financial year. The company is a subsidiary of the Central Energy Fund.

African Exploration Mining & Financing Corporation	
Physical address: 150 Linden street Block E, Upper Grayston Office Park Strathavon 2196	**Telephone:** +27 10 201 8107 **Website:** http://www.cefgroup.co.za/aemfc

Source: Central Energy Fund website

Buffalo Coal, formerly known as Forbes & Manhattan Coal, is a thermal and metallurgical coal producer with two mines – Magdalena and Aviemore – in KwaZulu-Natal. BEE partners own 30% of the mines.

The Magdalena mine has an estimated production capacity of 100 000 t/m of bituminous coal and the Aviemore underground mine has an estimated production capacity of 45 500 t/m of anthracite. Buffalo Coal has an export allocation of 204 500 t at the RBCT.

For the ten months ended December 31, 2014, Buffalo Coal produced 743 983 t, comprising 233 740 t of anthracite and 510 243 t of bituminous coal. In the 12 months ended February 28, 2014, the company's production was 922 274 t, comprising 304 256 t of anthracite and 618 018 t of bituminous coal. The company changed its financial year-end from February 28 to December 31 on March 1, 2014.

Buffalo Coal's total sales of bituminous coal and anthracite products for the period ended December 31 were 845 000 t, compared with 955 000 t sold in the period ended February 2014. About 52% of its bituminous sales were exported and 48% were domestic sales.

The company reported revenue of R593.84-million in the period ended December 31, 2014, compared with R688.42-million in the period ended February 28, 2014. The miner posted a net loss of R108.44-million in the financial year ended December 31, 2014, compared with a loss of R278.07-million in the financial year ended February 28, 2014.

Given its financial position, the company has announced the restructuring of its operations to cover operational cash flow shortfalls, ensuring that the company remains sustainable in the future.

Buffalo Coal	
Physical address: Woodlands Office Park Third floor, Building 13 Corner Woodlands and Kelvin drive Woodmead 2082	**Telephone:** +27 11 656 3446 **Website:** http://www.buffalocoal.co.za

Source: Buffalo Coal website

Continental Coal is a Sydney-listed thermal coal producer operating near Witbank, in Mpumalanga.

The company placed its South African assets into business rescue in early 2015 and later agreed to sell its Vlakvarkfontein and Penumbra mines to newcomer IchorCoal for R128-million. Vlakvarkfontein and Penumbra can produce about two-million tons a year of thermal coal for the export and domestic markets. Continental owns a third thermal coal project, De Wittekrans, which will produce 3.6-million RoM tons a year at full production. IchorCoal has indicated that it has no interest in buying the greenfield project.

Continental's RoM production for the year ended June 30, 2014, was 2.13-million tonnes (2013: 2.22-million tonnes). The company's most recent quarterly report was for the September 2014 quarter, in which it reported total RoM production of 513 263 t, compared with 539 089 t in the June 2014 quarter. About 70% of its production was sold to the domestic market.

Continental Coal	
Physical address: 34 Flicker road Illovo 2196	**Telephone:** +27 11 881 1420 **Website:** http://www.conticoal.com

Source: Continental Coal website

IchorCoal is an international company listed on the Frankfurt stock exchange with a focus on coal mining in South Africa. Headed by former ArcelorMittal South Africa CEO Nonkululeko Nyembezi-Heita, the company owns 74% of Vunene Mining, which operates the Usutu colliery, near Ermelo, in Mpumalanga.

According to the IchorCoal website, the Usutu colliery was the largest single producer of coal in South Africa in the 1970s and 1980s, with a monthly production of about 450 000 t. The underground mine was stopped in 1991, when Eskom mothballed the Camden power station. Camden has since been reopened under Eskom's return-to-service programme and IchorCoal has a coal supply agreement in place with the utility.

Vunene Mining produced 1.85-million tonnes of coal in the financial year ended December 2014, from 973 000 t in the previous year, resulting in IchorCoal's revenue doubling from €24.57-million to €48.63-million in 2014.

IchorCoal also owns 45% of Mbuyelo Coal, which owns three collieries and has a 29.99% shareholding in Universal Coal, which owns thermal and coking coal assets. The company bought Continental Coal's Vlakvarkfontein and Penumbra collieries, in Mpumalanga, in 2015. The mines have capacity to produce two-million tons a year of coal.

IchorCoal intends to sell coal to the domestic market, although it has allocated export capacity at the RBCT.

Nyembezi-Heita believes it is the right time to buy coal assets. So far, IchorCoal has assembled assets producing about four-million tons a year in attributable output. The company's strategic goal is to produce between 15-million tons and 20-million tons a year.

IchorCoal	
Physical address: 30 Jellicoe avenue Third floor Rosebank 2196	**Telephone:** +27 11 268 1100 **Website:** http://www.ichorcoal.com

Source: IchorCoal website

Keaton Energy operates two collieries – Vanggatfontein, in Mpumalanga, and Vaalkrantz, in KwaZulu-Natal. The Vanggatfontein colliery produces thermal coal for domestic and industrial consumers and the Vaalkrantz mine produces anthracite for domestic consumption and export to Brazil. The company aspires to grow its production to five-million tonnes a year of saleable coal in the medium term.

Keaton bought Xceed Resources in 2014, which gave it access to the undeveloped Moabsvelden colliery. Moabsvelden, which has a reserve of 43-million tonnes of coal, is its short-term growth priority and will be developed as an expansion to the nearby Vanggatfontein mine. Mining at Moabsvelden is expected to start once the company has concluded a supply agreement with Eskom.

In the 2015 financial year ended March, Keaton increased its thermal coal production by 4% year-on-year to 2.28-million tonnes, its metallurgical coal production by 29% year-on-year to 126 107 t and its anthracite coal production by 30% year-on-year to 395 450 t.

Keaton reported a net loss of R71.9-million for the 2015 financial year, compared with a profit of R64.4-million in 2014. The company reported coal theft amounting to a loss of R24.7-million from the Vaalkrantz colliery, which necessitated a R56.6-million impairment and a related deferred tax asset reversal of R35.9-million.

Keaton Energy	
Physical address: Eland House The Braes 3 Eaton avenue Bryanston 2194	**Telephone:** +27 11 317 1700 **Website:** http://www.keatonenergy.co.za

Source: Keaton Energy website

Petmin is a multicommodity company, which owns South Africa's largest high-quality metallurgical anthracite mine – Somkhele, in KwaZulu-Natal. The mine's capacity was expanded in 2012 to 1.2-million tonnes a year, with the completion of a second wash plant. In 2013, a third wash plant was commissioned to produce 350 000 t of energy coal from rewashed discard.

The Somkhele mine produced 1.13-million tonnes of saleable anthracite in the year ended June 30, 2014 (2013: 822 431 t). In the first six months of the 2015 financial year, saleable anthracite output was 678 002 t (H1 2014: 534 523 t). Anthracite sales were 1.17-million tonnes in the 2014 financial year and 659 754 t in the interim period.

Energy coal saleable production was 244 298 t in the 2014 financial year (2013: 207 238 t). In the interim period, energy coal production was 171 474 t (H1 2014: 110 349 t). The company sold 174 556 t of energy coal in the 2014 financial year and significantly increased that to 268 788 t in the first six months of the 2015 financial year. Energy coal sales were temporarily suspended in comparable period of the 2014 financial year, owing to a dispute with the main contracted customer.

Petmin	
Physical address: 37 Peter Place Bryanston 2021	**Telephone:** +27 11 706 1644 **Website:** http://www.petmin.co.za

Source: Petmin website

Universal Coal's Mpumalanga thermal coal assets include one operating mine, Kangala; one project in the acquisition and development phase, New Clydesdale colliery (NCC) Roodekop; and one exploration project, Brakfontein. The company's exploration coking coal projects are located in the emerging Soutpansberg and Tuli coalfields, in Limpopo.

Universal commissioned its 70.5% Kangala mine in February 2014 and officially completed the mine in October 2014. Kangala has a nameplate capacity of about 2.4-million tonnes a year of RoM coal and has an installed processing plant capacity of 4.25-million tonnes. The Kangala mine has an eight-year agreement to supply coal to Eskom and has a life-of-mine offtake agreement with Exxaro for export-quality coal from the mine. The company also has an RBCT export allocation of 51 000 t/y under the Quattro entitlement scheme for smaller miners and has applied to increase this allocation. Universal aims to export about 100 000 t/y from the Kangala mine.

In the year ended June 30, 2014 (five months of production), the Kangala mine produced 633 384 t of RoM coal and sold 375 333 t to the domestic market. In the six months ended December 2014, Kangala produced 1.08-million RoM tonnes and sold 709 069 t. Of this, 691 341 t were domestic sales and 17 728 t were export sales.

Universal's second operation will be the NCC mine, followed by the proposed Brakfontein mine. The NCC mine complex will increase Universal's yearly RoM production to 4.4-million tonnes and increase its total installed plant capacity to 6.25-million tonnes RoM. Universal reported in July 2015 that it was negotiating a long-term coal sales agreement with power and metallurgical firms for the use of coal from NCC. The company has secured R525-million in funding to progress the mine development programme.

In the first six months of the 2015 financial year, Universal's group revenue amounted to A$26.7-million (H1 2014: nil).

