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A review of South Africa's COAL SECTOR

Picture by Wescoal

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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 Bloomberg

List of abbreviations and acronyms

AACSA	Anglo American Coal South Africa
AAIC	Anglo American Inyosi Coal
AEMFC	African Exploration, Mining & Finance Corporation
BCG	Boston Consulting Group
BEE	black economic empowerment
CBIPPPP	Coal Baseload Independent Power Producer Procurement Programme
CSA	coal supply agreement
DMR	Department of Mineral Resources
DoE	Department of Energy
EMC	Eloff Mining Company
EA	Earthlife Africa
EU	European Union
HELE	high-efficiency, low-emissions technology
IDC	Industrial Development Corporation
IEA	International Energy Agency
IPP	independent power producer
IRP	Integrated Resource Plan
JV	joint venture
KPSX	Klipspruit Life Extension
Ledet	Limpopo Department of Economic Development, Environment and Tourism
LoM	life-of-mine
MCSA	Minerals Council South Africa
Mtoe	million tonnes of oil equivalent
MPRDA	Mineral and Petroleum Resources Development Act
NUM	National Union of Mineworkers
NBC	North Block Complex
RBCT	Richards Bay Coal Terminal
Resgen	Resource Generation
RoM	run-of-mine
SACBC	Southern African Catholic Bishops Council
SAEC	South Africa Energy Coal
SEZ	special economic zone
TFR	Transnet Freight Rail
UCDIV	Universal Coal Development IV
WCA	World Coal Association
WCP	Waterberg coal project
Wits	University of the Witwatersrand
WMC	Wolverkrans Middelberg Complex

Key developments

November 2017: A new study finds that accelerating the decommissioning of State-owned power utility Eskom's Grootvlei, Hendrina and Komati power stations in Mpumalanga, coupled with the halting of construction of units 5 and 6 of the Kusile project also in the province, could save South Africa's cash-strapped State-owned electricity utility R15-billion to R17-billion without jeopardising security of electricity supply in the country.

November 2017: Diversified miner South32 announces its intention to establish its South African coal division as a standalone business and eventually sell it off.

December 2017: Coal exploration and mining company Canyon Coal's Khanye opencast mine, in Gauteng, comes on stream. The colliery will produce 200 000 t/m of run-of-mine coal when it reaches full production.

December 2017: The South African government releases the Carbon Tax Bill, which aims to increase the cost of carbon-intensive goods and services to promote noncarbon alternatives. It is expected that the Bill will be passed during 2018 and come into effect at the beginning of 2019.

December 2017: The Competition Tribunal of South Africa grants energy and chemicals company Sasol subsidiary Sasol Mining and its black economic-empowerment partner, Ixia Coal, approval to acquire mining major Anglo American subsidiary Anglo American Inyosi Coal's mining rights over the Project Alexander coal resource, in Mpumalanga.

January 2018: South Africa State-owned freight logistics solutions provider Transnet Freight Rail tells journalists that a memorandum of understanding has been signed with the African Development Bank and South Africa's State-owned national development finance institution the Industrial Development Corporation for the 150 km rail link, which the parastatal is planning to build with its eSwatini counterpart.

January 2018: South African Environmental Affairs Minister Edna Molewa determines that the environmental authorisation for coal and heavy minerals company Exxaro Resources' planned Thabametsi coal-fired power station, in Limpopo, will remain in place. In June 2017, Molewa was ordered to reconsider the authorisation, following an application by environmental lobby group Earthlife Africa, which has vowed to contest the Minister's latest decision.

February 2018: South African mining group Tegeta Exploration & Resources, which is controlled by the controversial Gupta family, places the Optimum and Koornfontein collieries, in Mpumalanga, under business rescue as its financial challenges mount.

March 2018: Anglo American Inyosi Coal, a subsidiary of Anglo American, announces the sale of its New Largo coal assets, in Mpumalanga, for R850-million, to a consortium comprising Seriti Resources, Coalzar and the Industrial Development Corporation. The assets include the 585-million-tonne greenfield New Largo project.

March 2018: Midtier coal mining company Universal Coal announces that its 49%-owned subsidiary, North Block Complex, which it co-owns with black economic empowerment company Ndalamo Resources, will acquire Exxaro Resources' North Block Complex opencast mine, located in the Belfast area of Mpumalanga.

April 2018: Eskom reports that coal stock levels at seven of its power stations, in Mpumalanga, have fallen below the 20 days' supply stipulated in the grid code.

May 2018: Attorney Richard Spoor and the Southern African Catholic Bishops Council announce that they will seek compensation for former employees suffering from coal workers' pneumoconiosis and chronic obstructive pulmonary disease. This follows the signing of a settlement agreement in terms of which a R5-billion trust fund will be established to compensate mineworkers who contracted silicosis and tuberculosis after working in South African gold mines for prolonged periods.

May 2018: Eskom CEO Phakamani Hadebe announces that the State-owned electricity utility will invest in cost-plus coal mines, reversing a decision taken by his predecessor, Brian Molefe, in 2016.

June 2018: South African Mineral Resources Minister Gwede Mantashe unveils the latest draft of the Mining Charter for public comment.

June 2018: South Africa's High Court rescinds an interim interdict against MC Mining's Makhado coking coal project, in Limpopo. The interdict, granted in 2014, had been sought by the Vhembe Mineral Stakeholders Forum and effectively prevented MC Mining from undertaking construction and mining activities at the project site.

July 2018: Exxaro Resources breaks ground on the Belfast project, in Mpumalanga. The project boasts measured mineral resources of 83-million tonnes.

July 2018: Sasol's new Shondoni mine, in Mpumalanga, which was built as part of the group's R14-billion coal mine replacement programme, is officially opened.

July 2018: The New Largo Consortium, comprising black-owned entities Seriti Resources and Coalzar, as well as the Industrial Development Corporation, finalises the acquisition of New Largo from Anglo American Inyosi Coal, whose principal asset is the 585-million-tonne greenfield New Largo project.

August 2018: Energy Minister Jeff Radebe announces that South Africa's first privately built coal-fired power plants – Thabametsi, in Limpopo, and Khanyisa, in Mpumalanga – must have the latest technology to reduce harmful emissions.

August 2018: South Africa's Mineral Resources Minister Gwede Mantashe announces that he proposes to withdraw the Mineral and Petroleum Resources Development Act Amendment Bill, which has been criticised by many stakeholders.

August 2018: Mining and metals company South32 announces that it will initiate a process in September 2018 to broaden the ownership of its South Africa Energy Coal (SAEC) business. The company previously announced its intention to manage SAEC as a standalone business, with the aim to eventually sell it off.

August 2018: The South African Department of Energy releases the much-anticipated draft Integrated Resource Plan for public comment, with Energy Minister Jeff Radebe expressing the hope that Cabinet will adopt the plan soon after the end of the 60-day comment period to ensure certainty around South Africa's electricity generation roadmap for the next 12 years.

September 2018: Eskom reports that out of its 15 coal-fired power stations, ten have less than 20 days of coal supplies, posing a threat to national power supplies.

September 2018: A new report into South Africa's coal sector argues that any subsidies set aside for the country's "inevitable" transition away from coal in electricity production should be tailored to protect workers, their dependants and communities, rather than State-owned power utility Eskom, or the coal sector as a whole.

September 2018: The South African government gazettes a new version of the Mining Charter, or Mining Charter III. The charter is lauded by mining-sector stakeholders and other commentators as a material improvement on the previous charter gazetted in 2017.

October 2018: Commodities traders Vitol Group and Trafigura Group announce that they have entered the bidding process for South Africa's Optimum Coal – a miner under bankruptcy protection that was once controlled by the Gupta family.

Picture by Creamer Media – Simone Liedtke

Business environment

South Africa's coal endowment is estimated at about 30-billion tonnes, representing about 3.50% of the world's reserves. Coal mining in the country, which accounts for 3.30% of global production, takes place primarily in the fast-dwindling Mpumalanga coalfields – where 83% of the country's coal is extracted – with smaller volumes mined in the burgeoning Waterberg region of Limpopo, as well as in KwaZulu-Natal and the Free State. The country's coal deposits are generally shallow, largely unfaulted and lightly inclined, which lends them to opencast and shallow underground mining, with a high degree of mechanisation.

The commodity is the largest revenue generator in South Africa's mining industry, earning about R131.40-billion in 2017. It also contributes immensely to the fiscus in taxes and royalties and employs tens of thousands of people directly, with many more employed indirectly outside the sector.

Despite its importance, South Africa's coal mining sector faces several constraints that might impact on its sustainability and growth. In its Coal Strategy 2018, Minerals Council South Africa (MCSA) – formally the Chamber of Mines of South Africa – identifies the policy and regulatory environment, inadequate infrastructure, difficulties in accessing capital and land, and the challenges posed by technological advances as potential constraints to the sector.

MINING CHARTER III

The South African government has taken steps to address the policy and regulatory concerns. This has included the gazetting, in September 2018, of a new version of the Mining Charter – the so-called Mining Charter III – which has been lauded by mining-sector stakeholders and other commentators as a material improvement on the discredited document gazetted by former Mineral Resources Minister Mosebenzi Zwane in 2017. The gazetting followed the draft charter's release in June 2018 for public comment.

The gazetted charter represents consensus among stakeholders and is "an important contributory element to efforts aimed at stimulating the economy", Mineral Resources Minister Gwede Mantashe has said.

At the announcement of the charter being gazetted, Mantashe elaborated that Mining Charter 3 aimed to create regulatory certainty, sustainable growth and a competitive and transformed mining industry, which played an important role in South Africa, realising its long-term objectives of eliminating poverty, reducing inequality and creating jobs. He clarified that the elements of ownership and mine community development were ring-fenced and that these required "absolute compliance" at all times.

To entrench regulatory certainty for investors and to provide security of tenure for investments, an existing mining right holder who has achieved a minimum of 26% is recognised as compliant for the duration of the right. This includes a right holder whose black economic-empowerment (BEE) shareholder has since exited.

This recognition, however, is not applicable upon renewal, and is not transferrable to a new owner in the case of a transfer or sale. Such a right holder, Mantashe has noted, will be expected to increase its broad-based BEE shareholding to 30% within five years.

The 2010 version of the Mining Charter will apply to all pending applications lodged, and accepted, prior to Mining Charter 3 coming into effect.

A new mining right, granted after Mining Charter 3 coming into effect, must have a minimum of 30% BEE shareholding, which will be applicable for the duration of the mining right.

This 30% BEE shareholding will be distributed through a minimum of 5% nontransferable carried interest to qualifying employees; a minimum of 5% nontransferable carried interest to host communities, or a minimum 5% equity equivalent benefit; as well as a minimum of 20% effective ownership in the form of shares to a BEE entrepreneur, 5% of which must ideally be for women.

For junior miners, the charter outlines requirements.

To promote beneficiation in line with government policy, a mining right holder may claim the equity equivalent mechanism against a maximum of five percentage points of a BEE entrepreneur. A mining right holder must also submit a beneficiation equity equivalent plan to the Department of Mineral Resources (DMR) for approval. This, the Minister has said, will be outlined in the Mining Charter implementation guidelines.

In terms of inclusive procurement, supplier and enterprise development, the procurement of South African manufactured goods and services provides opportunities for expanding economic growth, creating decent jobs and widening market access to the country's goods and services, Mantashe has stated.

To confirm local content, goods must be procured in line with a standardised product identification coding system, which is being developed by the Department of Trade and Industry (DTI).

Mining right holders will be expected to provide proof of local content in the form of certification from the South African Bureau of Standards or any other designated entity.

On promoting research and development (R&D) capabilities, a mining right holder must spend a minimum of 70% of its total R&D budget on South Africa-based entities.

Additionally, in terms of human resource development, which Mantashe has said constitutes an integral part of competitiveness, transformation and sustainable growth, a mining right holder is expected to invest a minimum of 5% of leviable amount on essential skills development. This, he elaborates, includes science, technology, engineering and mathematical skills, as well as graduate training programmes and R&D initiatives.

In terms of mine community development, a mining right holder must meaningfully contribute towards mine community development, with a bias towards mine communities in terms of impact and size, and in keeping with the principles of the social licence to operate.

A trust, or similar vehicle, will oversee the implementation of the 5% equity equivalent detailed under the ownership element, which should have representation from host communities and mining companies.

In terms of housing and living conditions, a mining right holder will also be required to submit a housing and living conditions plan, to be approved by the DMR, after consultation with organised labour and the Department of Human Settlements.

Compliance with the charter, Mantashe avers, requires that mining right holders should submit yearly compliance reports to the DMR.

To adequately monitor and enforce compliance to the charter, Mantashe has said that the DMR is continuing with the process of filling key vacant positions to stabilise critical areas, including the monitoring and enforcement of compliance.

Lack of investment stymies South African coal producers

XMP Consulting senior coal analyst Xavier Prevost said in July 2018 that a lack of investment was preventing the South African coal mining industry from capitalising on a period of relatively stable demand for thermal and metallurgical coal locally and abroad.

Demand for seaborne thermal coal – South Africa's main product – has improved since 2017, reaching a six-year record, while demand in the local market has also increased, partially because of Eskom's intention to prioritise procurement from majority black-owned suppliers. The new policy has alienated the larger mining companies, which, in turn, have turned to export markets, leading to a shortage in the local market. The coal shortage in the local market has resulted in local prices rising and reaching near parity with export prices.

The only major coal mining projects under way in the country, he said, were being implemented by Exxaro Resources and Sasol Mining. Exxaro broke ground on its R3.30-billion Belfast mine project, in Mpumalanga, at the beginning of July 2018, while Sasol Mining inaugurated its R5.50-billion Shondoni mine during the same month. The Shondoni mine is part of a R14-billion ongoing mine replacement project that Sasol Mining is implementing.

Source: *Mining Weekly*

The MCSA considers this charter to represent a policy instrument that provides a clear and durable framework for securing a transformed industry with meaningful broad-based economic empowerment within which the critical goals of growth and competitiveness can realistically be achieved.

Nonetheless, the MCSA remains concerned about some key issues, specifically regarding the limited applicability of continuing consequences of past transactions on disposal of BEE shareholding, the treatment of renewals of mining rights as new rights, the practicality of the Inclusive Procurement provisions relating to local content targets for mining goods, the targets for services, and the turnover threshold for junior miners.

The Minerals Council has said, however, that it will engage Minister Mantashe on these unresolved issues.

It is further hoped that greater clarity and certainty will be obtained as the guidelines for implementation are developed.

OTHER POLICY AND REGULATORY ISSUES

In a move that has been welcomed by mining-sector stakeholders, Mineral Resources Minister Gwede Mantashe announced in August 2018 his intention to withdraw the Mineral and Petroleum Resources Development Act (MPRDA) Amendment Bill. When President Cyril Ramaphosa unveiled government's economic stimulus and recovery package in September 2018, he reiterated that Parliament would be requested not to proceed with the MPRDA, which, he said, had contributed to uncertainty in the sector, especially among potential investors.

Mining companies were particularly worried about a provision in the Amendment Bill that empowers the Minister of Mineral Resources to declare certain minerals – including coal – as strategic. This means that exports of the designated minerals might be restricted to ensure that domestic needs are met, with suppliers receiving prices determined by government.

The Amendment Bill has been in the National Council of Provinces for months and appears to have been intended to ensure that State-owned electricity utility Eskom had enough supplies for its coal-fired power stations.

Another policy and regulatory issue is the Carbon Tax Bill. Released in draft form in December 2017 and expected to be passed during 2018 and to come into effect at the beginning of 2019, it aims to increase the cost of carbon-intensive goods and services through the appropriate pricing of carbon, thus promoting noncarbon alternatives. The envisaged Carbon Tax Act is part of South Africa's efforts to meet its obligations under the Paris Agreement on climate change to ensure the country's emissions peak between 2020 and 2025, plateau between 2025 and 2035 and begin to decline thereafter.

Global efforts to curtail greenhouse-gas emissions have also resulted in a reduction in the amount of credit being extended by lenders like the World Bank and the International Finance Corporation for the construction of coal-fired power stations. This has the potential to curtail coal production not only in South Africa, but also in other countries.

South African Mineral Resources Minister Gwede Mantashe

Picture by Creamer Media Chief Photographer Dylan Slater

INFRASTRUCTURE AND INVESTMENT

Inadequate infrastructure constraining coal mine development is particularly evident in the Waterberg, in Limpopo, where a lack of rail and water infrastructure is limiting investment. However, State-owned freight logistics group Transnet has responded to the region's rail infrastructure challenge by implementing projects that will increase the rail capacity from Lephalale from two-million tonnes currently to 6.30-million tonnes a year, with plans to double this capacity to 12-million tonnes and later beyond 24-million tonnes a year.

Water, which is used throughout the coal value chain, is scarce in South Africa, which could disincentivise investment in coal projects. The scarcity is compounded by a huge backlog in investment in dams and related infrastructure, which the Department of Water and Sanitation estimates at R40-billion.

Investments in the coal mining sector have also stalled in the past few years, owing to a decision by Eskom, taken in 2015, to migrate from its cost-plus procurement model, in terms of which the utility pays coal mines' development and resource renewal costs in return for a guaranteed supply of coal of a specified quality at prices set several notches above the cost of production. As a result, black-owned company Exxaro Resources announced in March 2016 that mining activities had ceased at its Arnot mine, in Mpumalanga, whose expansion Eskom was obliged to fund, in line with the contract between the two parties. Another Exxaro mine, Matla, also located in Mpumalanga, needs to implement a R1.80-billion reserve and resource replacement project to continue supplying the contracted 10.10-million tonnes of coal to Eskom each year. The mine currently supplies eight-million tonnes a year to Eskom's Matla power station.

The decision to discontinue cost-plus procurement has since been reversed, with new Eskom CEO Phakamani Hadebe announcing in May 2018 that the utility had budgeted to invest in the mines that supplied it under this model.

Investments in South Africa's coal mining sector have also been affected by multinational companies re-evaluating their coal strategies, with mining and metals company South32 COO Mike Fraser, for example, telling reporters in February 2018 that the company no longer believed in the fossil fuel. He was commenting on South32's November 2017 decision to establish its South African coal division as a standalone business to eventually sell it off.

Anglo American Coal South Africa (AACSA), previously the largest producer of the fossil fuel in the country, has taken a similar course of action, selling its three Eskom-tied collieries and a large greenfield coal project to emerging black economic-empowerment company Seriti Resources. It has, however, retained its mines that target export markets. The decision to divest from the Eskom-tied mines was at least partially prompted by the utility's stated goal, which had no basis in government policy, that its suppliers have a minimum black shareholding of 50% plus one share, which would have rendered AACSA a minority partner in the coal mining assets.

Coal-sector analyst Xavier Prevost emphasises that South Africa urgently needs more capital investment and new mining projects, particularly from junior miners, to replace its ageing mines. This is required to avoid a so-called 'coal cliff' – a slump in coal production that will result in the coal industry being unable to meet the energy sector's coal requirements, leading to "less electricity being produced and the collapse of the coal industry and the economy of the country", he warns.

South African coal mines produced 252.60-million tonnes of saleable coal in 2017, according to MCSA. The country's coal production has remained largely stagnant during the past five years, owing to a lack of incentives and capital to implement new projects, and Prevost forecasts a drastic decline in the next few years, as some of the older, larger mine reserves are almost exhausted.

Of the 252.60-million tonnes produced in 2017, a record 76.47-million tonnes was exported through the Richards Bay Coal Terminal (RBCT), in KwaZulu-Natal, which is the largest such facility in Africa. The growth in export sales is indicative of a continued strong performance in the international market, where prices declined sharply in 2014, owing to lower demand in China, the world's largest consumer of the fossil fuel, but have since rebounded on the back of increasing demand in Asian markets such as India, Pakistan, South Korea and Taiwan. Consequently, the price of thermal coal exported through the RBCT ended 2017 at $95.80/t.

Prevost comments that local producers are also benefiting, as strong demand from Eskom and other local industrial customers competes against surging global demand. Pea, a good-quality coal used in boilers, for example, was selling at R1 200/t or more at the end of 2017. Prevost told an interviewer in September 2018 that some of the better coal grades were fetching higher prices in inland markets than similar grades in the seaborne market. This was prompting some coal mines to optimise coal production to supply the inland or export markets, depending on prices. He cautioned, however, that export coal volumes would not increase substantially unless the local high prices adjusted.

Moreover, Prevost says there is a growing lack of coal expertise in South Africa, owing to coal professionals and other mining professionals leaving the country or losing their jobs as the economy contracts.

In spite of these difficulties currently facing the industry, Prévost comments that, if government legislation – such as the Mining Charter and the MPRDA – becomes "industry-friendly" again, paired with the existing coal resources available, the industry should be able to turn the current dwindling production rate to a growing one.

Global coal production and consumption

Global coal production in 2017 increased by 3.20%, or 105-million tonnes of oil equivalent (mtoe), to 3 768.60 mtoe (2016: 3 663.50 mtoe), according to the latest BP Statistical Review of World Energy. This was the fastest growth rate since 2011, and the increase was driven mainly by increases in Chinese and US output of 56 mtoe and 23 mtoe respectively.

According to the review, published in June 2018, the increase in Chinese production – the strongest in six years – was attributable to government measures to increase supplies to ease pressure on prices, which were above target levels on the spot market for much of the year. The production increase posted by the US came despite a further decline in consumption in the country, which prompted US coal miners to increase exports to Asian countries.

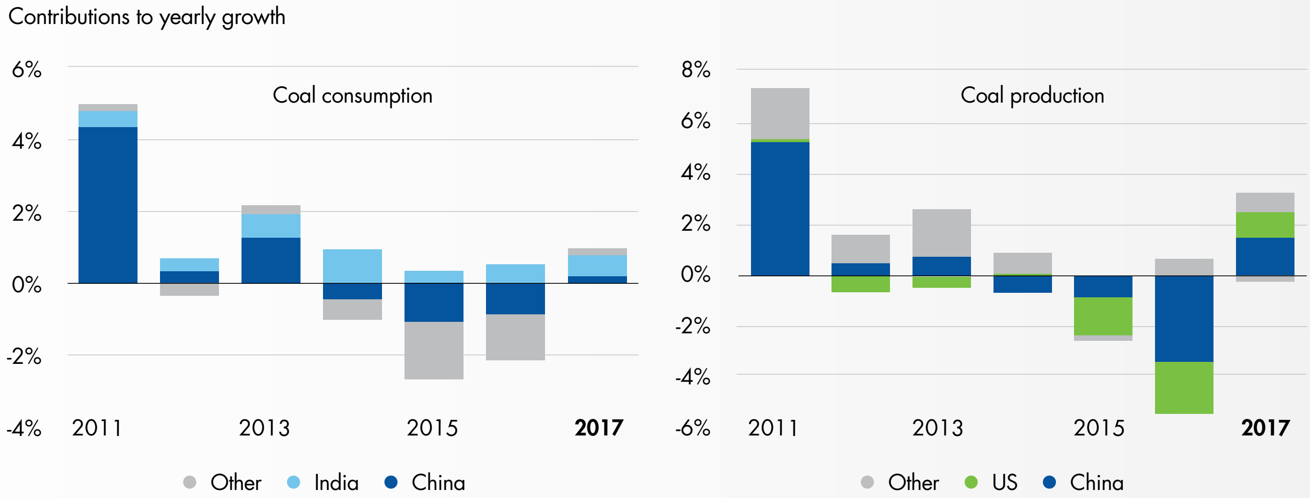
Meanwhile, global coal consumption during 2017 increased by 1%, or 25 mtoe, to 3 731.50 mtoe. The biggest contributor to this uptick was India, which consumed 18 mtoe more than in the preceding year as demand from its power stations and other sectors increased. China also posted an increase in absolute coal consumption – from 1 889.10 mtoe in 2016 to 1 892.20 mtoe. This was despite a significant coal-to-gas shift in the industrial and domestic sectors.

However, according to China's National Bureau of Statistics, as a portion of total energy consumption, coal consumption in China declined by 1.60 percentage points to 60.40% in 2017, while clean energy, comprising natural gas and renewables, increased by 1.30 percentage points to 20.80%. This indicates that the country is on track to achieve its objective of decarbonising its economy and reducing air pollution. China has set itself a target of reducing coal's share of energy consumption below 58% by 2020.

BP states in its review that, despite the major policy shift in many countries towards renewable-energy sources, coal's share of the electricity generation fuel mix in 2017 – at 38% – was similar to that in 1998, with the slight decline in recent years simply reversing the upsurge in the early 2000s associated with China's rapid expansion. The energy company notes that the share of nonrenewable-energy sources was actually lower in 2017 than it was 20 years earlier, attributing the decline to a failure by renewables to compensate for the decline in nuclear electricity generation.

The shift from coal-fired electricity generation has been most pronounced in developed countries, with the UK being a striking example of the transition. Coal's share of its electricity fuel generation mix declined from 40% in 2012 to less than 10% in 2016 and only 2% in the first half of 2017. Only eight coal-fired power stations are currently operational in the country, with plans to phase all these out by 2025.

Global coal consumption and production



Source: BP Statistical Review of World Energy 2018

Main participants

Prior to the disposal of its mines that supplied coal to South African State-owned electricity utility Eskom – which was announced in 2017 but received all the outstanding approvals in 2018 – Anglo American's coal mining subsidiary was the largest producer of the fossil fuel in South Africa. Anglo American and Seriti Resources, the startup that acquired its former mines, together with Exxaro, South32 and Glencore, account for about 80% of South Africa's coal production.

While large producers have dominated coal mining in the country for more than a century, more junior miners are entering the sector as Eskom – the largest domestic buyer of the fuel – has, until recently, pursued a procurement policy that favours suppliers with black ownership of at least 50% plus one share. According to coal analyst Xavier Prevost, there are 50 to 60 junior coal miners in the country, and Eskom, in accordance with its new procurement policy, has placed 60% of its medium-term coal contracts (with a duration of five to ten years) with junior miners. Such miners have also been awarded 80% of contracts spanning less than five years.

Besides Eskom's policy of sourcing more coal from black-owned mining companies, the many small coal deposits in the country present an opportunity for junior coal miners to enter the sector because such deposits do not lend themselves to mining by the larger companies, whose overheads require economies of scale. Most of the deposits are mineable using opencast methods, which require limited capital investment and depth of technical skill, compared with starting and/or running an underground colliery.

MAJOR PRODUCERS

Anglo American South Africa

Anglo American South Africa, a unit of global mining conglomerate Anglo American, previously owned and operated seven coal mines in South Africa, but it divested from three of the mines in 2017. The company is also a 73% shareholder in Anglo American Inyosi Coal (AAIC), an empowerment entity created in 2010. AAIC's assets include the Zibulo multiproduct mine and the Elders and Heidelberg greenfield projects, in Mpumalanga. It sold its New Largo greenfield project, also located in Mpumalanga, to New Largo Coal, which is owned by Seriti Resources and Coalzar, for R850-million in August 2018.

Anglo's remaining wholly owned and operated South African coal mines – Goedehoop, Greenside, Khweza (which resulted from the merger of the Kleinkopje and Landau mine in December 2016) and Zibulo – as well as the Mafube colliery, a 50:50 joint venture (JV) with Exxaro Resources, are all located in Mpumalanga and produce thermal coal, which they export through the Richards Bay Coal Terminal (RBCT), in which the company has a 23.20% stake. The Isibonelo colliery, also in Mpumalanga, is the only nonexporting operation in the company's portfolio and produces thermal coal for synthetic fuels group Sasol under a long-term supply contract.