The company posted a loss of A$4.07-million in the six-month period, compared with a loss of A$2.37-million in the first half of the previous financial year.

Universal Coal	
Physical address: 467 Fehrsen street Brooklyn 0182	**Telephone:** +27 12 460 0805 **Website:** http://www.universalcoal.com

Source: Universal Coal website

Wescoal engages in mining, processing, supplying, selling and distributing coal and coal-related products in South Africa. The company supplies most of its coal to Eskom and has a 200 000 t/y allocation at RBCT's Quattro scheme.

Wescoal's mining division operates the Khanyisa and Intibane collieries, in Mpumalanga. These mining operations are in proximity to Eskom's Kendal power

Wescoal's Khanyisa mine, in Mpumalanga

Pictures by Wescoal

station. Wescoal also owns the Elandspruit colliery, in Mpumalanga, which is a future operation.

The company produced 1.5-million tons of coal through Khanyisa and Intibane in the 2015 financial year, compared with 1.6-million tons in 2014. The group plans to ramp up its output to four-million tons a year by 2016, as the R170-million Elandspruit project comes on line.

Wescoal reported profit of R28.96-million for the financial year to the end of March 2015 (2014: R85.89-million). Its group revenue amounted to R1.67-billion (2014: 1.15-billion). The mining division contributed R595 576 to group revenue in the 2015 financial year (2014: R672 691).

The coal supply business of Wescoal Trading in the non-Eskom domestic market is the group's mainstay. Its Chandler Coal and MacPhail brands are the backbone of the supply business.

Wescoal has committed to being more than 50%-owned by black shareholders before December 2016 to qualify for long-term coal business from Eskom.

Wescoal	
Physical address: Corner of Hulley and Gewel avenues Isando 1600	**Telephone:** +27 86 111 6463 **Website:** http://www.wescoal.com

Source: Wescoal website

Coal resource developers

Coal of Africa Limited's (CoAL's) principal activity is the exploration and development of coking and thermal coal properties. The company owns the development phase Vele colliery and the Makhado project, in Limpopo, as well as three exploration stage projects – Chapudi, Generaal and Mopane – in the Soutpansberg coalfield, in the same province.

CoAL has a vision of producing 6.7-million tonnes a year of coal by 2019. Its Vele mine, where operations were halted in October 2013 to allow for a R220-million brownfield expansion, will produce 1.2-million tonnes a year and its greenfield Makhado project will produce 5.5-million tonnes a year. Commercial production at Vele is expected to start in 2017.

The Mooiplaats colliery, in Mpumalanga, was placed on care and maintenance in October 2013 and CoAL is in the process of selling the asset. A $23.47-million transaction with Blackspear Holdings lapsed at the end of June 2015. The company previously said that, should the transaction with Blackspear fall through, CoAL might consider reopening Mooiplaats as an Eskom-product-only mine. Mooiplaats is located close to Eskom's Camden power station.

Since 2013, when CoAL implemented a five-point turnaround strategy, the company has also disposed of the Woestalleen colliery, the Opgoedenhoop mining right and the Holfontein project, in Mpumalanga.

CoAL has access to port throughput capacity at the Matola terminal, in Maputo, Mozambique.

Coal of Africa Limited	
Physical address: South Block Summercon Office Park 96 Sunset avenue Sandton	**Telephone:** +27 10 003 8000 **Website:** http://www.coalofafrica.com

Source: Coal of Africa Limited website

Resource Generation is developing the Boikarabelo coal mine in the Waterberg region, in Limpopo, which will deliver saleable coal production of six-million tonnes a year in the first phase. The second phase of the mine will target up to six-million tonnes a year of output. The Boikarabelo mine will cost $477-million to build. The company started construction in February 2013. The project will include a $200-million coal handling and preparation plant, which will be the largest capital item. Initial production was delayed from December 2015 to mid-2016 after the earthworks contractor has been placed under liquidation in 2014.

Resource Generation	
Physical address: Unit 2 Carrera House 15 Sovereign drive Route 21 Corporate Office Park Irene 0157	**Telephone:** +27 12 345 1057 **Website:** http://www.resgen.com.au

Source: Resource Generation website

Waterberg Coal Company (WCC) is the managing partner in the Waterberg coal project (WCP) JV, in Limpopo, through its subsidiary Firestone Energy and its empowerment partner Sekoko Coal.

The company is also developing a standalone coal export project in the south of the WCP area.

The WCP, which could supply ten-million tons a year of coal to Eskom was on hold by mid-2015, pending the status of negotiations with respect to a coal supply agreement. Meanwhile, WCC is focusing on an export project, which could produce four-million tons a year by 2020.

First coal is expected in the third quarter of 2016. WCC believes the profitability of the export project will be enhanced by the supply of lower-grade coal, produced during the export-coal mining process, to an independent power producer (IPP).

WCC has submitted an application to establish an IPP with a capacity of 600 MW, with plans to increase the capacity.

The company stated in February 2015 that its power project "appears to be the only one announced to date which controls its own source of feedstock coal".

Waterberg Coal Company	
Physical address: 1 Walker avenue West Perth 6005	**Telephone:** +618 9485 0888 **Website:** http://www.waterbergcoal.com.au

Source: Waterberg Coal Company website

Corporate activity

The South African coal sector has undergone a number of mergers and acquisitions (M&As) over the past few years.

One of the biggest changes in 2015 has been the disappearance of Becsa from the local coal scene and the emergence of a new BHP Billiton spin-off company. South32 started trading on the ASX, JSE and LSE in May 2015. The company owns alumina, aluminium, coal, manganese, nickel, silver, lead and zinc assets, which diversified mining giant BHP Billiton demerged to simplify the group's portfolio. BHP's rationale behind spinning out the assets is that they will be worked harder by focused management and, therefore, deliver better earnings and receive greater value recognition. South32 owns four operating energy coal mines in South Africa and three underground metallurgical coal mines in Australia.

A potential significant corporate activity development in the coal industry will depend on whether Anglo American will exit its domestic coal business. The company has indicated that it is considering exiting the domestic coal industry, partly owing to government's demands that mines supplying coal to power utility Eskom have 51% black ownership. The group plans to retain its export coal business.

The Pembani Group, founded by Phuthuma Nhleko, is reportedly interested in Anglo American's South African coal mines. Pembani and the Shanduka Group combined their business interests in 2014, which commentators said indicated the strong presence that they were building in the energy market. Shanduka is in a JV with Glencore on South African coal assets, while Pembani has energy investments such as Engen and Exxaro.

Total has announced that it will exit the South African coal sector, although the transaction to sell its local coal business to Exxaro has not been completed yet. Three of the conditions precedent to the transaction, which was announced in July 2014, have been fulfilled. These include approval by the competition authorities, South African Reserve Bank and the RBCT. By June 2015, consent by the Department of Mineral Resources was still outstanding. The Mineral Resources Minister has reportedly said that the transaction will require a community stake to be granted State approval.

On the junior coal miner front, IchorCoal is positioning itself as a credible player in the M&A field. The Netherlands-incorporated company, which trades on the Frankfurt stock exchange, believes consolidation of junior miners is a logical step in a market where funders have withdrawn. In a corporate presentation dated May 2015, IchorCoal states that depressed valuations provide good opportunity for M&A at attractive prices. In June 2015, IchorCoal concluded agreements to acquire Continental Coal's Vlakvarkfontein and Penumbra mines for R128-million. The company is only interested in producing or near producing assets and has decided not to buy Continental Coal's greenfield De Wittekrans project.

Continental Coal has been struggling to sell its South African mines for some time. In November 2014, the company accepted a R700-million offer from a consortium led by South Africa-based fund LSP Energy for its 74% interest in Continental Coal South Africa. However, in early 2015, a new buyer emerged in the form of UK-based Ivory Mint Holdings, which offered \$75-million for the company's stake in its South African subsidiary. By June 2015, Continental Coal announced that IchorCoal had offered to buy the Vlakvarkfontein and Penumbra mines.

CoAL, which has disposed of three assets in the past two years, was selling its stalled Mooiplaats colliery to Blackspear Holdings for \$23.47-million, but the agreement lapsed at the end of June 2015, owing to funding issues. The company is continuing discussions with various parties, including Blackspear, regarding the sale of the mine, which is on care and maintenance.

Shanduka Resources in June 2015 announced the sale of its Uitkomst thermal coal mine, in KwaZulu-Natal, to precious metals-focused Pan African Resources for R200-million. The mine yields and sells about 400 000 t/y of coal for the export market.

In neighbouring Botswana, Australian junior African Energy has signed a term sheet to sell its Mmamantswe coal and power project to a South African project developer, which plans to submit a bid to South Africa's upcoming Coal Baseload IPP Procurement Programme. The project is located about 20 km from South Africa's border and hosts about 1.25-billion tonnes of coal.

Government's black ownership requirement for coal mines supplying Eskom power stations may also

Coal sector HDSA ownership

The Chamber of Mines (CoM) believes that the coal mining industry has exceeded the Mining Charter's target of 26% ownership by historically disadvantaged South Africans (HDSAs) by achieving HDSA ownership of 47.2%.

The CoM estimates that the broad-based HDSA ownership of the South African mining industry equates to 38% on average and that it has been responsible for the transfer of about R47-billion to HDSA beneficiaries. The CoM estimates the empowerment percentages of the platinum group metals sector at 38%, gold at 27.3% diamonds at 26%, iron-ore at 35.7%, manganese at 42.2% and chrome at 35.1%.