As at December 31, 2017, the Goedehoop mine had 209.90-million tonnes *in situ* of coal in the measured and indicated categories, with Greenside having 23.80-million tonnes, Zibulo 326.70-million tonnes, Isibenelo 23.60-million tonnes, Landau 45.70-million tonnes and Mafube 74.80-million tonnes. Kleinkopje had 3.70-million tonnes in the inferred category.

According to Anglo, the collieries it has disposed of and those that remain within its portfolio are in the first cost quartile, while productivity at the operations has improved by 40% to 50% during the past three-and-a-half years.

However, Anglo CEO Mark Cutifani stated in July 2018 that the diversified mining group's thermal coal assets in South Africa and elsewhere had a remaining life-of-mine (LoM) of 14 years and that incremental expansion of these assets would be undertaken only where this made business sense. He added that no investments would be made in longer-term growth projects. Cutifani, who was presenting Anglo's financial results for the half-year to the end of June 2018, said thermal coal, unlike metallurgical coal, was not regarded by the group as a growth commodity and that it also did not feature in Anglo's 'greener world' category.

In 2017, Anglo's South African coal mines (including those that have been sold to Seriti) produced 18.60-million tonnes of export thermal coal, 3% less than in the previous year, while production from the group's trade mines decreased 11% to 22-million tonnes, with production from the Eskom-tied mines declining 4% to 23.90-million tonnes. Export thermal coal production declined by 9% to 8.80-million tonnes in the six months to June 30, 2018, with the production of coal destined for the domestic market falling to 7.80-million tonnes during the same period.

Exxaro Resources

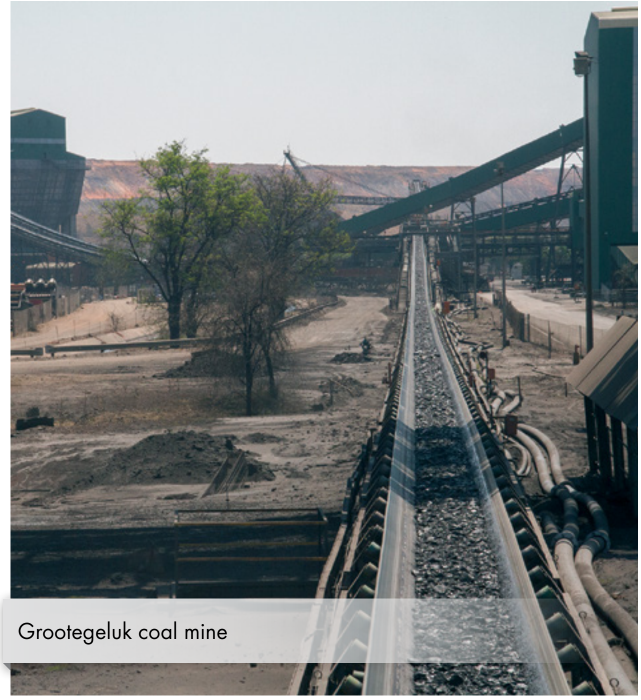
Exxaro Resources is a black-empowered diversified mining group that has seven coal mining operations in Mpumalanga and Limpopo, including the Mafube 50:50 joint venture (JV) with Anglo American Coal South Africa, located near the Mpumalanga town of Middelburg.

The Exxaro coal mines, which supply coal to Eskom power stations and export markets, as well as the local ferroalloys industry, are the Arnot and Matla mines and the Dornfontein and Forzando complexes, all in Mpumalanga, as well as the Limpopo-based Grootegeluk complex and Leeuwpan mine. The 49%-owned Tumelo thermal coal mine, in Mpumalanga, is under care and maintenance.

The Arnot mine was closed following Eskom's arbitrary cancellation, in December 2015, of its 40-year contract to supply 4.02-million tonnes a year to the Arnot power station. An arbitration process is under way and Exxaro expects a resolution in the second half of 2018. The Mafube JV, which also supplied the Arnot power station, had its coal supply agreement (CSA) terminated at the same time as the Arnot mine's. This was after Eskom had signed supply contracts with smaller coal producers. Eskom has also not extended the Leeuwpan mine's CSA to supply the Majuba power station.

Eskom has failed to invest R1.80-billion in the Mine 1 shaft project at the Matla operation. The shaft was closed in February 2015, as it was becoming unsafe for mining to continue. Exxaro has instituted arbitration to resolve the dispute with Eskom. However, with Mine 1 out of operation, the remaining two shafts are expected to produce only seven-million tonnes in 2018, which is much lower than the 10.10-million tonnes the mine is contracted to deliver to the Matla power station each year. Exxaro is implementing the Mine 2 and Mine 3 projects at Matla, which will comprise two inclines at Matla 2 and two declines at Matla 3 that will link the current coal seam 4 works with the seam 4 reserve. Work on Mine 3 was expected to start in September 2018, with completion scheduled for August 2019. The estimated start date for Mine 2 is mid-2019.

Exxaro has a robust pipeline of greenfield and expansion projects that it is implementing in Mpumalanga and Limpopo at a cost of R20-billion over five years. The largest is the R4.80-billion, 1.70-million-tonne-a-year Grootegeluk 6 – Phase 2 project, in Limpopo's Waterberg



Grootegeluk coal mine

Picture by Creamer Media

region, where first production of semisoft coking coal is expected in 2020. The project will provide the group with additional export volumes and more power station coal. In October 2017, the group signed a ten-year coal export transport agreement with logistics parastatal Transnet to transport 7.60-million tonnes of coal each year from the Waterberg to the RBCT.

Also in the Waterberg, Exxaro is implementing the R3.20-billion first phase of the Thabametsi mine. This phase, the implementation of which followed the selection of the planned Thabametsi power station during the first bid window of the Department of Energy's Coal Baseload Independent Power Producer Procurement Programme, will supply 3.90-million tonnes of coal a year when it reaches full capacity in 2021.

In Mpumalanga, Exxaro is executing the R3.30-billion, 2.70-million-tonne-a-year Belfast project, where production of thermal coal is expected to begin in the first half of 2020 and continue over a 17-year LoM. Meanwhile, a R500-million, 2.70-million-tonne-a-year life extension project at Leeuwpan, in Limpopo, is expected to produce its first thermal coal during the second half of 2018.

Exxaro produced about 46.35-million tonnes of thermal, coking and semicoking coal during the year to

December 31, 2017, an 8% increase on the preceding year's 42.85-million tonnes. Owing to the increased production, the company had to source only 218 000 t of thermal coal from third parties to meet its obligations to Eskom, compared with 606 000 t in 2016. Total sales also increased – from 43.85-million tonnes to 44.82-million tonnes – mostly because of Eskom sales being 8% higher and demand from other domestic customers also increasing. Export sales, however, were about 3% lower; this was largely attributable to adverse-weather-related congestion at the RBCT during the first half of 2017. During the six months to June 30, 2018, the group produced 1.50-million tonnes of coal, 7% more than in the corresponding period of the previous year, with the increase attributable to higher production volumes at the Grootegeluk mine.

In terms of financial performance, the group's 2017 coal revenue of R22.55-billion was 9% higher than the 2016 figure, while net operating profit, at R6-billion, was 16% higher year-on-year, mainly as a result of increased volumes and higher prices. Revenue for the half-year to June 30, 2018, increased 14% year-on-year to R12.31-billion, while net operating profit increases to R3.39-billion.

Glencore

Diversified mining and metals trading company Glencore operates four coal mining complexes in Mpumalanga that produce thermal product for the domestic and export markets. These are the wholly owned iMpunzi and Tweefontein complexes, as well as the Goedgevonden JV with African Rainbow Minerals and the Izimbiwa Coal JV with Shanduka Resources. The company was reportedly pressured to sell Optimum Coal Mine Holdings to Tegeta Exploration & Resources in 2015. Tegeta, part-owned by the controversial Gupta family, was placed in business rescue in February 2018, and Glencore is reportedly one of the companies interested in buying it.

Glencore's South African coal operations produced 28.70-million tonnes of thermal coal in 2017, which was in line with the previous year's output, as improved operating performances at the main mining complexes were offset by the planned closures of smaller mines. Of the total output, 18.70-million tonnes was exported, with the balance of ten-million tonnes supplied to the domestic market.


Coal stockpile at Tweefontein mine

Picture by Creamer Media

The South African thermal coal mines' production for the first six months of 2018 totalled 12.30-million tonnes (H1 2017: 13.50-million tonnes), with the decline largely reflecting the deconsolidation of the Wonderfontein mine, following a change in its ownership structure from a controlled subsidiary to a 43.70% equity interest.

Glencore's South African mines generated revenue of $1.52-billion in 2017, compared with the previous year's $1.36-billion. Revenue for the first half-year of 2018 totalled $829-million.

As at the end of December 2017, Glencore boasted 2.48-billion tonnes of coal resources in the measured category, 844-million tonnes in the indicated category and 355-million tonnes in the inferred category.

Sasol Mining

Sasol Mining, a subsidiary of petrochemicals group Sasol, operates one of the world's largest underground coal mining complexes, comprising six mines that supply feedstock to the group's coal-to-liquids plant, in the Secunda area of Mpumalanga. Additional volumes are delivered to the Sasolburg operation, in the Free State, where they are used to generate electricity and steam. Sasol Mining sells some of its product to customers in Europe and Asia.

The six mines are at Bosjesspruit, Brandspruit, Middelbult, Syferfontein and Twistdraai – all in the vicinity of Secunda – and at Sigma, near Sasolburg. However, some of these mines, namely the long-serving Twistdraai, Brandspruit and Middelbult mines, as well as part of the Syferfontein operation, are nearing the end of their operating lives.

To ensure adequate feedstock to its operations, at least until 2050, Sasol has been implementing a R14-billion investment programme since 2009 to replace depleting mines with the new Shondoni, Thubelisha, Impumelelo and Tweedraai operations.

The new Shondoni mine, which replaced the Middelbult operation, was officially opened in July 2018. Project implementation started in 2012 and Phase 1 was completed in August 2016. The new mine, which boasts a 190-million-tonne reserve, is expected to be operational for the next 20 years, producing 9.20-million tonnes of coal a year. Unlike Sasol's five other coal mines, Shondoni uses renewable-energy technologies, including solar geysers and heat pumps. The mine also has the longest single-flight conveyor in Africa without an intermediate booster drive, at 21 km.

Meanwhile, Phase 1 of the project to transition the Brandspruit mine into the 8.50-million-tonne- to 10.50-million-tonne-a-year Impumelelo colliery was completed in June 2016. Sasol Mining reported in June 2017 that, at the time, the entire project was 40% complete and that Phase 2 was on course for completion in late 2019.

The 10.50-million-tonne-a-year Thubelisha mine, inaugurated in 2012, has extended the operating life of the Twistdraai mine beyond 2040, while the 2.50-million-tonne-a-year Tweedraai project has replaced part of the Syferfontein mine as an opencast operation.

As part of the strategy to secure continuous coal supply for its South African operations, Sasol Mining and its black economic-empowerment partner, Ixia Coal, acquired Anglo American Inyosi's Project Alexander coal resource, which is adjacent to the existing Syferfontein colliery in 2017. It has also secured the mining right for Block IV at Syferfontein colliery and received approval from the Department of Mineral Resources (DMR) to acquire the Rietfontein coal reserve.

Sasol Mining produced 37.20-million tonnes of coal during the year ended June 30, 2018, which was 3% higher than production for the previous year.

Seriti Resources

An 84%-black-owned and -controlled company, Seriti Resources has Masimong Group, Thebe Investments, Zungu Investments and Community Investment Holdings as its anchor shareholders. It completed the acquisition of Anglo American's New Vaal, New Denmark and Kriel mines, as well as various life-extension coal projects and closed collieries, in March 2018. The acquisition of these assets, which are located in Mpumalanga and the Free State, has positioned Seriti as a major South African coal mining company, supplying 24-million tonnes of the fossil fuel each year to Eskom's Lethabo, Tutuka and Kriel power stations, which collectively generate about 23% of South Africa's electricity.

The Kriel mine, located in the eMalahleni area of Mpumalanga, was established in 1975 to supply coal to the Kriel power station. Comprising underground and opencast mining operations, it produces five-million tonnes of thermal coal a year and has enough resources to sustain mining at current rates until 2029. The New Denmark colliery produces a similar tonnage to the Kriel colliery, which it supplies to the Tutuka power station. The New Denmark colliery, about 30 km north of the town of Standerton, is one of the deepest coal mines in South Africa and has enough resources to operate until 2039. The New Vaal colliery is located south of Vereeniging, in the Free State, and employs opencast strip mining methods to extract the remnant coal pillars left behind following underground mining during the 1960s. New Vaal produces 17-million tonnes a year of coal, and the coal that is produced is sold to the Lethabo power station. The mine has a remaining mine life of about 21 years.

Seriti is also part of the New Largo Coal consortium, whose other members are an empowerment entity called Coalzar, and the State-owned Industrial Development Corporation. In July 2018, the consortium finalised the acquisition of thermal coal assets that were previously owned by Anglo's 73%-owned subsidiary, Anglo American Inyosi Coal, for R850-million. The main asset is the 585-million-tonne greenfield New Largo project, which is well positioned to supply Eskom's 4 800 MW Kusile power station, in Mpumalanga, which is under construction. Also included in the sale was the closed Old New Largo mine.

Seriti has ambitions to diversify into export coal production, with CEO Mike Teke telling an interviewer in March 2018 that the company was keen on acquiring the Optimum colliery, which has been placed into business rescue by its owner, Tegeta Exploration & Resources, a company controlled by the Gupta family. The CSA that obligates Optimum to deliver all its production to Eskom expires in December 2018. Seriti, should it succeed in acquiring the mine, will be able to divert coal from the mine to export markets using the mine's entitlement at the RBCT, which is equivalent to 7.50% of the terminal's total capacity.

However, Seriti will have to outbid other companies that have shown an interest in the Optimum mine. These include the Phakamisa consortium, owned by former Exxaro Resources CEO Sipho Nkosi and well-known mining industry personality Bernard Swanepoel. Phakamisa is interested in Optimum and Tegeta's other mine, Koornfontein, as well as the RBCT export entitlement, while another potential bidder, Exxaro Resources, is interested only in Optimum's RBCT export entitlement.

Tegeta sells mine to Swiss company

In August 2017, Tegeta Exploration & Resources announced that it had sold the Optimum coal mine to Switzerland-based company Charles King for R2.97-billion and that the latter had paid a deposit of R64-million. The sale agreement has, however, been cancelled by the mine's business rescue practitioners, prompting Charles King to seek a court order compelling the business rescuers to reverse their decision or to recognise the deposit amount as a credit claim that should be refunded. Judgment has yet to be delivered in this matter.

Source: News24

South32

A diversified miner spun out of Anglo-Australian group BHP in 2015, South32 owns coal assets in South Africa's Mpumalanga province. These are the Eskom-tied 8.60-million-tonne-a-year Khutala colliery, comprising an underground bord-and-pillar operation and a truck-and-shovel mini pit; the 6.50-million-tonne-a-year Klipspruit colliery, which consists of a multiseam opencut mine and a truck-and-shovel mini pit; and the 13.80-million-tonne-a-year Wolverkrans Middelberg Complex (WMC), comprising opencut mines and truck-and-shovel operations. Some of the WMC's output is supplied to Eskom under a long-term contract, while the balance is shipped to customers abroad through the RBCT, where South32's 4 000-plus-employee coal business, South Africa Energy Coal (SAEC), has a 17.30-million-tonne yearly entitlement.

SAEC produced 27.27-million tonnes of coal during the financial year ended June 30, 2018, compared with 28.91-million tonnes in the previous year. The company expects to produce 29-million tonnes in 2018/19. Revenue for 2017/18 totalled \$1.37-billion, up from \$1.10-billion in 2016/17.

South32 announced in November 2017 that it would manage SAEC – which boasts resources of 4.94-billion tonnes and reserves of 346-million tonnes – as a standalone business. It announced in August 2018 that it was making progress in this regard, with a separate leadership team having been appointed. It added that the process to broaden the ownership of SAEC was due to start in September 2018. South32 has cited Eskom's demand, which has no basis in government policy, for empowerment ownership of its coal suppliers of at least 50% plus one share as the main reason for its decision to eventually divest from SAEC. The planned


Picture by Creamer Media

divesture would also enhance SAEC's competitiveness and ensure its ongoing sustainability.

Once the reconfiguration of SAEC as a standalone business has been completed, the company's black economic empowerment (BEE) partner, Phembani Group, may exercise its option to increase its stake in the new entity from its current 8%, and a process to broaden SAEC's ownership may be initiated to secure a listing on the JSE. News agency Bloomberg News reported in September 2018 that Phembani, along with Exxaro Resources and Seriti Resources, were among the groups that were considering bidding for the SAEC assets, which, it said, had been valued at almost $800-million. Bloomberg added that nonprofit group Mining Forum of South Africa planned to make an offer for a 30% shareholding. In line with Eskom's contested coal procurement objective, the buyers of the SAEC assets must have a black shareholding of at least 50% plus one share.

Meanwhile, South32 is investing R4.30-billion to extend the LoM of the Klipspruit mine by another 20 years. Production at the mine was due to cease in 2020, owing to reserve depletion. The LoM extension project, expected to produce its first coal in 2019, will create about 4 000 jobs during construction and unlock 616-million tonnes of resources at the mine's Klipspruit South and Weltervreden deposits.

At Khutula, a study on the feasibility of extending the mine's life is at the feasibility stage, with the results expected in 2018.

SMALLER PRODUCERS

African Exploration, Mining & Finance Corporation (AEMFC), previously a subsidiary of the State-owned Central Energy Fund, which falls under the Department of Energy, was established in 2007 to produce coal for electricity generation. Its mandate also includes the production of uranium and limestone.

Financial daily Business Day reported in October 2017 that DMR director-general Thabo Mokoena had informed AEMFC management that the parastatal would report to the DMR, in line with a Cabinet decision taken in December 2010. Many commentators questioned the timing of the transfer, which had been expected to take place in April 2018 to coincide with the start of government's new financial year.

AEMFC's sole operating mine, Vlakfontein, is an opencast operation near Ogies, in Mpumalanga, which has a LoM of about 25 years. Mining began in 2011 and the 300-employee operation currently supplies less than one-million tonnes of coal to Eskom's Kendal power station, but will be able to deliver more than two-million tonnes a year after implementing an expansion project. AEMFC is also conducting prefeasibility studies for another coal mine, Klippoortjie, about 40 km from the existing operations. The company's latest financial statements were published in the 2016 annual report.

Buffalo Coal's two operations – the Magdalena thermal coal mine and the Aviemore anthracite coal mine – are located in the Klipriver coalfield, near Dundee, in KwaZulu-Natal. Its head office is located on a site called Coalfields, which is also near Dundee and hosts two processing plants and a rail siding. The mines have a combined resource base of 50.29-million tonnes of thermal coal and 35.35-million tonnes of anthracite, with potential for expansion.

Further, a new adit is planned at Aviemore to access the remainder of the mine's reserve. The current adit is expected to reach its limits in 2020. Should the envisaged adit be constructed, the LoM will be extended to 2033. However, implementation of this project will depend on the company's ability to obtain the required funding. In August 2018, Buffalo Coal announced that it was awaiting final offers from bidders interested in investing in the adit project, which requires an investment of R445-million. However, the company warned that there was no guarantee that any final offers would be received and that the Magdalena mine would not be able to carry the company's full operational costs should the Aviemore adit project not proceed.

Half of Buffalo Coal's saleable production is exported, with the balance sold locally, where it is used in the steel, paper and other sectors. The company does not have a contract with Eskom and does not have current plans to supply the utility.

Despite implementing restructuring initiatives in recent years, the company continues to experience operational and financial pressures. In 2017, it produced 1.34-million tonnes of run-of-mine (RoM) production, which it processed into 793 547 t of saleable product, compared with 1.56-million tonnes and 892 591 t in 2016. Buffalo Coal posted a loss of R124-million in 2017, compared with R46-million for the previous year, despite revenue having increased from R661-million to R738-million.

For the half-year ended June 30, 2018, RoM production totalled 554 835 t, with saleable production (excluding calcine) being 369 750 t. Revenue for the period was R394.70-million, up from R325.90-million in the corresponding half-year of the previous year.

Buffalo Coal has a significant need for equity capital, and operating and working capital financing. Its debt of more than R200-million, largely owed to financial services house Investec, has been mounting in recent years. Despite being in breach of its debt covenant, the company reported in March 2018 that it had secured a further R16-million from Investec, increasing the aggregate facility from the bank to R236-million.

Canyon Coal is an unlisted mining and exploration company. Its assets include the Hakhano, Phalanndwa and Singani opencast collieries, in Mpumalanga, and the Khanye opencast mine, in Gauteng, which came on stream in December 2017 and will produce 200 000 t/y of RoM coal when it reaches full production. This compares with monthly RoM production of about 40 000 t at Hakhano, 120 000 t at Phalanndwa and 140 000 t at Singani. The Hakhano and Singani collieries produce bituminous coal for the export market, while the Phalanndwa and Khanye operations produce sub-bituminous coal for the domestic and export markets. Current yearly production totals 3.60-million tonnes, but this is expected to increase to ten-million tonnes by 2019 as new operations are commissioned.

The new operations include the Ukufisa opencast mine, on Gauteng's East Rand, where commissioning is expected in 2018, with 400 000 t/m of coal to be produced over the mine's 38-year LoM. Other projects in the pipeline are the Wittekrans and Witfontein underground mining projects, both in Mpumalanga. The former boasts a 118-million-tonne reserve and will produce 400 000 t/m, while the latter, which has a 70-million-tonne reserve, will produce 100 000 t/m. Construction on both projects is scheduled to start towards the end of 2018.

To support the new mining projects, Canyon Coal is developing four railway sidings – two each in Mpumalanga and Gauteng – to improve the distribution of coal products to domestic and export markets. Financial results are not available for this company.

MC Mining, previously known as Coal of Africa Limited, or CoAL, is an emerging coal mining company whose assets include the Uitkomst colliery, in KwaZulu-Natal,

Hakhano mine

Picture by Creamer Media

and the mothballed Vele colliery, as well as the Makhado and Greater Soutpansberg projects, all in Limpopo. CEO David Brown said in September 2018 that the company was targeting the acquisition of a second cash-generating mine similar to Uitkomst.

As at June 30, 2017, MC Mining had attributable tonnes *in situ* in the measured resource category of 441.93-million and 337.78-million tonnes in the indicated resource category.

Uitkomst, which was acquired from Pan African Resources in June 2017, is a high-grade thermal export quality coal deposit with metallurgical applications, including an existing underground mine with an estimated 16-year mine life, and plans for an extension. The acquisition of the mine is part of the company's strategy to become a midtier coal producer. Mining was previously undertaken by Khethekile Mining, from whom MC Mining acquired the company's equipment for about $4.90-million in August 2018. This will result in a transition to an owner-operator model. Uitkomst processed 505 130 t of raw coal in the year to June 30, 2018 (2017: 481 547 t).

To strengthen its balance sheet MC Mining sold its Mooiplats colliery, in Mpumalanga, to a consortium led by mining industry veterans Sipho Nkosi and Bernard Swanepoel for R180-million in October 2017. The disposal of the mine, which had been on care and maintenance since 2013, will yield yearly savings of about $1.40-million, while the proceeds from the transaction will be used to further develop the flagship Makhado project or acquire a second cash-generating mine after Uitkomst.

Brown told an interviewer in March 2018 that the company was contemplating the sale of another asset, which he did not identify. This is possibly the Vele mine, near the Mapungubwe World Heritage Site, which has been on care and maintenance since 2013 and has been opposed by environmental lobby groups. Upon taking over as CEO, Brown decided to re-engineer the Vele project, which required a new water licence and other permits. While the process to obtain these approvals has largely been completed, the strengthening of the rand against the dollar is impacting on plans to resuscitate the mine and commentators have suggested that selling the mine may help ease the pressure on MC Mining's balance sheet. However, Brown said in September 2018 that Vele's return to production, if it materialised, would coincide with a planned government-led coal-intensive special economic zone (SEZ) coming into operation. Vele's semisoft coking coal and thermal coal would be used at the SEZ. The Vele project was granted a 20-year new-order mining right in May 2015 and has also secured an integrated water-use licence, environmental authorisation and other regulatory approvals

Meanwhile, MC Mining says that most of the legacy issues at the company – heavy debt, unprofitable collieries and a surfeit of shares after repeatedly raising funds from shareholders – have mostly been resolved.

However, the company has abandoned plans to build the Makhado mine as a massive coking coal operation, opting instead for a smaller mine producing 2.30-million tonnes of hard coking coal and 3.20-million tonnes of thermal coal a year, with both product types destined for the domestic and export markets. MC Mining reported in its results for the three months to June 30, 2018, that the High Court had reversed an interim order barring the company from proceeding with construction at Makhado, which has received all the required regulatory permissions.

In January 2018, MC Mining applied to the DMR and the Limpopo Department of Economic Development, Environment and Tourism (Ledet) to amend the Makhado project's environmental authorisation so that it aligns with a revised project plan, whereby saleable coal will be transported to the Musina rail siding by road instead of rail. Both regulators announced on September 3, 2018, that they had approved the amendment. Shortly thereafter, however, a fresh appeal against the environmental authorisation was lodged by what MC Mining has described as a "narrow interest group". The appeal has been lodged by the same group that had previously unsuccessfully appealed against the original Makhado environmental authorisation.

In addition to the environmental authorisation required, MC Mining needs access to the nearby Lukin and Salaita farms to confirm geotechnical information before construction at Makhado begins. These properties are subject to a South African government land claim process. However, MC Mining has begun a statutory process to obtain access to the properties by virtue of its mining right. In September 2018, *Mining Weekly* cited the company as saying that it could take from June 2019 to early 2020 to resolve the the access issue. In the meantime, it added, marketing offtake agreements were being negotiated for the project's hard coking coal and its thermal coal by-product. The finalisation of the negotiations – in three to four months – would be followed by the sourcing of $100-million in funding for the development of the project, which the company said was being buoyed by the favourable pricing of coal.

At Greater Soutpansberg, planned development is on a longer-term horizon and mining right applications have been submitted for the Mopane, Generaal and Chapudi projects.

During the year to June 30, 2018, when it achieved full integration of the cash-generating Uitkomst mine, MC Mining posted a normalised after-tax loss of $9.80-million, compared with a loss of $8-million for the previous year. Uitkomst, the company's only operating asset, sold 475 079 t of coal, realising revenue of $32.70-million.

Petmin, which delisted from the JSE in June 2017, following a management buy-out, mostly produces metallurgical anthracite at the Somkhele mine, in KwaZulu-Natal. The bulk of the mine's production is exported to iron-ore pelletising and sintering plants, with the balance sold to the South African ferroalloy industry. Potential markets include the ferromanganese industry and titanium smelters. Calcining the anthracite, which increases carbon and reduces volatiles, could help Petmin to penetrate niche metallurgical markets. Petmin also produces low-volatile, high-ash energy coal, which it sells to overseas customers, primarily for use in cement production and electricity generation. The company has not published its results since its delisting.