The Department of Mineral Resources; however, believes the mining industry has generally failed in terms of the Mining Charter's targets. It states that 90% of the companies achieved the 26% target on an employment-weighted basis with an average of 32.5% HDSA ownership.

When the issue of "meaningful economic participation" is taken into account, only 20% of these transactions complied.

The CoM estimates that the coal sector has achieved black economic-empowerment (BEE) ownership of 43.9% weighted based on value. The ownership structure has benefited 74% BEE entrepreneurs, 12% communities, 14% employee-share ownership plans (Esops) and an estimated 114 653 individuals.

In terms of volume weighted, the industry has achieved a BEE ownership of 47.2%.

The ownership structure has benefited 68% BEE entrepreneurs, 13% communities and 19% Esops.

The coal sector has a net value of between R24-billion and R49.51-billion.

Picture by Duane Daws

Source: Chamber of Mines and Department of Mineral Resources

result in further corporate activity in the junior miner sector. Wescoal has indicated that it will introduce a 51%-owned BEE structure to improve stakeholder value, meet legislative requirements and set a precedent for transformation in South Africa. The company aims to achieve its stated BEE goal by December 2016.

WCC has also confirmed that it is in discussions with potential BEE partners about subscribing for new equity to increase the company's total BEE ownership to more than 50%.

The company has BEE ownership of nearly 40%.

Other BEE-related transactions in 2015 include Petmin's R350-million broad-based BEE deal, which will allow for its employees and the local community to acquire a 20% stake in the Somkhele mine. CoAL has also finalised the BEE shareholding for its Makhado project, having previously signed a memorandum of understanding to enable a BEE consortium comprising seven communities to acquire a 20% interest in the project.

The company has also identified suitable BEE share-holders to acquire a further 6% in the project, ensuring that Makhado meets the requirements of South Africa's mining legislation.

Selected coal mining projects

Belfast – Exxaro Resources

Diversified resources company Exxaro Resources is spending R3.8-billion on a new openpit and underground mine near Belfast, in Mpumalanga. The mine will produce 2.2-million tonnes a year of A-grade thermal coal and 500 000 t/y of Eskom-grade coal. The mine is forecast to start output in the second half of 2017 and ramp up in 2018.

Boikarabelo – Resource Generation

Resource Generation is developing the Boikarabelo mine, in Limpopo, at a cost of $480-million. The mine will be developed in two phases, the first of which will produce about 14-million tonnes a year of RoM coal, equating to about six-million tonnes of product coal, which will be split equally between the export and domestic markets. Construction of the mine started in the first quarter of 2013 and is scheduled for completion in the first half of 2017. Phase 2 is planned for 2020 and involves ramping up production to 20-million tonnes a year of product thermal coal.

Elandspruit – Wescoal Mining

Wescoal Mining is planning to build an opencast mine in Mpumalanga. The coal junior secured a water-use licence for the Elandspruit project in April 2015, enabling the company to start work on the project. Wescoal reported in July 2015 that it had delivered its first batch of coal to customers after it was processed at Wescoal's nearby beneficiation plant. The company is developing the Elandspruit project from operationally generated cash flows, without having to seek funding support from shareholders. The mine is expected to attain 200 000 t/m by late 2015.

Impumelelo – Sasol Mining

The R4.7-billion Impumelelo coal project, in Mpumalanga, will replace Sasol Mining's old Brandspruit mine and produce coal for the Sasol Synfuels plant. The project involves the construction of a new 8.5-million-ton-a-year coal mine, which is upgradeable to 10.5-million tons a year. First production from the mine was expected in May 2015, followed by the completion of Phase 1 in June 2015 and Phase 2 in June 2019.

A 2 400 t/h, 28-km-long conveyor system will deliver coal to the synfuels complex, making it the longest conveyor system of its kind in the southern hemisphere.

Makhado – Coal of Africa Limited

The R3.96-billion Makhado thermal and coking coal project is CoAL's anchor project in the Soutpansberg coalfield, in Limpopo. The colliery will deliver 5.5-million tonnes a year of saleable product – 2.3-million tonnes a year of hard coking coal and 3.2-million tonnes a year of thermal coal. The mine will have a 16-year mine life. CoAL received a new-order mining right for Makhado in May 2015 and expects to start a 26-month construction phase in the first half of 2016. The mine is forecast to enter commercial production during the 2019 calendar year.

Moabsvelden – Keaton Energy

Keaton Energy is planning the 1.4-million-ton-a-year Moabsvelden thermal coal mine, in Mpumalanga. The company plans to integrate Moabsvelden into the greater Vanggatfontein complex. The project has been redesigned as an Eskom-only mine, although it was originally planned that one-third would be exported. At current export prices, Keaton believes Moabsvelden's coal quality would not have made it an economically viable operation. The company reported in June 2015 that it was preparing to conclude financing for the R300-million project. It was still awaiting a water-use licence.

New Clydesdale colliery – Universal Coal

The New Clydesdale colliery (NCC), which Universal Coal bought from Exxaro Resources in 2014, will produce two-million tons of coal a year for high-end domestic markets over a ten-year period. The first phase of the Mpumalanga-based project involves the development of an opencast operation on the Roodekop property, with the recommissioning of the NCC processing facility to meet the demand of the initial tonnage throughput. The NCC will be fully commissioned in late 2015.

New Largo – Anglo American Inyosi Coal

New Largo is a planned opencast mine in Mpumalanga, which will produce 11-million tonnes a year of thermal coal to supply the Eskom Kusile power station, which is currently under construction. Anglo American Inyosi Coal (AAIC), a 73:27 joint venture between Anglo American and black-owned Inyosi Consortium, owns the project. In November 2014, AAIC and Eskom signed a memorandum of understanding to conclude the commercial and technical aspects of the project, while further engaging on strategic empowerment imperatives. Eskom's 51% BEE ownership stipulation for the project was believed to be central to the stalling of negotiations. It is understood that the technical issues pertain to the finalisation of the mine plan, which will inform the cost of the project and the commercial terms of the eventual supply agreement.

Shondoni – Sasol Mining

The R3.09-billion Shondoni project, in Mpumalanga, involves the construction of a new mine to replace output from Sasol Mining's Middelbult coal mine. The mine will have 13 production sections and will deliver 10.5-million tons a year of coal when in full production. In May 2015, the mine was 63% complete. First production is expected in January 2016.

T-project and Klippoortjie – African Exploration Mining & Finance Corporation

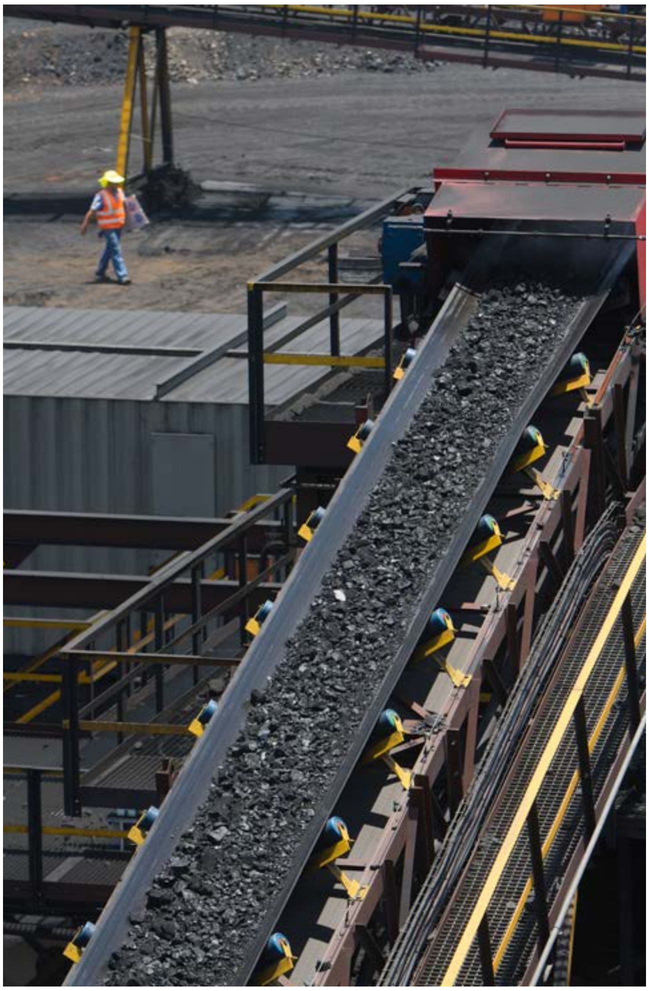
The R2.5-billion to R3-billion T-project, near Kinross, will process about 3.5-million tons a year of Seam 4 thermal coal, which is suitable for use at Eskom power stations. African Exploration Mining & Finance Corporation (AEMFC) is also developing the Klippoortjie project, near Emalahleni. The project will cost about R350-million. AEMFC is aiming to have both projects on stream by late 2017.