Tegeta Exploration & Resources is owned by Oakbay Investments Group, a company controlled by the controversial Gupta family, which has faced mounting pressure in the past year amid allegations that it offered bribes to top government officials and parastatal executives in return for favours for the companies it controls. Tegeta's main assets, acquired when it bought Optimum Coal Holdings from Switzerland-headquartered mining and metals trading group Glencore in 2015, are the Optimum and Koornfontein mines, in Mpumalanga, as well as a six-million-tonne-a-year export allocation at the RBCT, in KwaZulu-Natal. The company previously owned the Brakfontein colliery as well, but this mine was transferred to Shiva Coal, another Gupta-owned company, in 2015. The Optimum and Koornfontein mines are contracted to supply 7.90-million tonnes of coal a year to Eskom's Hendrina and Komati power stations, while the Brakfontein mine supplies 65 000 t/m to the utility's Majuba power station under a ten-year CSA.

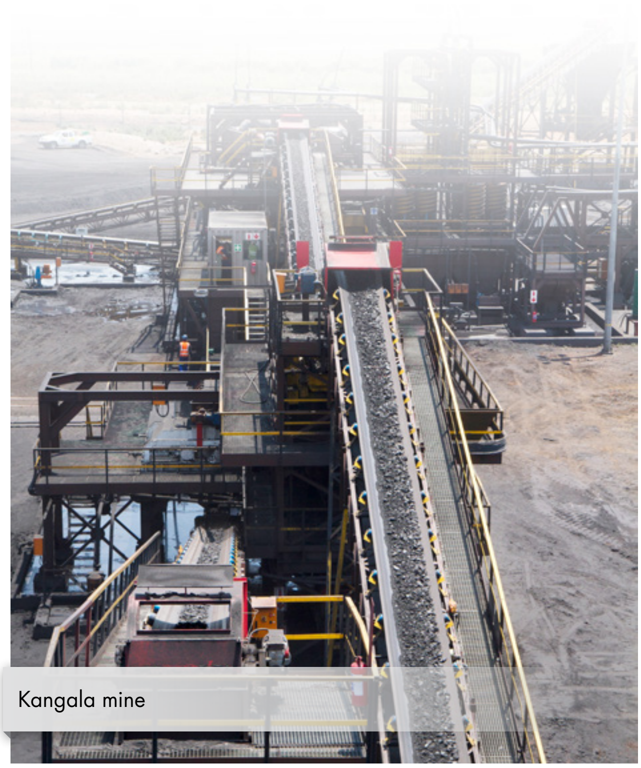
In August 2017, Oakbay Investments announced plans to sell Tegeta – which is facing severe operational difficulties attributable to alleged mismanagement and Gupta malfeasance – to a Swiss company called Charles King. Tegeta was placed under business rescue in February 2018 and the business recue practitioners subsequently cancelled the sale to the Switzerland-based entity, describing it as an attempt to move money internationally and enable Tegeta to continue paying salaries. The practitioners have claimed that the R64-million deposit paid by Charles King was paid out as salaries the next day. Even if Charles King succeeds in reversing the decision to cancel its purchase of Tegeta, it will still have to get the approval of Eskom, the DMR and the Competition Commission.

Failure by the Optimum and Koornfontein mines to deliver the 7.90-million tonnes they are contracted to supply each year to Eskom has been blamed for the coal shortage at seven of the utility's power stations.

Mineral Resources Minister Gwede Mantashe said in March 2018 that his department was optimistic the business rescue operation would succeed.

Universal Coal has a portfolio of producing, development and exploration assets in the coalfields of Mpumalanga and Limpopo. These include the 70.50%-owned Kangala mine, the 49%-owned New Clydesdale colliery and the 50.29%-owned Brakfontein mine, all of which are located in Mpumalanga and produce thermal coal. The company also has a 50% stake in the Berenice/Cygnus coking coal exploration project, in Limpopo's Soutpansberg coalfield. The company announced in March 2018 that it planned to acquire Exxaro Resources' North Block Complex (NBC), in Mpumalanga, which has produced 3.50-million tonnes of product each year over the past four years. In August 2018, Universal announced that the DMR had granted Ministerial approval for the mining rights for the Glisa and Eerstelingsfontein operations into the NBC. The transaction is expected to be finalised towards the end of 2018, and Universal plans to convert NBC, an opencast operation, into a multiproduct mine after incorporating it into the adjacent Paadeplaats project.

The Kangala mine, where mining started in 2014, is a truck-and-shovel openpit operation that mostly supplies its product to Eskom under a CSA that expires in 2023. Following the acquisition, through a 49%-owned subsidiary, of an initial 29% stake in Eloff Mining Company, which owns the adjacent 424-million-tonne-resource Eloff project, there is potential to extend Kangala's LoM. During the financial year ended June 30, 2018, the mine achieved a 10% year-on-year production increase to 4.03-million tonnes (2017: 3.66-million tonnes), resulting in sales tonnages increasing 6% to



Kangala mine

Picture by Creamer Media

2.69-million tonnes (2017: 2.46-million tonnes), 65 480 t of which was exported to overseas customers.

The NBC, an amalgamation of the historical NBC and an adjoining deposit previously called Roodekop, produced its first coal in January 2017, with output for the 2018 financial year totalling 3.67-million tonnes an increase of 381% (2017: 763 892 t). Sales tonnages increased 296% from 539 695 t to 2.14-million tonnes, of which 766 633 t was exported.

During the year to June 30, 2018, Universal Coal achieved total sales of 4.70-million tonnes, compared with the three-million tonnes produced in the preceding year. The increase was largely attributable to the New Clydesdale coal mine's full nameplate production. Revenue of A$316.35-million (2017: A$149.30-million) for the year represented a 112% increase on the previous year.

Meanwhile, in September 2018, Universal reported that it had received a conditional, nonbinding offer from South African mining finance and private-equity firm Ata Resources. Universal, however, emphasised that it was not definite the proposal would result in a binding offer.

Wescoal Holdings, which acquired junior miner Keaton Energy in July 2017 to expand its asset portfolio, aims to be a key player in the consolidation of the South African junior coal mining industry. Following the disposal of the noncore Intibane 1 and Intibane 2 opencast collieries, in Mpumalanga, in July 2018, Wescoal's Mpumalanga-based assets now comprise the Elandspruit, Khanyisa and Vanggatfontein collieries, as well as four coal processing facilities and the Moabsvelden and Braakfontein exploration projects. Total coal reserves were more than 300-million tonnes as at March 31, 2018.

The company currently produces low-grade coal for Eskom and for export markets, but CEO Waheed Sulaiman told *Mining Weekly* in July 2018 that the company was considering further acquisitions to produce a different grade of coal.

Meanwhile, during the financial year ended March 31, 2018, Wescoal's RoM production doubled for the second consecutive year to 6.80-million tonnes. The company said in July 2018 that the expanded company was on track to produce eight-million tonnes of coal in the 2018/19 financial year. Sales totalled 6.50-million tonnes. Revenue for 2017/18 increased 67% year-on-year to R3.50-billion.

Khanyisa mine

Picture by Wescoal Holdings

CORPORATE ACTIVITY

Anglo American and Seriti Resources

The R2.20-billion sale of Anglo American's three mines that supply coal to Eskom, as well as various life-of-mine (LoM) extension projects and closed mines to Seriti Resources, was concluded in March 2018.

The transaction was announced in April 2017 and had been sanctioned by the Competition Commission and the DMR by the end of that year. The only outstanding condition that delayed its finalisation was approval by Eskom of the ceding of the CSAs for the Lethabo, Tutuka and Kriel power stations from Anglo American to Seriti. The Lethabo and Kriel coal supply agreements (CSAs) have a further 11 years to run, while the Kriel CSA expires in two years.

Meanwhile, Anglo American announced in January 2018 that its 73%-owned subsidiary, Anglo American Inyosi Coal, had agreed to sell its New Largo thermal coal assets, in Mpumalanga, to the New Largo Coal consortium, comprising empowerment entities Seriti and Coalzar, as well as the State-owned Industrial Development Corporation. The R850-million transaction was finalised in the second half of 2018.

Anglo American Inyosi Coal and Sasol Mining

Sasol Mining reported in December 2017 that the Competition Tribunal had granted it and Ixia Coal, its BEE partner, approval to acquire Anglo American Inyosi Coal's mining rights over the Project Alexander coal resource, in Mpumalanga. The acquisition forms part of Sasol Mining's strategy to secure continuous supply of coal feedstock for its Southern Africa value chain. The coal resource is located adjacent to Sasol Mining's Syferfontein colliery.

Ata Resources and Universal Coal

Universal Coal announced in September 2018 that it had received a conditional, nonbinding offer of A$40.35 per share from South Africa-based mining finance and private-equity firm Ata Resources. Ata was also proposing the delisting of Universal should the takeover materialise. Universal added that its independent directors would soon meet to consider the offer and that Ata had reportedly received an irrevocable undertaking from a 27.50% shareholder to vote in favour of the scheme. It emphasised, however, that there was no certainty the proposal would result in a binding offer. The takeover proposal drove Universal's share price nearly 7% higher to A$0.32 per share, just short of the 52-week high of A$0.33 per share that was reached in July 2018.

Exxaro Resources and Universal Coal

Universal Coal Development IV (UCDIV), a joint venture (JV) in which Universal Coal and BEE company Ndalamo Resources own stakes of 49% and 51% respectively, increased its interest in the Eloff coal project, in Mpumalanga, from 29% to 80% in November 2017. This followed UCDIV's purchase from Exxaro Coal Central of Manyeka Coal Mines, which has a 51% interest in Eloff Mining Company (EMC), the owner of the Eloff coal project. EMC owns two prospecting rights covering 8 168 ha that are the subject of a mining right application. It also owns the surface rights to 6 147 ha of the Eloff project area that cover most of the areas identified for the expansion at Universal's Kangala colliery. The Eloff project's development will require minimal development capital, as the current Kangala infrastructure will be sufficient to support an extension of the LoM. Eloff will be funded from operational cash flows.

Meanwhile, Universal Coal announced in March 2018 that its 49%-owned subsidiary, NBC, which it co-owns with BEE company Ndalamo Resources, would acquire Exxaro Resources' NBC opencast mine, in the Belfast area of Mpumalanga. The NBC, located in the vicinity of the Arnot, Tutuka and Nkomati power stations, comprises the Glisa and Eerstelingsfontein operating mines and the nearby undeveloped Paardeplaats prospecting right. It has achieved yearly RoM production of 3.50-million tonnes and sales of 2.70-million tonnes over the past four years. The bulk of its output is supplied to Eskom, with small volumes of higher-value product sold to traders. The R172-million transaction, for which Competition Commission and DMR approvals are pending, is expected to be finalised towards the end of 2018, at which time the remaining LoM will be two to four years. Universal plans to convert it into a multiproduct operation with the gradual inclusion of the Paardeplaats project. This will increase exposure to higher-margin export markets, while maintaining coal supplies to Eskom. When it is fully operational, Paardeplaats will be a lower-quartile-cost coal mine producing 25.10-million tonnes of coal a year over its ten-year LoM.

Wescoal, Tokata Resources and Banjosign

Wescoal Holdings announced in June 2018 that it had entered into an agreement with privately owned businesses Tokata Resources and Banjosign for the sale of its Intibane Complex, near Ogies, in Mpumalanga, which comprises two opencast mining operations known as Intibane 1 and Intibane 2. The transaction came into effect on July 1, 2018, and the total consideration, which was payable by August 31, 2018, comprised Tokata's share of R39-million for the mining operations and assets, and Banjosign's share of R18-million for the surface rights. Wescoal will use proceeds from the sale to reduce its debt.

SELECTED COAL MINING PROJECTS

Belfast – Exxaro Resources

Exxaro broke ground on the Belfast project, which boasts measured mineral resources of 83-million tonnes, in July 2018. The R3.20-billion project's first phase will comprise the development of a greenfield opencast mine that will include a coal handling and preparation plant, and supporting infrastructure and

Belfast coal project under construction

Picture by Exxaro Resources

services. The mine is expected to come on stream in the first half of 2020 and to produce 2.70-million tonnes a year of A-grade thermal coal over its 17-year life-of-mine (LoM). The mine will be the first of its kind in South Africa to have a digital twin – a complete digital replica that will enable management and the contracted company to be connected to it and manage it from any location in the world. Further, maintenance teams will be connected to certain machinery to analyse and detect problems early, resulting in improved safety and reduced downtime. In the future, the digital twin could make operational decisions on its own. The mine is expected to create 6 000 direct jobs during construction and operation and to contribute R39-billion to gross domestic product.

Boikarabelo – Resource Generation

The Boikarabelo project, being developed by Resource Generation (Resgen) subsidiary Ledjadja Coal in the Waterberg region of Limpopo, had estimated reserves of 267.10-million tonnes as at June 30, 2017. The coal seam, lying at depths of 20 m to 30 m below ground level, has a thickness of 100 m to 120 m, with zones of varying qualities of thermal and soft coking coal. To limit upfront capital expenditure requirements, the project will be implemented in two phases, with the first delivering six-million tonnes of coal, of which 3.60-million tonnes will be exported and 2.40-million tonnes sold on the domestic market. The second phase, planned for 2022, will increase yearly production to 12-million tonnes of thermal coal.

The Boikarabelo project has been delayed by funding challenges and, in June 2018, Resgen announced its plans to approach international commodities group Noble Resources for additional financing for the expected working capital requirement arising from the development delay. In March 2018, Resgen borrowed $2.50-million from Noble, bringing the total facility made available to the company at that time to $34.70-million. Resgen continues to develop measures to address concerns pertaining to a bilateral senior loan facility between the State-owned Industrial Development Corporation (IDC) and Ledjadja Coal. The IDC approved Resgen's request for R540-million in funding in April 2014.

In September 2018, the company announced that it had received commitment from a lender to table a funding proposal for credit committee approval. Should the credit committee approval be secured, it said, the final lender board approval would be granted by the end of October 2018. Resgen has pursued a tandem approach to finding a funding solution for the development of the Boikarabelo coal mine. As part of this tandem approach, it continues to engage with the proposed lending syndicate, particularly the lender that is delaying its credit committee approval processes, owing to a broad-based internal review of the organisation's environmental, social and governance criteria. Simultaneously, it is seeking to involve a third party as a substitute funder in the syndicate or as a complementary participant in the syndicate.

Meanwhile, Resgen continues to engage with several interested parties, including the IDC, on the funding required for a 44 km rail link from the mine to the existing rail network. The Boikarabelo project will create 2 500 jobs during construction and 709 during operation.

Brakfontein – Universal Coal

Boasting a 75.80-million-tonne resource and a 9.10-million-tonne reserve, the Brakfontein thermal coal project is located in the Delmas district of Mpumalanga. Universal Coal, which has a 50.29% interest in the project, with potential to increase this to 74%, proposes to build a 1.20-million-tonne-a-year run-of-mine (RoM) operation at the project site, which is situated 25 km east of the Kangala colliery, a truck-and-shovel operation that is 70.50%-owned by the company. The project has secured mining rights, environmental authorisation and an integrated water-use licence, and production is targeted to start in 2018.

Grootegeluk Phase 6 – Exxaro Resources

Being developed at the Grootegeluk mining complex, in Limpopo's Waterberg coalfield, the Grootegeluk Phase 6 (GG6) project, with a budgeted cost of R4.80-billion, is the largest in Exxaro Resources' R20-billion capital expenditure programme, which will be implemented from 2018 to 2022.

The mine will produce a minimum of 1.70-million tonnes of semisoft and coking coal a year from 2020. This production level is lower than the 2.70-million tonnes envisaged under previous plans. As a result of the change, GG6 will deliver a higher-priced product, with the additional one-million-tonne-a-year capacity to be deferred to phases 7 and 8 of the mine's development.

Impumelelo – Sasol Mining

Involving the construction of a new 8.50-million-tonne-a-year colliery, with potential to increase this capacity to 10.50-million tonnes a year, the project is being implemented in Mpumalanga as part of Sasol Mining's R14-billion programme to replace depleted mines. The first phase of the project – being developed to replace the Brandspruit mine and produce coal for the Sasol Synfuels plant – was completed in June 2016, with the second phase on schedule for completion in the latter half of 2019.

The R4.60-million mine will operate for a minimum of 35 years. A conveyor system, the longest of its kind in the southern hemisphere, will transport coal from the mine to the Synfuels complex.

Kangala expansion project – Universal Coal

Universal Coal Development IV (UCDIV), a joint venture (JV) between ASX-listed Universal Coal and Ndalamo Resources, is considering expansion of its Kangala thermal coal mine, in the Delmas district of Mpumalanga, following the acquisition in July 2017 of a 29% in the adjoining Eloff project and a further 51% in November 2017. UCDIV intends to

Kangala mine

Picture by Creamer Media

acquire the remaining 20%. The Eloff project, with a 424-million-tonne resource in openpittable areas, is a direct extension of the Kangala colliery's current pit. Thus, it will require limited future development capital, resulting in significant cost savings in monetising it.

UCDIV plans to meet its share of the Eloff project's funding requirements from the operating cash flow of its existing operations. A mining right application for the envisaged project has been lodged with the DMR.

Klipspruit Life Extension – South32

Approved in November 2017, construction on the R4.30-billion Klipspruit Life Extension (KPSX) opencut mining project, in Mpumalanga, is expected to start during 2018, with first coal production during South32's 2019 financial year. The project will unlock the 616-million-tonne resource at the Klipspruit South and Weltervreden deposits and secure the future of the Klipspruit colliery, which was to reach the end of its life in 2020 as resources depleted, for at least another 20 years. On average, production over the LoM will be 9.60-million tonnes of RoM coal a year and eight-million tonnes of saleable product a year, which will be sold on the export and domestic markets. The project, which is fully permitted, is located near Eskom's new Kusile power station, for which the utility has yet to secure a long-term supply contract.

Leeuwpan Life Extension – Exxaro Resources

The Leeuwpan Life Extension project, in Mpumalanga, entails the development of an opencast mine with a ten-year LoM that will produce an estimated 2.70-million tonnes of thermal coal a year for the domestic and export markets. Exxaro has budgeted about R600-million to develop the project, which is expected to produce its first coal during the second half of 2018.

Makhado – MC Mining

The Makhado project, in Limpopo, is being developed by Baobab Mining & Exploration, which is 69%-owned by MC Mining, formerly Coal of Africa Limited, with the other shareholders being a community trust (20%), a black industrialist (6%) and the State-owned Industrial Development Corporation.

Makhado coal project

Picture by MC Mining

The project's original plan envisaged a 26-month construction phase, followed by a four-month ramp-up to achieve yearly production of 5.50-million tonnes of saleable coal. Under a revised plan, approved in September 2017, this has been scaled down to between 1.70-million tonnes and 1.80-million tonnes of saleable product over the project's estimated 46-year LoM, comprising 700 000 t/y to 800 000 t/y of hard coking coal and 900 000 t/y to one-million tonnes a year of export-quality thermal coal. Under the revised plan, the mine and its processing plant will be built in about 12 months at a cost of about R1.10-billion.

The Makhado project, which has a 344.80-million-tonne *in situ* resource and is MC Mining's most advanced feasibility-stage project, suffered a setback in 2014, when the High Court granted the Vhembe Mineral Stakeholders Forum and other applicants an interim order against the company and the Limpopo Department of Economic Development, Environment and Tourism, which effectively prevented MC Mining from undertaking construction and mining activities at the project site. The order was, however, lifted by the court in June 2018.

However, the company has abandoned plans to build the Makhado mine as a massive coking coal operation, opting instead for a smaller mine producing 2.30-million tonnes of hard coking coal and 3.20-million tonnes of thermal coal a year, with both product types destined for the domestic and export markets. MC Mining reported in its results for the three months to June 30, 2018, that the High Court had reversed an interim order barring the company from proceeding with construction at Makhado, which has received all the required regulatory permissions.

In January 2018, MC Mining applied to the DMR and the Limpopo Department of Economic Development, Environment and Tourism (Ledet) to amend the Makhado project's environmental authorisation so that it aligns with a revised project plan, whereby saleable coal will be transported to the Musina rail siding by road instead of rail. Both regulators announced on September 3, 2018, that they had approved the amendment. Shortly thereafter, however, a fresh appeal against the environmental authorisation was lodged by what MC Mining has described as a "narrow interest group". The appeal has been lodged by the same group that had previously unsuccessfully appealed against the original Makhado environmental authorisation.

Thabametsi – Exxaro Resources

The R3.20-billion Phase 1 of the Thabametsi openpit colliery, being developed by Exxaro Resources, in Limpopo, is expected to produce 3.90-million tonnes of thermal coal a year for the nearby Thabametsi coal-fired power station over its 30-year operating life. The mine – which has received all the required licences – is scheduled to produce its first coal in 2021, reaching full production in 2022, in line with the development ramp-up schedule of the power station, which is expected to start operating in 2021.

The Thabametsi power station, which will produce 600 MW of electricity, is one of the two power stations selected under the first bid window of the Department of Energy's Coal Baseload Independent Power Producer Procurement Programme.

Waterberg coal project – Sekoko Resources

Unlisted black-owned mining investment company Sekoko Resources reported in June 2017 that it would revive the Waterberg coal project (WCP), in Limpopo. Sekoko, which owns 30% of the WCP and an interest in the now delisted Waterberg Coal Company – previously the market-facing entity behind the WCP – has a new plan for the project, which entails the production of 600 000 t/y of thermal coal to be sold to Eskom initially, with the cash flow to be used to develop export coal. This is much lower than the initial plan for a ten-million-tonne-a-year export component and ten-million tonnes of Eskom supply, with any waste or surplus coal supplied to an independent power producer.

Local sales

Coal continues to dominate South Africa's electricity generation mix, despite the addition of renewable sources, such as wind and solar, in recent years. Of the coal sold locally, 53% is delivered to State-owned power utility Eskom's fleet of 14 coal-fired power stations, which generate about 84% of the country's electricity and include the new 4 764 MW Medupi power station, in the Lephalale area of Limpopo, and the 4 800 MW Kusile power station, in the Nkangala district of Mpumalanga, both of which have been only partially completed. It is expected that the remaining units at Medupi will have entered commercial operation by 2020, while the completion of construction at Kusile is scheduled for 2022.

In the 2017/18 financial year, Eskom's power stations burnt 115.49-million tons of thermal coal, up from 113.74-million tons in the previous year but much lower than the record 125-million tons burnt in 2008. The reduction in Eskom demand is partially attributable to the utility's newfound surplus capacity, which is primarily attributable to declining activity in the energy-intensive industrial and mining sectors amid challenging economic conditions. This has prompted Eskom to consider mothballing the Hendrina, Kriel, Komati, Grootvlei and Camden power stations – all in Mpumalanga. While the intended decommissioning has been heavily criticised by trade unionists, who are concerned about the attendant job losses, a study released in November 2017 found that accelerating the process at the older Grootvlei, Hendrina and Komati power stations, coupled with the halting of construction of units 5 and 6 of the Kusile project, could save the cash-strapped utility R15-billion to R17-billion without jeopardising security of electricity supply in the country.

Eskom uses predominantly two types of coal supply contracts: long-term cost-plus contracts and fixed-price contracts that can be short or long term. Under the cost-plus contracts, Eskom provides the initial and working capital for dedicated coal mines located near its power stations. The utility pays these mines prices that cover their costs and also includes an agreed profit margin. Mines owned by the four major coal producers have long-term cost-plus contracts with Eskom. These include South32's Khutala colliery, Seriti's New Vaal, New Denmark and Kriel collieries, and Exxaro's Matla colliery, all of which are in Mpumalanga. Exxaro's Grootegeluk colliery, South32's Middelberg Wolvekrans colliery, Tegeta Exploration & Resources' Optimum colliery, and the Goedgevonden colliery, which is a joint venture between Glencore and African Rainbow Minerals – are fixed-price multiproduct mines that supply Eskom, but export higher-grade product.

Together, the cost-plus and fixed-price mines account for 70% of Eskom's contracted coal supply, with the balance delivered by mines on medium-term contracts.

Eskom's top ten coal suppliers

Supplier	Contract type
Exxaro Coal	Cost-plus and fixed-price
Anglo American/Seriti Resources	Cost-plus
South32	Cost-plus and fixed price
Universal Coal Development I	Fixed-price
Iyanga Mining	Fixed-price
Tshedza Mining Resources	Fixed-price
Umsimbithi Mining	Fixed-price
Koornfontein Mines	Fixed-price
Keaton Mining	Fixed-price
Wescoal Mining	Fixed-price

Source: Eskom integrated report 2017/18

As at September 2017, Eskom had contracts with 40 suppliers, compared with 29 in 2015, with the increase attributable to not only the need to meet demand from the new Kusile and Medupi power stations but also the State-owned utility's controversial decision to insist, until recently, that suppliers have black shareholding of at least 50% plus one share. Supporters of the intervention argued that the move has been a major boost for junior coal miners, with coal supply contracted from miners with short- and medium-term contracts increasing from one-million tons in 2000 to 45-million tons in 2017. However, the requirement is not supported by government's official mining policy.

However, Eskom's failure over the past five years to meet its capital expenditure commitments for the ongoing development and expansion of several cost-plus mines has resulted in massive declines in production and deliveries to some of its power stations. In some cases, deliveries have been as low as 20% of planned levels. The utility reported in April 2018 that stock levels at its Arnot, Camden, Hendrina, Komati, Kriel, Majuba and Tutuka power stations, in Mpumalanga, had fallen below the 20 days' supply stipulated in the grid code.

The shortages attributable to underdeliveries from the Eskom-tied collieries – which have suffered from underinvestment by the parastatal – have been associated with massive increases in the cost of each

Coal shortages at ten Eskom power stations

State-owned power utility Eskom announced in mid-September 2018 that it had fewer than 20 days' coal supply at 10 of its 15 coal-fired power stations, with one of the stations having fewer than ten days' supply.

The main reason for the shortages, which threatened national power supplies, was that Tegeta Exploration & Resources, owned by the controversial Gupta family, had cut supplies to Eskom as it sought insolvency protection. The power utility said that it would transport coal from some power stations to those facing constraints and was in discussions with 12 suppliers to secure coal contracts.

Source: Reuters

ton delivered, as the fixed overhead and management fees are recovered from a much lower production volume.

Coal supply challenges – specifically at the Arnot, Hendrina and Komati mines – have also resulted from the Tegeta-owned Optimum and Koornfontein mines' failure to meet their contractual obligations. According to media reports published in May 2018, the Optimum mine delivered only 6.50-million tonnes at a cost of R150/t to Hendrina from June 2016 to January 2018 instead of the contracted ten-million tonnes. During the same period, it reportedly exported more than four-million tons at an average price of R1 075/t.

The Optimum colliery, along with the Koornfontein colliery, was placed under business rescue in February 2018 as Tegeta's financial challenges mounted. The business rescuers told reporters in May 2018 that they were in discussions with Eskom to reduce deliveries from Optimum from the contracted 400 000 t/m to 200 000 t/m and to have the price paid for coal from the mine increased. If this request was granted, the business would divert the other 200 000 t to global energy commodities trader Vitol, which had made an unconditional offer for this volume at R1 000/t, compared with the R201.46/t that Eskom pays for deliveries from the mine and R450/t for coal from the Koornfontein mine. The business rescue practitioners said they intended to use the additional income to repair the damage and neglect caused when the mines were under the control of the Gupta family.