Thabametsi – Exxaro Resources

Diversified mining company Exxaro Resources is pursuing the opencast thermal coal Thabamesti mine, in Limpopo. The proposed mine is adjacent to the west of its Grootegeluk mine. Phase 1 of a bankable feasibility study for the greenfield project started in 2014, with construction planned for 2016. Some of the required licences for the project have been granted. The mine will supply coal to a proposed 600 MW IPP plant, which GDF-Suez is planning to build.

Vele Colliery – Coal of Africa Limited

Coal of Africa Limited (CoAL) is modifying and expanding its Vele colliery beneficiation plant, in Limpopo, which will enable the company to optimally produce semisoft coking coal, thermal coal and sized coal simultaneously at an expected processing capacity of 2.7-million tonnes a year of RoM coal. The total capital expenditure to complete the plant modification is estimated at R450-million. CoAL reported in March 2015 that it would decide on timing the start of plant modification at the colliery after it had received an integrated water-use licence for the mine. Commercial production at Vele is targeted for 2017.



Picture by Duane Daws

Waterberg coal project – Waterberg Coal Company

The Waterberg Coal Project (WCP) proposes the development of an opencast mining operation to produce ten-million tonnes a year of coal for Eskom over an initial 30 years. The Waterberg Coal Company (WCC) is the lead and managing partner in the project. WCC reported in April 2015 that optimisation and value engineering studies for the project were on hold, pending further direction from Eskom on the status of negotiations with respect to a coal supply agreement. In the meantime, the company is advancing a definitive feasibility study for an export project, which will be located in the south of the WCP area. The export project entails producing four-million tons a year of coal by 2020. First coal is expected in the third quarter of 2016.

Local demand

Coal is the primary energy source for South Africa and is expected to remain a strategic input to power generation. Currently, coal provides for more than 70% of the country's primary energy needs. About 53% of the coal that South Africa produces is used for electricity generation, 33% for petrochemical industries, 12% for metallurgical industries and 2% for domestic heating and cooking.

South Africa's coal consumption in 2014 was 89.4-million tonnes oil equivalent, which is a 0.9% increase on its 2013 consumption of 88.7-million tonnes.

Eskom, which operates 13 coal-fired power stations, is the largest consumer of coal, buying about 50% of the coal produced locally. Domestic coal consumption, especially by Eskom, is expected to increase over the next few years. The utility is bringing two new coal-fired power stations on line – Medupi, in Limpopo, and Kusile, in Mpumalanga. A third coal-fired power station after Medupi and Kusile is also under consideration.

Eskom has said over the years that it is facing a large supply deficit, owing to increased demand and underinvestment in new mining projects. It was previously estimated that Eskom would face a 40-million-tonne to 60-million-tonne-a-year supply shortfall after 2018.

However, Eskom has since moderated its stance, as weaker export prices have made more coal available to the domestic market and lower coal requirements have placed the utility in a better position than previously thought. Media publications in South Africa quoted a senior Eskom manager in May 2015 as saying that the utility had secured about 80% of its coal requirements over the next five years.

Coal is expected to remain a strategic input to South Africa's energy security

Picture by Duane Daws

Eskom's coal requirements for the period until 2026 are 260-million tonnes, lower than previously anticipated. During this period, Eskom is forecasting a deficit of about 11-million tonnes a year, compared with a previous deficit estimate of 40-million tonnes a year.

Eskom estimates it has to contract about 2.17-billion tonnes of coal by 2051, of which about 1.12-billion tonnes will be sourced from long-term supply contracts, including extensions of existing contracts, and the balance from new supply contracts, which may include new mines in the Waterberg. Eskom's total coal demand will peak at about 140-million tonnes a year in 2033. Thereafter, demand will begin to decline in line with the country's Integrated Resources Plan, which aims to diversify energy sources.

In the short term, Eskom is facing a 17-million-tonne coal shortfall by 2017. The shortfall is expected to take effect in 2015 at Eskom's Matla, Tutuka and Hendrina power stations, and in 2016 at the Kriel and Arnot power stations.

Meanwhile, the coal sector is set to receive a demand boost from the electricity sector in the form of South Africa's Coal Baseload Independent Power Producer (IPP) Procurement Programme, under which the Department of Energy (DoE) is aiming to procure 2 500 MW of new electricity capacity. These projects will require significant coal supplies.

Energize, a magazine published by EE Publishers, stated in a January 2015 article that a power station of 500 MWe capacity running in baseload mode would require between 1.8-million tonnes a year and 2-million tonnes a year of coal, which is more than the yearly output of several of the smaller coal mines in the country.

The article explores the option of using discard coal for the power stations.

Citing the DoE, the article states that the domestic coal mining industry produces 60-million tonnes a year of discard coal and that the country has accumulated about one-billion tonnes of scrap coal. The discard coal option could be attractive to IPPs developing smaller-sized stations and could provide a price advantage.

After coal consumption for electricity generation, Sasol, which operates coal-to-liquid plants, is the next biggest consumer of coal. Sasol's subsidiary Sasol Mining supplies the majority of the group's coal needs.

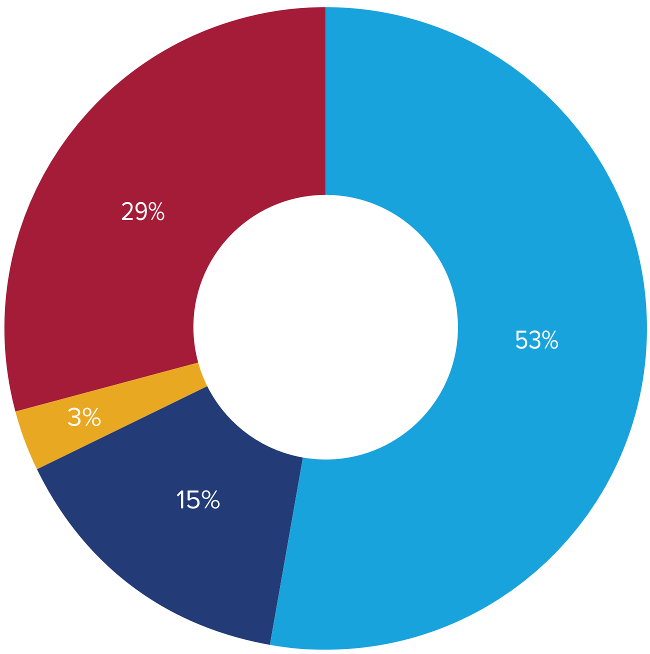
Other coal consumers include industries, such as cement, chemicals and steelmaking; small businesses and households. The largest consumer of metallurgical coal is steelmaker ArcelorMittal South Africa, which has for years sourced the material locally from Exxaro's Tshikondeni mine, in Limpopo. Exxaro closed the mine in September 2014. The steel producer is importing coking coal from countries including neighbouring Mozambique.

Eskom is facing a 17-million-tonne coal shortfall by 2017

Picture by Duane Daws

Export sales

Coal exports by region 2014



■	Asia	53%
■	Africa and Middle East	15%
■	Americas	3%
■	Europe	29%

Source: Energy Information Agency

Despite relatively small coal production volumes, South Africa is one of the top five coal exporters. Owing to its location, the country's exports can fluctuate relatively easily between the Atlantic and Pacific markets.

About 25% of South Africa's coal production is exported, with most of the coal being shipped to Asia. According to the US Energy Information Agency, South Africa exported 78-million tonnes of coal in 2014, of which more than half was sent to Asia. India accounted for 40% of the country's total coal exports. Europe, which once was the main market for South African coal exports, is the second-largest regional importer of South Africa's coal, followed by Africa, the Middle East and the Americas.

Most of South Africa's coal is exported through the privately owned Richards Bay Coal Terminal (RBCT), in KwaZulu-Natal, with smaller volumes going through the Richards Bay and Durban harbours, also in KwaZulu-Natal, and through Mozambique.

The 91-million-tonne-a-year RBCT exported a record 71.3-million tonnes of coal in 2014, beating its previous record of 70.2-million tonnes in 2013. Coal from the terminal is exported to 41 countries, with 67% of the exports destined for Asian countries.

Prospects for South African coal exporters may improve in 2015 as the country's main export destination, India, is forecasting higher thermal coal imports in the 2015/16 financial year. The country initially had an import guidance of 200-million tonnes for the year, but owing to concern about insufficient rainfall during the monsoon season, it expects imports to be between 15% and 20% higher than that. Low rainfall during the monsoon carries the risk of lower hydroelectricity generation, putting pressure on thermal power generation. Simultaneously, scanty rainfall triggers an increase in demand for irrigation, which will increase electricity demand. The India government estimates that it might have to import up to 350-million tonnes of thermal coal by 2016/17.

India is aiming to reduce its imports of power-generating thermal coal in the next few years, which could potentially impact on South African coal exporters. India's government has set a target for State-owned Coal India Limited (CIL) to double its output to one-billion tonnes by 2020. However, the Australian government's Office of the Chief Economist points out in a June 2015 research report that it will be a challenge for CIL to achieve this goal, as it will involve adding about 100-million tonnes of production each year. This will equate to production growth of 15% a year, which compares with production growth of less than 2% over the past five years. If all projects proceed as planned, it will take several years before they are completed and operating at full capacity.

CIL has also been aiming to expand its international asset base to secure more coal for its domestic market. One of its ventures was in the Tete province of Mozambique, where it acquired a six-year exploratory licence for two coal blocks. However, after three years of exploration, the coal reserves had not stood up to exploratory scrutiny and the licences were handed back to local authorities.