Eskom has confirmed the discussions concerning a possible reduction in coal supplies from the Tegeta mines, but spokesperson Khulu Phasiwe stated in April 2018 that the utility was not considering increasing the price it paid for coal from the mines, despite the business rescuers calculating that R430/t for such coal would be critical to the success of the rescue effort.

Many of South Africa's coal miners are apparently diverting supplies to more lucrative export markets, where prices have increased to about $110/t. This prompted Public Enterprises Minister Pravin Gordhan to appeal to Parliament's Portfolio Committee on Public Enterprises, in August 2018, to call in the coal mining companies and ask them to account for their exports.

Indicating the severity of the coal shortages at some of Eskom's power stations in Mpumalanga, financial daily Business Day reported in July 2018 that one-million tonnes of the fuel was being transported daily by 200 trucks from a stockpile at the Medupi power station, in Limpopo, to the Kendal and Kusile power stations, about 400 km away. The coal stockpiled at Medupi, which was supplied from the Grootegeluk mine and currently stands at 20-million tons, arose as a result of a take-or-pay coal supply agreement. Independent analysts have estimated the cost of transporting the coal at about R100-million a month. Eskom generation and sustainability executive Thava Govender told Parliamentarians in August 2018 that coal levels at nine power stations were very low, with some power stations having enough coal to last only ten days, while ideal stockpiles were those that would last 30 to 40 days.

Speaking at the South African Coal Export Conference in February 2018, in Cape Town, Eskom senior GM for primary energy Ayanda Nteta said the utility faced a 750-million-ton supply shortfall to 2040, owing to reserve depletion at the established mines and some mines failing to secure finance for life-of-mine extension projects. This figure, she explained, excluded the coal allocation of two contracts currently out on tender, one of which outlined coal supply of 100-million tons.

The envisaged supply shortfall, however, offers a significant opportunity for emerging, small-scale producers, which, according to Nteta, already account for 45-million tonnes a year of Eskom's short- and medium-term coal supplies. Such suppliers service 60% of the utility's medium-term contracts – with a duration of five to ten years – and 80% of contracts lasting less than five years. The increasing share of supplies from emerging coal miners is, to some extent, being aided by Eskom's aspiration to promote transformation, which has been interpreted until recently as requiring black shareholding in coal companies be at least 50% plus one share.

As such new mines will be located farther away from existing power stations, more coal will need to be transported by road or rail, thus creating opportunities for logistics service providers.

Meanwhile, more coal will be required for two planned independent power producer (IPP) coal-fired power stations that form part of the Department of Energy's (DoE's) 2 500 MW Coal Baseload Independent Power Producer Procurement Programme (CBIPPPP). These are the 630 MW Thabametsi project, in Limpopo, and the 306 MW Khanyisa project, in Mpumalanga.

The developer of Thabametsi – a consortium led by Korea Electric Power Corporation and Japan's Marubeni Corporation – expects the $2-billion project to be operational from 2021. The project has, however, faced resistance from environmental campaigners. An initial environmental authorisation for the project was successfully challenged by Earthlife Africa (EA) in the North Gauteng High Court, which, in June 2017, ordered Environmental Affairs Minister Edna Molewa to reconsider the authorisation, taking into consideration a climate change impact assessment. In January 2018, Molewa determined that the Thabametsi environmental authorisation would remain in place, but EA plans to contest that decision.

Picture by Creamer Media

The Thabametsi project is also being opposed by the Life After Coal Campaign, which, besides EA, comprises the Centre for Environmental Rights and groundWorks. The campaign is also opposed to the Khanyisa project, and a ruling on an application against the project's environmental authorisation is still pending in the North Gauteng High Court. The consortium that is seeking to develop the Khanyisa project comprises Acwa Power, Pele Green, Thebe Investments, Paris Group, Masi Capital and the State-owned Industrial Development Corporation. The financiers and lenders include the Development Bank of Southern Africa, Absa, Nedbank and Standard Bank.

The CBIPPPP aims to procure 2 500 MW when all its phases have been implemented.

While coal-fired power stations currently account for 84% of the electricity generated in South Africa, the DoE's draft updated Integrated Resource Plan (IRP), released towards the end of August 2018 for public comment, envisages this declining to 46% by 2030 as the shares of renewable-energy sources, such as wind, solar and natural gas, increase. Business, labour and community representatives had 60 days from the draft IRP's release to submit their comments to the DoE. Energy Minister Jeff Radebe expressed the hope that Cabinet would adopt the plan soon thereafter, ensuring certainty concerning South Africa's electricity generation roadmap for the next 12 years.

Besides the electricity generation sector, the other major domestic consumers of coal in South Africa are the iron and steel sectors, which account for 20% of total demand, followed by Sasol, which uses coal from its own mines – equivalent to 10% of the fossil fuel consumed in the country – to manufacture synthetic fuels and chemicals.

Meanwhile, independent economic risk consultant Rob Jeffreys has warned that a major decline of the coal mining industry and industries associated with it, as a result of the progression towards using less polluting energy sources, will have dire consequences for the economy. In an opinion piece published in October 2017, he calculates that, should Eskom's demand completely fall away shortly after 2050, once the Kusile and Medupi power stations are retired, the coal mining sector would effectively shrink by 46%. This would, in turn, reduce the country's gross domestic product by 2.50%, or R75.20-billion, taking into account the direct, indirect and induced impact.

Coal exports

World's largest thermal coal exporters (in million tonnes)

	2017	2018 f	2019 f	2020 f
Australia	200	197	200	202
Colombia	82	80	81	83
Indonesia	374	377	371	367
Russia	151	154	156	160
South Africa	76	76	77	77
US	33	50	49	47

Source: Australian Department of Industry, Innovation and Science
f – forecast

South Africa is the fifth-largest thermal coal exporter in the world after Indonesia, Australia, Russia and Colombia. It shipped 76-million tonnes of the commodity to overseas markets in 2017, a tally that Australia's Department of Industry, Innovation and Science expects to remain largely flat to 2020, owing to strong domestic demand, shortages at State-owned power utility Eskom and a range of production-, transport-, equipment- and weather-related challenges. Although South Africa is a top-five thermal coal exporter, its contribution to the world's yearly thermal coal trade of about one-billion tonnes is overshadowed by top exporters Indonesia and Australia, whose shipments totalled 374-million tonnes and 200-million tonnes respectively in 2017.

South African producers export their thermal coal mainly through the private-sector-owned Richards Bay Coal Terminal (RBCT), in KwaZulu-Natal, with small volumes going through the Richards Bay and Durban harbours, both in KwaZulu-Natal, and the Maputo harbour, in neighbouring Mozambique.

Despite losing 38 days to bad weather, the RBCT loaded a record-breaking 76.47-million tonnes of export-bound coal in 2017, about 5.10% more than in 2016 and 1.40% more than the previous record of 75.38-million tonnes, which was set in 2015. A further increase to 77-million tonnes is forecast in 2018 on the back of an increase in seaborne coal prices to an average of \$100/t in 2018 – according to consulting firm BMI – as supply tightens. The free on-board thermal coal price from Richards Bay was assessed at \$86/t by consultancy SP Global Platts in July 2018.

Eighty-one per cent of the coal loaded at the 91-million-tonne-a-year-capacity RBCT in 2017 was delivered to India, Pakistan and South Korea, with 10.10% destined for Europe and 7.80% for the rest of Africa.

India is the most important market for South African coal in Asia, accounting for 45% of total exports, according to Minerals Council South Africa (MCSA), formally the Chamber of Mines of South Africa. India started to emerge as a major market for South African coal in 2007, when shipments to that country suddenly increased from 3% of total exports in the preceding year to 13%. While the Indian government has committed to reducing the country's greenhouse-gas emissions by between 20% and 25% from 2005 to 2020, it is likely that India's coal demand will continue to increase in the foreseeable future. This is because electricity supply in the country, which is dominated by coal generation, at 75%, has not kept up with demand growth.

Meanwhile, Pakistan is emerging as a major coal export market, having increased its imports from 3.42-million tonnes in 2013 to 11.20-million tonnes in 2017. Market watchers expect a further increase to 40-million tonnes by 2025 amid a huge coal-fired power station construction programme that is being implemented in conjunction with China as part of the latter's Belt and Road initiative. South Africa currently supplies 60% of Pakistan's coal requirements, with 33% coming from Indonesia and the rest from Afghanistan. Pakistan trading firm Agro Trading executive Sajid Hussain said at the IHS Markit Coal Export Conference, held in Cape Town, in the Western Cape, in February 2018, that Pakistan preferred to buy higher-quality South African coal to maximise the energy value of each tonne of coal imported. As a result, lower-quality Indonesian coal is used mainly for blending with higher-grade material.

Hussain pointed out that South African coal had a significant freight advantage over Pakistan-bound coal from Australia and from more distant suppliers such as the US and Colombia. For this reason, South African coal producers are well placed to get a big share of the expected growth in Pakistan's coal consumption and to compete for markets elsewhere in Asia, such as Sri Lanka, Bangladesh, Taiwan and Malaysia, where MCSA forecasts sizeable demand growth in the foreseeable future. MCSA believes that the South Korean market also presents potential for growth, but points out that the extent of this needs to be ascertained. China, which previously imported significant amounts of South African coal, has taken drastic steps to reduce its carbon emissions, including closing some mines and reducing the number of operating days in the coal mining states from 330 days to 276 days a year.

Hussain said at the IHS Markit Coal Export Conference that South African coal producers were also well positioned to take advantage of any increase in demand from the Middle East, which is expected mainly from industrial operations such as cement factories.

No further growth is expected in the European Union (EU) member countries – especially the Netherlands, Belgium and the UK – which have increasingly closed down coal-fired power stations in favour of natural gas and renewables, such as wind and solar, to comply with environmental legislation passed since the adoption of the Kyoto Protocol. In the Netherlands, for example, consumption for electricity generation declined from 20% of South Africa's total exports in the past to only about 5% in 2011 and, except for 2013 and 2014, the trend appears to be continuing. Shipments to the UK declined from 17% of total exports in 2004 and have been averaging 1% since 2009, while similar reductions have been observed in France, Spain, Denmark and Germany. Italy is the only EU market that has endured but even in that country the trend indicates a decline.

While electricity shortages in sub-Saharan Africa suggest that this region may become a significant market for South Africa's thermal coal in the foreseeable future, MCSA states in its Coal Strategy 2018 document that this potential will be limited by a lack of investment and investment finance.

Another major risk factor for South African thermal coal exports is technology, as some of the country's current and potential markets have invested, or are planning to invest, in high-efficiency, low-emissions (HELE) technology. Unlike its competitors, such as Australia, South Africa is not endowed with the high-grade coal required for the HELE coal-fired power stations, which emit 30% to 50% less carbon dioxide than previous-generation power stations. China, the world's largest coal consumer, currently operates the highest number of HELE coal-fired power stations – 579 – with India having commissioned 49 and Japan and South Korea 44 and 38 respectively. An additional 1 139 plants are planned or under construction, with 575 of these in China, 395 in India, 57 in Vietnam, 52 in Japan, 32 in Indonesia, 18 in South Korea, nine in Taiwan and one in the Philippines.

South Africa is the fifth-largest coal exporter

Picture by Creamer Media

Coal logistics

State-owned power utility Eskom's power stations receive about 115-million tonnes of coal a year, with more than half of this volume delivered by conveyor belt, and road being the second-most used mode of transport, followed by rail. However, with increasing quantities of coal being sourced from mines that are located far from the utility's power stations, transport is becoming a significant cost element.

Illustrating how this was impacting on the utility's finances, energy-sector analyst Chris Yelland told financial daily Business Day in July 2018 that Eskom was trucking coal stockpiled at its Medupi power station, in Limpopo, to the Kendal and Kusile power stations, in Mpumalanga, about 400 km away, at a cost of R500/t. Based on an estimated 200 trucks a day holding 33 t of coal each, Eskom transported about 205 000 t/m at a cost of R100-million, he said.

Eskom, which has contracts with trucking companies that collect coal from mine gates, is investigating how coal can be delivered to its power stations more cost effectively. Speaking at the IHS Markit South African Coal Export Conference, in Cape Town, in February 2018, Eskom primary energy division GM Ayanda Nteta said the utility was considering opportunities to ensure that all its power stations could receive coal delivered by rail, such as joint investments with suppliers in infrastructure such as rail and rail sidings.

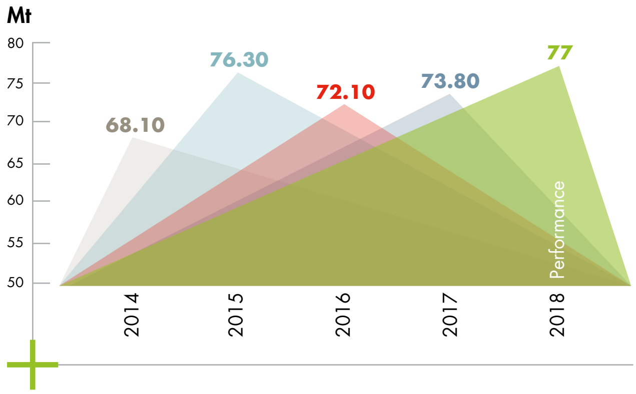
RAIL TRANSPORT

Transnet Freight Rail (TFR), a division of State-owned freight logistics group Transnet, owns and operates the country's rail network, including the dedicated line that links the inland coalfields of Limpopo and Mpumalanga with the Richards Bay Coal Terminal (RBCT), in KwaZulu-Natal.