Opportunities may emerge for South Africa and other thermal coal exporting countries if Indonesia, which is the world's largest exporter, successfully ramps up its domestic coal-fired power generation, thereby removing millions of tonnes from the seaborne market. Developments in Indonesia are particularly significant as the Chinese market, which was once tipped to be the seaborne coal market's white knight, is importing less coal, owing to pollution restrictions and a shift away from heavy industry.

Glencore believes that the changes in Indonesia might lead to a slight undersupply of coal. The global company, which also operates mines in South Africa, puts the current seaborne coal demand at 950-million tonnes of coal a year, with Indonesia poised to supply progressively less than its current 450-million tonnes a year over the next five years. From 2015 to 2020, at least 150-million tonnes of Indonesian coal will be used domestically rather than being exported.

Future export trends for South African companies also focus on the Middle East-North African region, where new markets are emerging in the cement industries of Egypt, Jordan and Iraq. South African coal is reportedly consistent in quality and its volatility, moisture and ash qualities are suitable for cement making. According to an article on BDLive, Egypt will need about six-million to seven-million tonnes a year of coal when its cement industry operates at full capacity, compared with 500 000 t/y in 2014 and a projected two-million to three-million tonnes in 2015.

A potentially negative development for export sales is the proposal to declare coal a strategic mineral. This will impact on exports of low-grade coal that could be used at Eskom power stations to countries such as India. Declaring coal a strategic mineral will allow Eskom to shore up domestic demand ahead of exports.

The strategic mineral proposal is contained in the Mineral and Petroleum Resources Development Act Amendment Bill, which was referred back to Parliament in January 2015 on doubts about its constitutionality, leaving the mining industry uncertain whether, and in what form, it will be passed.

The issue of declaring coal a strategic mineral remains contentious, with commentators warning that the proposal has added to uncertainty and that it could lead to much needed investment in the local coal mining industry being delayed or withheld.

Indian firm to establish South Africa trading company

India's government-owned and -operated MMTC Limited announced in March 2015 that it would open a fully fledged trading company in South Africa to leverage the region's mineral assets.

Coal trading will reportedly constitute a significant portfolio of MMTC's Johannesburg-headquartered company considering that India's import dependency will continue to increase, despite government's efforts to get new projects off the ground.

MMTC chairperson Ved Prakash says coal imports will continue to be robust for at least the next three years, as it will take mining companies time to start operations at the coal blocks they were awarded through government's new auction route. From a level of about 70-million tonnes a year three years ago, coal imports have increased to 150-million tonnes a year, while production from Coal India Limited has remained static.

Under the circumstances, Prakash says imports to fill the demand-supply gap are imperative and that MMTC will continue to fulfil its role as the nominated trading firm for inward shipment of coal. The South African subsidiary will have an important role to play in this emerging opportunity, he adds.

The company's trading turnover is estimated at about $10-billion.

Source: *Mining Weekly*

Coal logistics

Road transportation

Eskom takes delivery of about 120-million tons of coal a year, of which 60% is transported by conveyor, 30% by road and 10% by rail. The utility's first choice is to have its coal delivered by conveyor, followed by rail as a second choice. About 124 000 t/d of coal is transported in Mpumalanga for Eskom power stations using a road network of 3 200 km. The fleet of 2 000 coal trucks share the road infrastructure with the general public, which places this means of transport at a higher risk of accidents than other forms of coal transport.

Despite punting a shift from road to rail as a national imperative, Eskom concedes that there will always be an element of road transportation in the coal industry, owing to the flexibility that the mode of transport provides to the supply chain.


Road transport facilitates the physical transportation of coal along the industry value chain

Picture by Duane Daws

Coal transport by road here to stay, summit told

Trucks were here to stay and the sooner all industry stakeholders embraced their presence, the better it would be for society as a whole, Cross Border Road Transport Agency research division senior manager Etiyei Chibira said at the second yearly Coal Transportation Africa summit, held in Johannesburg, in May.

He said that coal volumes transported by road were gradually increasing and given the significant role that road haulage played in the Southern African Development Community (SADC), particularly in the coal sector, there needed to be an efficient road transport system to better support the bulk commodity haulage industry.

"Road transport facilitates the physical transportation of coal along the industry value chain, connects inland coalfields to production nodes and is responsible for linking remotely located coalfields to railway networks in many instances."

He stated that road transportation, in many instances, provided a faster alternative to transportation by rail, which was particularly important in cases where coal supplies were urgently needed by power stations to ensure electricity generation was not interrupted.

Further, Chibira pointed out that road haulage was becoming increasingly popular in not only the coal sector but also the freight sector throughout the SADC, owing to the flexibility of routes and varying nature of volumes, as well as the lower capital investment required, compared to rail.

Source: *Mining Weekly*

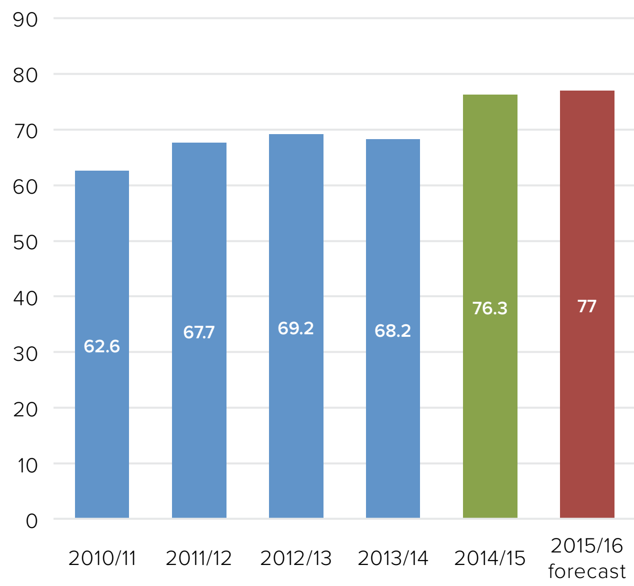
Rail logistics

Transnet Freight Rail coal export line

Distance: 580 km from Blackhill, Mpumalanga to Richards Bay, KwaZulu-Natal.
Topography: Descends from 1 700 m altitude to sea level.
Axle loads: 26 t/axle on heavy haul and some feeder lines.
Civil: 137 bridges, 37 tunnels. Overvaal tunnel = 4 km (single).
Number of lines: Double. Third line on some feeder sections.
Gross tons a train: 22 000 t at 2.2 km in length
Volumes in 2014/15: 76.3-million tons
Capacity: 74-million tons export coal, 14-million tons general freight.

Source: Transnet Freight Rail, May 2015

Export coal rail volumes (million tons a year)



Source: Transnet Freight Rail, May 2015

Transnet Freight Rail (TFR), a business unit of the State-owned Transnet Group, is responsible for transporting coal to Eskom power stations and to export hubs in South Africa and Mozambique.

TFR's coal export line, which was opened in 1976, is one of the utility's most important operations, serving as an artery for coal from the Mpumalanga coalfields to the RBCT.

TFR increased its export coal rail volumes by 12% from 68.2-million tons to 76.3-million tons of coal in the financial year ended March 2015. The freight utility is aiming to raise export coal rail volumes to 77-million tons in the 2015/16 financial year.

Coal rail volumes have for some time been unable to keep pace with expansions at RBCT, which has capacity to export 91-million tons a year of coal. Coal exporters and TFR have been at loggerheads about who is to blame for not meeting the expanded capacity. Coal mining companies believe that TFR has failed to invest in expanding its rail infrastructure, while TFR (in the past) criticised exporters for stalling on take-or-pay rail tariff agreements, which TFR said it needed to invest in increased rail capacity. Under take-or-pay contracts, TFR commits to providing trains and the customer is obliged to pay, whether it has products to rail or not. TFR has since concluded take-or-pay contracts with its 36 coal customers. Mining group Glencore was one of the companies that had strong reservations about the take-or-pay model, which it argued would prevent the company from diverting coal to Eskom, should the utility need more tonnage.

Some of TFR's projects aimed at expanding its coal railing capacity include the expansion of the capacity on the RBCT line to 81-million tons a year, doubling capacity at the Overvaal tunnel, Project Shongololo, the Swaziland rail link, the Waterberg development and initiatives to serve the Navitrade and Maputo terminals.

Under Transnet's Market Demand Strategy, the utility is officially investing R45.5-billion to increase its capacity on the coal corridor to 97.5-million tons by 2020. However, TFR has indicated that the Swaziland link with its 200-wagon Project Shongololo means TFR has the potential to increase capacity to 120-million tons of coal.

Project Shongololo involves a 200-wagon rail service on the coal export line. TFR in 2013 started introducing new locomotives on the corridor, which allows for the Ermelo yard to be bypassed, thereby boosting turnaround times.

The Swaziland project, which involves collaboration between TFR and Swaziland Railways, will enable TFR to divert the transportation of general freight from the coal line through Swaziland. Should TFR and Swaziland

Railways proceed with the project, TFR will remove the 12 general-freight trains currently operating on the corridor. A business plan for the route has been completed; however, an investment decision has been delayed, owing to geotechnical difficulties associated with the route. This has shifted the project's targeted completion date of 2018 to either late 2019 or 2020.

Studies are also under way to open the Waterberg coalfields to the export markets. TFR is investigating options to develop a 560 km Waterberg heavy-haul rail line to link the Waterberg coalfield, in Limpopo, to the existing coal line. A feasibility study is due for completion by August 2015.

TFR has announced a R1-billion investment to provide interim capacity for coal exports from the Waterberg. The investment will create the capacity to export 26-million tons between 2015 and 2019. The longer-term solution involves creating rail capacity of between 40-million tons and 80-million tons from 2021 onwards.

Export terminals

The privately owned RBCT, on the north coast of KwaZulu-Natal, is South Africa's main coal export terminal and one of the largest of its kind in the world. When the terminal was opened in 1976, it had a capacity of 12-million tons a year. Currently, it has a nameplate capacity of 91-million tons a year and preliminary research work has been done on a further expansion (Phase 6) to 110-million tons a year, although the RBCT has no immediate plans to approve the expansion.

The terminal works on a fully integrated supply chain with TFR, which rails coal from mines up to 850 km away. Five tipplers offload rail wagons at a rate of 5 500 t/h, emptying a 100-wagon train in less than two hours.

RBCT, which is owned by the 16 big and small coal mining companies that use it, has come under fire in the past for restricting access to the export markets for small, black-owned coal companies, an allegation that it has rejected.

Richards Bay Coal Terminal shipping statistics

Year	Coal shipped
2011	65.5-million tonnes
2012	68.3-million tonnes
2013	70.2-million tonnes
2014	71.3-million tonnes

Source: Energy Information Agency

Richards Bay Coal Terminal shareholders

- Anglo Operations
- ARM Coal
- Exxaro Coal
- Exxaro Coal Mpumalanga
- Glencore Operations South Africa
- Kangra Coal
- Koornfontein Mines
- Mmakau Mining
- Optimum Coal Holdings
- Sasol Mining
- South32 SA Coal Holdings
- South African Coal Mine Holdings
- South Dunes Coal Terminal SOC
- Total Coal South Africa
- Tumelo Coal Mines
- Umcebo Mining

Source: Richards Bay Coal Terminal

The terminal has allocated four-million tons a year of capacity to 23 junior coal miners in its Quattro scheme, which started in 2004 with an initial capacity of one-million tons a year. In 2014, RBCT agreed to double the capacity for junior miners in the scheme. This is in addition to 15-million tons of capacity that was made available to black economic empowerment-compliant companies through the terminal's Phase 5 expansion.

RBCT exported a record 71.3-million tons of coal in 2014, and is targeting 74-million tons for 2015, which is still well below its nameplate capacity. Shipments are expected to increase to 77-million tons and 81-million tons in 2016 and 2017 respectively.

Besides the RBCT, Richards Bay has two other coal export options – the Richards Bay dry bulk multipurpose terminal, operated by Transnet National Ports Authority (TNPA), and the Navitrade terminal, operated by JSE-listed Grindrod.

The Grindrod Navitrade terminal is in a joint venture with RBT Resources. The coal and magnetite terminal has a nameplate capacity of 3.2-million tons a year, which will be upgraded to 4.5-million tons a year by the end of 2015 at a cost of R12-million.

Further extensions might expand capacity to 20-million tons a year; however, this will require secured coal volumes.

TNPA is also proposing the construction of a short-term coal storage facility at the Richards Bay port using 10 ha of undeveloped land.

Phase 1 of the proposed coal export facility will consist of 4.7 ha, followed by Phase 2 consisting of 5.3 ha. The proposed development will facilitate coal exports of between four-million tons a year and eight-million tons a year.

"Although RBCT has capacity of 91-million tons a year, no allocation exists within the current RBCT arrangements to allow for new coal exporters, especially junior miners.

This project aims to address this although on a short-term basis," TNPA states in its Basic Assessment Report, dated March 2015.

The facility has a proposed lifespan of seven years, whereafter TNPA intends to use the port area for a larger Richards Bay expansion project.

In 2013, Transnet former CEO Brian Molefe threatened to build a R15-billion terminal to compete with the RBCT, after criticising the RBCT for not providing access to small black-owned coal mining companies. However, the utility announced in October 2014 that it abandoned plans for the 32-million-ton-a-year terminal, after an industry agreement had been reached to provide extra capacity for junior miners.

South African coal is also exported through Maputo, in Mozambique, where Grindrod operates the Matola coal terminal. The most recently completed expansion phase of the coal terminal increased capacity from 6-million tons a year to 7.5-million tons a year. The company is studying the potential of increasing the terminal's capacity to more than 20-million tons. Grindrod is working with South African and Mozambican rail utilities to create capacity for established and junior coal mining companies.

Grindrod also operates a 48 000 m^2 footprint in Maputo's main port known as Grindrod Mozambique Limitada, where sided coal, destined for the Turkish domestic market and iron-oxide/magnetite, is exported. The facility has a throughput capacity of four-million tons a year.

RBCT is targeting the export of 74-million tonnes of coal in 2015

Picture by Duane Daws

Inland terminal rapid rail master plans urged for new coal basins

A new logistical concept involving the overland conveying of coal to inland terminals for processing prior to rapid railing to ocean terminals is being proposed for new coal basins to boost efficiencies, cut costs, ensure economically feasible junior-miner participation and bring bulk-commodity management into the twenty-first century.

The basic idea of the new concept, being put forward by project house Logiman of Johannesburg, is to facilitate the continuous flow of coal from mines to ocean terminals, free of all intermediate time-absorbing interruptions, including those at rail spurs and marshalling yards.

The concept involves building coal-processing infrastructure at inland terminals so that individual mines are relieved of the need to invest in their own coal-processing facilities. Its introduction is not expected to cost more than current expenditure on individual systems and is likely to bolster junior-miner involvement.

Overland conveyors are strongly favoured to transport coal to inland terminals, where it is envisaged that state-of-the-art equipment will prepare the coal for rapid loading on to a rail shuttle.

"I would like to combine all the processes, from the coal face to the ocean," says associate director technology of Logiman Lyonell Fliss, who is involved with the development of new industrial concepts.

His proposal, which is best suited to new coal basins where it would be implemented in accordance with a master plan, is designed to eliminate processing and transportation bottlenecks.

Advocated for Southern Africa is the drawing up of a master plan that would view South Africa's emerging Waterberg coalfield and the large adjoining Botswana coalfield as one big whole, on the basis that the Waterberg really represents only the tip of a far larger regional coal basin that extends into Botswana, with similar approaches adopted in Mozambique.

The concept hinges on attaining master plan buy-in by all parties as the starting point.

"In this master plan, we have to eliminate stumbling blocks in the conventional systems and reduce the double handling of coal at individual mines and collection points," Fliss tells Mining Weekly.

Inland terminals and ocean terminals will need to match one another's performances.

Overland conveyors are strongly favoured to transport coal to inland terminals

Picture by Duane Daws

Source: *Mining Weekly*

Labour

Wage negotiations

The South African coal mining industry conducts centralised wage negotiations, facilitated by the Chamber of Mines. Wage negotiations take place every two years, with the most recent agreement having been signed in 2013.

In September 2013, the National Union of Mineworkers, Solidarity and Uasa signed a two-year wage agreement with South African coal employers, including Anglo American Coal South Africa, Exxaro Coal, Umsobo Coal, Kangara Coal, Delmas Coal and Glencore's Optimum, Koornfontein and Glencore Coal South Africa operations.

Negotiations to reach a new wage agreement will start in the second half of 2015 and commentators have said that the importance of these talks should not be overlooked, as the coal industry is facing challenges that might affect the outcome of the negotiations. Considering coal's importance in electricity generation, a protracted coal mining strike could have severe implications for the South African economy.

The South African coal mining industry conducts centralised wage negotiations every two years

Picture by Duane Daws

Health and safety

South Africa's coal mines are generally opencast operations, which are inherently safer than the deep underground mines found in the gold and platinum sectors.

The mining industry has made significant strides in safety in recent years, with 2014 marking the year of the lowest-ever fatalities. A total of 84 fatalities were reported in the local mining industry in 2014, which is an 86% reduction on the 616 fatalities reported in 1993.

The coal sector contributed most to these reductions. Fatalities in the coal sector declined from 90 in 1993, to seven in 2013. Nine fatalities were recorded in 2014.

Many coal mining companies have managed to go for more than 12 months without fatalities, these include Anglo American Coal South Africa, Total Coal South Africa, Kuyasa Mining, Glencore (Coal) and Coal of Africa Limited.

The issue of coal workers' exposure to coal dust, which can lead to lung disease, remains a challenge for the industry. In 1993, the Leon commission of Inquiry investigated the occupational health situation of the South African mining industry and found that 50% to 60% of the workforce will develop coal workers pneumoconiosis after 40 years of exposure.