The coal line – with a capacity of 81-million tonnes a year – comprises the 438 km line from Lephalale, in Limpopo, to the Mpumalanga mining town of Ogies; the 210 km 'coal backbone' from Ogies to Ermelo, also in Mpumalanga; and the 420 km line from Ermelo to the RBCT.

The tonnage railed on the line increased from 73.80-million tonnes in the year ended March 31, 2017, to 77-million tonnes in the 12 months to March 31, 2018. The wagon cycle time improved 1.70% year-on-year to 62.60 hours.

Transnet's export coal volumes



Source: Transnet's Integrated Report 2018

The line achieved a record monthly throughput of 7.20-million tonnes in September 2017.

Realising that increased capacity on the line is key to increasing South Africa's coal exports, TFR has been implementing projects to upgrade yards, electrical equipment and lines, with expenditure to date totalling R2.70-billion. In the Waterberg, it completed the Stage 1 expansion in 2016, with this project entailing the construction of a 1.80-km-long passing loop at Matlabas, which enables 100-wagon trains to cross without disrupting the operation of other trains on the line. Stage 2 is under way and entails incremental upgrades of the existing rail networks and yards by using additional loops, maintaining the existing 20-axle loads and level crossings, strengthening steel bridges, undertaking electrical upgrades and improving train control systems. Once completed, it will increase the Waterberg railing capacity from two-million tonnes to 6.30-million tonnes a year. Transnet states in its 2017/18 annual report that a feasibility study has been funded for Stage 3 to Stage 5 of the Waterberg rail capacity project. The aim is to increase capacity to 24-million tonnes a year.

To further increase capacity – from 81-million tonnes to 132-million tonnes – Transnet is finalising an optimal solution to replace the single-line Overvaal tunnel, near Ermelo, by providing a new double-track tunnel adjacent to the existing tunnel or a double-line deviation to bypass the tunnel.

To release capacity on the coal export corridor, Transnet and its counterpart in eSwatini, Swazi Rail, plan to build a 150 km link from Lothar, in South Africa, to

Sidvokodvoko, in eSwatini, which will transport the general freight currently transported on the coal line. By relieving the coal line of almost all its general freight, TFR will align the line with the coal handling capacity at the RBCT to facilitate an increase in exports, initially from the coal mines in Mpumalanga, but progressively from the Waterberg and eventually from neighbouring Botswana.

The project, which is estimated to cost about R20-billion and for which a feasibility study has been completed, has secured environmental permits and a water-use licence. According to media reports published in 2017, Transnet was in the process of acquiring the 506 ha required for the project on the South African side and discussing the relocation of several households with communities. eSwatini was in discussion with 15 chiefdoms regarding the relocation of 235 homesteads. TFR COO Lloyd Tobias told journalists in January 2018 that a memorandum of understanding for the project had been signed with the African Development Bank and South Africa's State-owned Industrial Development Corporation.

Meanwhile, a rail link extending from the Waterberg to the coalfields in north-eastern Botswana has reached the prefeasibility stage. Should it go ahead, the project will entail Botswana's building 140 km of rail and Transnet 40 km, providing capacity for another 32-million tonnes of coal for the export line.

EXPORT TERMINALS

Richards Bay Coal Terminal export volumes (million tonnes)

2010	2011	2012	2013	2014	2015	2016	2017
63.43	65.51	68.34	70.23	71.29	75.38	72.57	76.47

Source: Richards Bay Coal Terminal

The RBCT, in the deep-water port of Richards Bay, in KwaZulu-Natal, is 29.54%-black-owned and 6.25%-black-women-owned. Its shareholders are 18 South African coal-exporting entities, which include Anglo American, Glencore, Sasol Mining, South32, Exxaro, Optimum Coal Terminal, Koornfontein Mines, African Rainbow Minerals, Tumelo Coal, Umcebo Mining, Kangra Coal, South African Coal Mine Holdings, South Dunes Coal Terminal, Ilima and Mbokodo.

Richards Bay Coal Terminal

Picture by Creamer Media

The terminal started operations in 1976 as a 12-million-tonne-a-year facility and has undergone several expansions that have increased its capacity to 91-million tonnes a year, making it Africa's largest coal export terminal. Of the total capacity, four-million tonnes a year is reserved for junior mining companies under the Quattro scheme. While the RBCT has capacity to export 91-million tonnes of coal a year, Transnet's coal export line can deliver only 81-million tonnes a year.

While the RBCT has investigated the possibility of further expansion to 110-million tonnes a year, the project will be implemented only when demand and capacity justify investment; there are no immediate plans to approve it. However, a machinery replacement programme aimed at improving productivity and turnaround times is under way, with the R1.34-billion first phase having been completed. This phase involved the installation of two new rail-mounted stacker reclaimers and as many shiploaders. These machines were built simultaneously by Chinese company TZME.

The reclaimers have a capacity of 6 000 t/h, compared with the previous machines' 4 500 t/h, while the new shiploaders have a capacity of 10 000 t/h, up from the 8 000 t/h of the machines they replaced. The reclaimers have also reduced the amount of bulldozing required, as their boom lengths have been extended to 60 m – from the previous machines' 40 m, enabling them to reach further into the coal yard. The structural life expectancy of the new machines is more than 40 years.

The Phase 1 project also entailed the reconfiguration of the terminal's five electrical substations and the addition of a new one. A decision on the second phase of the project is expected in the next five years.

Coal exports shipped from the terminal totalled 76.47-million tonnes in 2017, compared with 72.57-million tonnes in 2016, 75.38-million tonnes in 2015 and 71.29-million tonnes in 2014.

While junior coal miners have a yearly entitlement of four-million tonnes at the RBCT under the Quattro scheme, their exports are falling short of this figure, totalling two-million tonnes in 2016 and 1.70-million tonnes in 2017. RBCT CEO Alan Waller told an interviewer in January 2018 that this was partly because of insufficient allocations being made by the Department of Mineral Resources, which has the final say. Some small coal producers are reportedly channelling their coal through traders instead of directly through the Quattro scheme.

Coal from South Africa is also exported from Richards Bay through Transnet Port Terminals' Richards Bay multiproduct terminal and the Navitrade terminal, which is owned by RBT Grindrod Terminals, a 50.1:49:9 joint venture between black-owned RBT Resources and JSE-listed logistics and shipping group Grindrod that caters for smaller coal companies.

The Navitrade terminal exported 1.50-million tonnes of coal in 2017, compared with 1.20-million tonnes in 2016. RBT Grindrod plans to develop the terminal and the adjoining land, which it owns, into a fully mechanised coal export terminal. No timelines have been provided for the expansion, which will be undertaken in phases – from three-million tonnes to 20-million tonnes. RBT Grindrod also plans to develop an inland coal hub that will enable junior coal mining companies to consolidate their shipments, thus achieving economies of scale and making it possible for producers of small quantities to access export markets.

Grindrod also owns and operates the Matola magnetite and coal terminal, in the Mozambican capital city of Maputo, which has a throughput capacity of 7.50-million tonnes a year, with plans to increase this to 20-million tonnes a year in the future. In 2017, the terminal exported 5.20-million tonnes of cargo from established and junior mining companies from throughout the region, including those in South Africa.

Vitol, Trafigura to bid for coal mines once owned by Guptas

Commodities traders Vitol Group and Trafigura Group have entered the bidding process for South Africa's Optimum Coal – a miner under bankruptcy protection that was once controlled by the Gupta family.

The interest from two of the biggest commodities trading houses underscores the strategic value of Optimum's yearly entitlement to ship eight-million tons of coal through Africa's largest export terminal – the Richard's Bay Coal Terminal (RBCT) – for the fuel. While South Africa is well-positioned for exports to India and China, shipments are constrained by limited port capacity. Other investors in the RBCT include mining giants Anglo American, South32 and Glencore.

Bids for Optimum are expected to be finalised by the end of November 2018. The assets are expected to draw other potential bidders in addition to the interest shown by Vitol and Trafigura, including local companies Seriti Resources Holdings and Exxaro Resources. Glencore is reportedly also considering a bid.

Optimum was put into business rescue after members of the Gupta family fled South Africa. The Gupta's holding company agreed to sell Optimum for R2.97 billion rand ($201-million) to Swiss company Charles King SA in 2017. The sale, however, was not completed.

This will be Vitol's second attempt at acquiring the coal-export allocation. The trader teamed up with Burgh Group Holdings in 2016 to buy it from the company part-owned by the Guptas. The world's largest independent oil trader walked away from the deal the following year.

Source: Bloomberg

Labour

According to Minerals Council South Africa (MCSA), the country's coal mining companies employed 81 962 people in 2017, while a further 170 000 jobs were indirectly sustained outside the sector. Employees in the sector are paid R22-billion in salaries and wages each year. However, a new report published by the University of Cape Town's Energy Research Centre in September 2018 forecasts that employment will decline as the coal mining sector comes under increasing environmental pressure, coupled with a loss of competitiveness as renewable-energy technologies are added to the country's electricity mix. Assuming a gradual decline in South Africa's emissions through the retirement of existing power stations, employment in the sector will decline to 28 200 by 2050, the report states. However, the rate of job losses will be faster under scenarios where South Africa moves to meet its 'low' peak-plateau-decline emissions trajectory, in line with what the report calls a '2 oC compatible transition'. However, coal analyst Xavier Prevost predicts that the number of coal mining jobs will increase in the future, as more junior mines are expected to be established, provided the economic situation does not deteriorate further.

South African coal mines are reportedly among the safest in the world. However, the sector's performance has been worsening in recent times, with the number of deaths having doubled from four in 2016 to eight in 2017, and five deaths having occurred from January to the end of April 2018. This makes it unlikely that the target fatality rate of 0.01 for the whole year will be achieved. The deaths reported in 2016 and 2017 equated to fatality rates of 0.03 and 0.06 respectively.

Eighty-six coal mineworkers died in South Africa in 2017

Picture by Creamer Media

Overall, 86 mineworkers died in South Africa in 2017, compared with 73 in 2016, 77 in 2015 and 84 in 2014.

Department of Mineral Resources deputy chief inspector of mines Thabo Ngwenya said in May 2018 that no deaths associated with coal dust explosions had been reported since 2015, with deaths attributable to this hazard continuing to decline since the 1980s.

Two-hundred safety incidents were reported at South African coal mines in 2017, 115 of which were classified as general, which means they were not related to machinery and transportation, falls of ground or other classifiable hazards. Ngwenya suggested this implied general complacency by coal miners towards personal safety.

Meanwhile, although there has been a reduction in the incidence of occupational diseases in the coal mining sector, with a 4% decline reported in 2016, the Southern African Catholic Bishops Council (SACBC) has announced that, working with attorney Richard Spoor, it will institute compensation claims against coal mining companies on behalf of former workers who have developed lung ailments. Should it go ahead, the class action lawsuit, to be pursued on a company-by-company basis, will follow the signing, in May 2018, of a settlement agreement in terms of which a R5-billion trust fund will be established to compensate mineworkers who contracted silicosis and tuberculosis after working in gold mines for prolonged periods. The agreement was the culmination of three years of extensive negotiations with the Occupational Lung Diseases Working Group, which represents African Rainbow Minerals, Anglo American South Africa, AngloGold Ashanti, Gold Fields, Harmony and Sibanye-Stillwater. At the time of the agreement, Pan African Resources, which has recently joined the litigation process, was still considering whether it should sign the agreement.

Spoor said in May 2018 that he and the SACBC would seek compensation for former employees suffering from coal workers' pneumoconiosis – a condition that is similar to silicosis and also known as black lung disease – and chronic obstructive pulmonary disease. He said his law firm had been screening workers for these two conditions and had been running a test case at Sasol Mining on behalf of 22 individuals. It would also screen about 200 employees at Exxaro Resources' Tshikondeni colliery, in Limpopo.

INDUSTRIAL RELATIONS

Strikes are a fairly common occurrence in South Africa, including in the mining industry. To avert them, mechanisms are in place in many sectors to bargain for remuneration. In the coal sector, salary and wage negotiations have, for years, been negotiated centrally by MCSA, representing mining companies and trade unions, with the rationale being that this ensures fairly similar pay and conditions of employment throughout the sector.

However, in January 2017, MCSA – when it was still called the Chamber of Mines of South Africa – announced its intention to have a decentralised bargaining system, contending that the various coal mining companies faced different business and financial circumstances.

However, the intended move was rejected by trade unions, and MCSA – representing Anglo American Coal, Delmas Coal, Glencore, Exxaro Coal Mpumalanga, Koornfontein Mines and Msobo Coal – initiated negotiations with trade unions Solidarity and the National Union of Mineworkers (NUM), which culminated in the signing of three-year wage agreements with the two unions in October 2017 and November 2017 respectively. The agreements averted imminent strikes.

The offer accepted by Solidarity was for wage increases of 7.50% for workers at Anglo American, Exxaro and Glencore, 7% for workers at Kangra and 5% for those at Delmas and Msobo, and there was also provision for housing and travel allowances and four months' maternity leave for female employees.

The three-year agreement secured by the NUM, which was backdated to June or July 2017, depending on the employee category or mine, was broadly for a 7.50% increase or inflation plus one percentage point for lower employee categories in the first year, with differences in subsequent years. For example, Anglo American will award an increase of 8% to 8.50% in 2019, higher than most of the other coal miners. Kangra Coal, however, did not sign the agreement with the other coal mining companies, resulting in a week-long strike that ended when the NUM, representing the workers, signed a three-year wage agreement with the mine for a R600 increase in 2017 and 7% increases for each of the following two years. The parties also agreed on a R1 000 housing allowance increase for 2017, followed by increases of 12% and 14% for 2018 and 2019 respectively.

Environmental considerations

Coal mining often has significant impacts on the environment. These include altered landscapes, lower air quality and the decanting of dirty water and acid mine drainage into water resources. Although