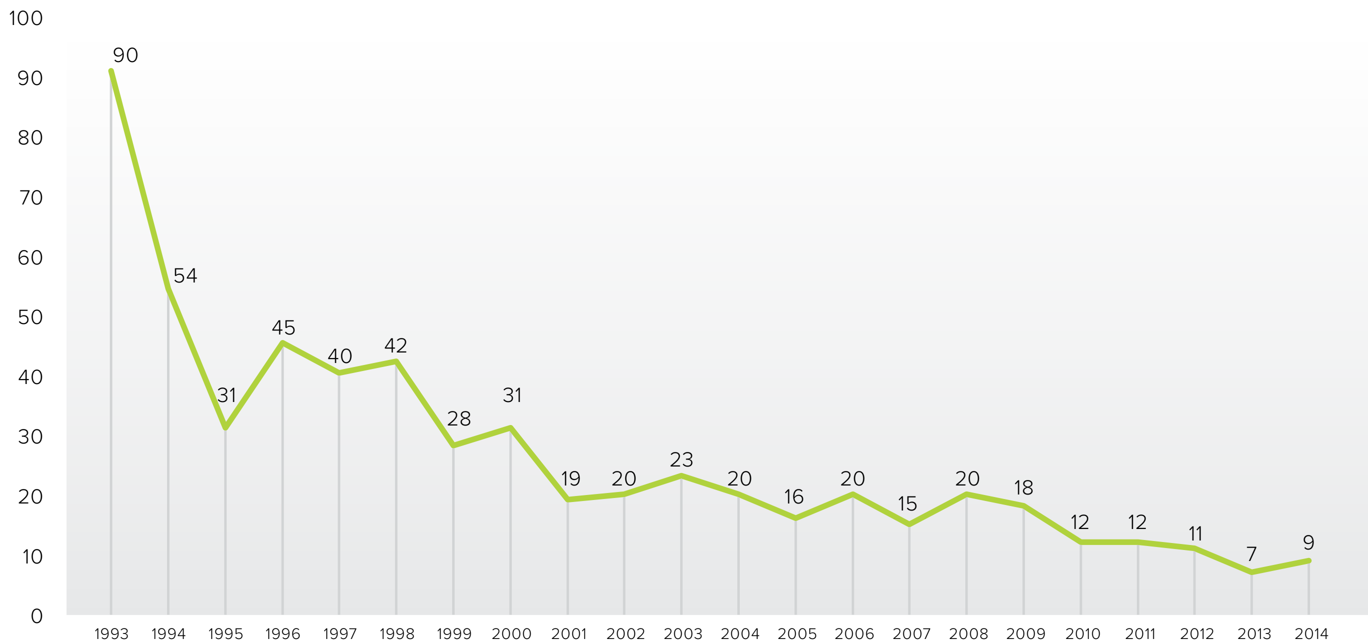
The Department of Mineral Resources in 2014 pledged to eliminate occupational lung diseases, including coal workers pneumoconiosis, silicosis and pneumoconiosis.

Sasol Mining, which owns mines near Secunda, in Mpumalanga, is facing a lawsuit from current and former employees who contracted illnesses as a result of their having worked for the company. Attorney Richard Spoor filed the claim in the South Gauteng High Court in April 2015 on behalf of the group of employees, who allegedly contracted lung disease as a result of their exposure to dust while employed at Sasol's coal mines.

Coal dust can cause lung disease including coal workers pneumoconiosis, progressive massive fibrosis and obstructive pulmonary disease.

The plaintiffs allege that Sasol Mining failed to provide and maintain a working environment in its mines that was safe and without risk to the health of its employees and that it failed to comply with the statutory and common law duties that it owed them.

Coal sector fatalities 1993 to 2014



Source: Department of Mineral Resources

Environmental considerations

Environmental concerns pose the main challenge to coal as an energy source. Not only does the burning of coal cause air pollution, mining activities to extract the fossil fuel also have a severe impact on the environment. Coal mining, particularly opencast mining, requires large areas of land to be disturbed, raising environmental challenges, including soil erosion, dust, noise and water pollution.

Much of the focus of the environmental impacts of coal mining in South Africa centres on the Emalahleni area of Mpumalanga, where coal mining has been conducted for more than a century. Nongovernmental organisations and environmental groups continue to warn of the devastating impacts that the extraction of coal is having on the area's environment.

The World Wide Fund for Nature South Africa provided a detailed account of the degradation of the Olifants river catchment area, as a result of coal mining, in a 2011 report, while the Bureau for Food and Agricultural Policy studied the impact of coal mining on agriculture in a 2012 pilot study, which concluded that the effects of coal mining on agriculture are immense and that some effects are irreversible.

Some of the main environmental concerns regarding coal mining pertain to air and water pollution in sensitive catchment areas, which could jeopardise water and food security.

Acid mine drainage (AMD) from coal mining is considered a major risk, although the AMD discussion in South Africa mainly focuses on the gold industry. AMD is metal-rich water formed from the chemical reaction between water and rocks containing sulphur-bearing minerals. The runoff dissolves heavy metals, such as copper, lead and mercury into ground and surface water.

The Council for Geoscience has investigated the impact of AMD on catchment areas in the Olifants and Komati-Crocodile rivers catchment areas and a technical report indicated that coal mining posed the main hazard.

South Africa is estimated to have about 6 000 abandoned mines spilling acid water and heavy metals into the environment, despite environmental and water legislation requiring effective mine closure.

In an August 2014 report focusing on coal mining, the Benchmarks Foundation claims there is a tendency for coal majors to sell off mines approaching the end of their life to junior companies, which do not have the resources or capacity to close such mines properly.

The report, which forms part of the Benchmarks Foundation's Policy Gap series, is critical of the industry and has called for strict regulatory steps to guide the enforcement of more social and environmental responsibility in the sector.

Many of the country's largest coal producers are investing in treatment plants to treat the polluted water from their mines to potable standards. Anglo American was the first to invest in such a plant and others have since followed.

Anglo American has spent R1.4-billion on the Emalahleni water reclamation plant, which treats between 25-million litres and 30-million litres a day of water. Some of it is used in its mining operations, but the bulk is pumped into the municipal reservoirs for water supply to the community of Emalahleni. An expansion to increase capacity to 50-million litres is under way.

Commissioned in 2007, the plant desalinates rising underground water from Anglo American's Landau, Greenside and Kleinkopje collieries, as well as from the defunct South Witbank mine. By doing so, it prevents polluted mine water from decanting into the environment and the local river system while also alleviating serious operational and safety challenges.

Exxaro Resources launched its R250-million water treatment plant at the Matla coal mine in April 2015. The plant will treat 10 Mℓ/d, of which 6.5 Mℓ/d will be discharged to the Olifants river and the remainder will be used in the Matla operations or for potable water needs at the mine.

In addition to the Matla water treatment plant, Exxaro is also planning a plant at its North Block Complex, near Belfast. This plant has undergone pilot testing and is expected to be operational by the end of 2015. A third water treatment plant is being studied for the Arnot mine, near Middelburg. A prefeasibility study has been completed and a bankable feasibility study is under way. The plant is expected to be operational by 2017.

Other water treatment plants include one near the Optimum colliery, which Glencore bought from BHP Billiton. Glencore also owns a 16% stake in a new R1.5-billion water reclamation plant near Middelburg, which will be commissioned in October 2015. The Middelburg plant will pump clean water into a river upstream from the town.

Despite the environmental impacts of coal mining and coal-fired power stations, coal is expected to continue to feature prominently in global and domestic power generation. However, there is an acknowledgement that coal use in its current form has to change. The World Coal Association (WCA) is among the groups calling for more investment in low-emission coal technologies.

The WCA in December 2014 proposed a global platform for accelerating coal efficiency, the vision of which is to support efficient coal-fired power plant technology to enable developing and emerging economies to access the benefits of affordable electricity from coal, while minimising carbon dioxide (CO_2) emissions. According to WCA, about two gigatonnes of CO_2 emissions – equivalent to India's yearly CO_2 emissions – could be eliminated should the average efficiency of the global coal fleet be increased from the current 33% to 40%. The association believes that the deployment of high-efficiency, low-emission coal-fired plants is a key step along the pathway to near-zero emissions from coal with carbon capture and storage.

Exarro's Matla water treatment facility, in Mpumalanga

Picture by Duane Daws

Outlook

Despite the Group of Seven (G7) industrial powers' pledge in June 2015 to end a reliance on fossil fuels by 2100, the World Coal Association (WCA) believes that coal will continue to play a fundamental role in the global economy in the long term. The WCA states that coal plays a critical role in delivering affordable and reliable electricity to developing and emerging economies. Citing the International Energy Agency (IEA), the WCA points out that global electricity from coal is expected to grow by 33% by 2040 and that demand for coal in South-East Asia alone is expected to increase by 4.8% a year through to 2035.

The G7 pledge was hailed as a historic decision in the fight against climate change and comes ahead of a key climate change conference in France in December 2015, where energy production and its contribution to greenhouse-gas emissions will be at the core of the discussion.

Energy group BP also believes that coal is likely to sustain a dominant share of global primary energy, but that its rate of growth is likely to slow over the medium term. BP states that demand for coal is forecast to grow slower than that of other fossil fuels over the next 20 years.

The IEA expects coal demand to grow at an average rate of 2.1% a year through 2019, compared with an actual growth rate of 3.3% a year between 2010 and 2013.

In the short to medium term, China's economic rebalancing is expected to continue to affect power demand growth and therefore thermal coal demand. Wood Mackenzie highlights the impact of policies designed to protect the environment and to what lengths the Chinese government will go to protect its domestic industry as the two key issues to watch.

Despite China's efforts to moderate its coal consumption, the IEA forecasts in its 'Medium-Term Coal Market Report', released in December 2014, that global demand will still exceed the nine-billion-tonne level by 2019, with China accounting for three-fifths of demand growth.

Picture by Duane Daws

Main sources

Anglo American. Annual report 2014 (2015).
Anglo American. Production report for the fourth quarter ended December 31, 2014 (January 28, 2015).
Anglo American. Preliminary results 2014 (February 13, 2015).

Australian government. Department of Industry and Science. Office of the Chief Economist report on Coal in India (June 2015).

BDLive. Richards Bay Coal Terminal sets coal export record (January 7, 2014).
BDLive. Coal study gives lie to Eskom supply scare (April 17, 2014).
BDLive. Waking up to potential of dirty water (June 30, 2014).
BDLive. Transnet coal terminal put on hold (October 30, 2014).
BDLive. Transnet on target to rail 77-million tonnes of coal to Richards Bay (February 4, 2015).
BDLive. Eskom may look elsewhere as cost of coal increases far faster than inflation (February 5, 2015).
BDLive. SA coal exports valued globally for quality and reliability (February 6, 2015).
BDLive. No new mines but no coal cliff, says Eskom (May 29, 2015).
BDLive. Criminal action after huge theft at Keaton (June 25, 2015).

Bloomberg News. South Africa calls for coal efficiency as $2-billion lost (February 4, 2015).
Bloomberg News. South Africa requires community stake for Exxaro-Total deal (June 9, 2015).

BP. BP Statistical Review of World Energy 2015 (June 10, 2015).
BP. Energy in 2014: Presentation by group chief economist Spencer Dale, After a calm comes the storm (June 10, 2015).

Buffalo Coal. Management discussions and analysis of the financial results for the three months and ten months ended December 31, 2014 (March 26, 2015).

Chamber of Mines. Summary of chamber research report on progress of ownership (May 15, 2015).

Coal of Africa Limited. Interim financial statements announcement (March 13, 2015).

Daily Times. Can Indonesia save the seaborne coal market? (June 25, 2015).

Department of Mineral Resources. Minister Ngoako Ramatlhodi: 2014 health and safety statistics announcement (January 30, 2015).
Department of Mineral Resources. Media statement: National coal policy to put SA back on global map (February 4, 2015).
Department of Mineral Resources. Presentation to the Portfolio Committee on Mineral Resources on the 2015/16 APP (March 18, 2015).

Department of Public Enterprises. Minister Lynne Brown's written response to Parliamentary question number 1 275 (April 17, 2015).

Department of Public Enterprises. Minister Lynne Brown's written response to Parliamentary question number 1 623 (May 8, 2015).

Energize. The potential for IPP coal-fired power generation in South Africa (January 9, 2015).

Energy Information Administration. South Africa country profile (April 2015).

Eskom. Generation fact sheet: Coal in South Africa (November 2014).
Eskom. Presentation at the second annual coal transportation Africa summit (May 20, 2015).

Exxaro Resources. Integrated report for 2014 (March 5, 2015).
Exxaro Resources. Presentation by CEO Sipho Nkosi at the BAML Mining and Metals Conference 2015 (May 28, 2015).

Glencore. Corporate update and production report for the 12 months ended December 31, 2014 (February 11, 2015).
Glencore. Annual report 2015 (March 18, 2015).

Keaton Energy. Media statement: Keaton announces another record production year (April 13, 2015).
Keaton Energy. Reviewed provisional condensed consolidated results for the year ended March 31, 2015 (June 24, 2015).

Mining Weekly. TFR sees Swazi link, Shongololo raising coal export capacity to 120Mt/y (June 30, 2014).
Mining Weekly. Anglo, Eskom seek 'mutually beneficial' New Largo outcome (November 28, 2014).
Mining Weekly. Record-breaking RBCT targets export of 74Mt of coal in 2015 (January 20, 2015).
Mining Weekly. Coal needs higher prices to survive – Prevost (February 13, 2015).
Mining Weekly. Continental Coal SA in business rescue, agreement status uncertain (February 20, 2015).
Mining Weekly. Grindrod to invest in Maputo port, RBay coal and Africa rail projects (February 25, 2015).
Mining Weekly. Top coal analyst backs Optimum coal for Eskom (March 20, 2015).
Mining Weekly. India's MMTC sets up subsidiary in South Africa (March 25, 2015).
Mining Weekly. Despite lower price, CoAL remains bullish on South African projects (March 27, 2015).
Mining Weekly. Energy adviser slams Eskom (April 24, 2015).
Mining Weekly. Waterberg Coal Company to focus on export project (April 30, 2015).
Mining Weekly. Production up at Glencore's South African coal mines (May 5, 2015).
Mining Weekly. Sasol nears tail end of R15.3bn mine replacement project in Secunda (May 6, 2015).
Mining Weekly. Wescoal's BEE ambitions get deadline (May 12, 2015).
Mining Weekly. AEMFC aiming to increase output from 1.6Mt to 2.2Mt by end of current fiscal year (May 15, 2015).
Mining Weekly. CoAL awarded Makhado mining right (May 18, 2015).
Mining Weekly. Buffalo considers restructuring, placed under TSX delisting review (May 22, 2015).
Mining Weekly. State miner developing new projects, eyeing acquisitions (May 22, 2015).
Mining Weekly. Quick action needed to prevent collapse of global coal sector – Prevost (May 28, 2015).
Mining Weekly. Pan African looks forward to improved 2016 performance, buys coal mine (June 9, 2015).
Mining Weekly. Ichor to acquire troubled Continental Coal's mines for R128m (June 10, 2015).
Mining Weekly. India's thermal coal imports likely to spike owing to poor monsoon rains (June 17, 2015).
Mining Weekly. Universal secures R525m to progress Witbank coal project (June 22, 2015).
Mining Weekly. Keaton lays criminal charge over massive coal theft, R56m impaired (June 24, 2015).
Mining Weekly. Glencore sees slight coal undersupply (June 26, 2015).
Mining Weekly. Coal transport by road here to stay, summit told (July 3, 2015).
Mining Weekly. African Energy to sell Botswana coal and power project to SA developer (July 6, 2015).
Mining Weekly. Glencore rubbishes NUM statements over job cuts (July 6, 2015).

Mining Weekly. Coal India to relinquish 75% of coal blocks in Mozambique (July 7, 2015).
Mining Weekly. Inland terminal rapid rail master plan urged for new coal basins (July 8, 2015).
Mining Weekly. Transnet says take-or-pay contracts offer volume 'cover' in weak commodity climate (July 14, 2015).

MiningMX. RBCT wary of 19Mtpa expansion plan (January 20, 2015).
MiningMX. Anglo may sell Eskom thermal coal business (February 13, 2015).
MiningMX. Pembani, Anglo coal deal on the cards? (May 15, 2015).
MiningMX. Molefe keen on scrapping cost-plus coal mines (June 22, 2015),
MiningMX. Right time to shop for SA coal (July 2, 2015).

Moneyweb. Eskom – we're covered (June 2, 2015).
Moneyweb. Coal worth more to SA than gold (June 26, 2015).

Petmin. Condensed consolidated preliminary financial statements for the year ended June 30, 2014 (June 2014).
Petmin. Condensed consolidated interim financial statements for the six months ended December 31, 2014 (February 24, 2015).

Resource Generation. 2014 annual report (September 17, 2014).

Reuters. Employees seek damages from Sasol over coal dust exposure (April 17, 2015).
Reuters. India's coal imports to jump 19% to 200-million tonnes in 2014/15 (April 24, 2015).

Sasol. Analyst book for the six months ended December 31, 2014 (March 9, 2015).
Sasol. Annual integrated report June 30, 2014 (September 8, 2015).

South32. JSE prelisting statement (March 16, 2015).

Transnet Freight Rail. Presentation by Willem Kuys. New developments in heavy haul in South Africa (March, 2014).
Transnet Freight Rail. Presentation by Divyesh Kalan. Next steps in creating export capacity (May 19, 2015).

Transnet National Ports Authority. Final basic assessment report for the short-term coal storage facility at Berth 606, Port of Richards Bay, Kwazulu-Natal (March 31, 2015).

Universal Coal. 2014 annual report (October 29, 2014).
Universal Coal. Half-year financial statement 2015 (April 10, 2015).

Waterberg Coal Company. Press release: Waterberg coal company's BEE plans are at an advanced stage (February 26, 2015).

Wescoal. Shareholder update (May 12, 2015).
Wescoal. Reviewed condensed consolidated results for the year ended March 31, 2015 (June 24, 2015).

Wood Mackenzie. News release: Australian coal mines best positioned; US most at risk (February 8, 2015).

World Coal Association. Media statement: WCA urges G7 leaders to recognise that climate action needs great investment in cleaner coal technologies (June 9, 2015).

XMP Consulting. Presentation. A review of Southern Africa thermal coal markets (May 22, 2013).
XMP Consulting. Presentation at the Coaltrans Middle East coal trading and shipping forum (November 2014).

http://www.exxaro.com
http://www.grindrod.co.za
http://www.keatonenergy.co.za
http://www.petmin.co.za/
http://www.rbct.co.za
http://resgen.com.au
http://www.sasol.com
http://southafrica.angloamerican.com
http://www.ichorcoal.com
http://www.universalcoal.com

creamer media

Coal 2015:
A review of South Africa's coal sector

Presented by: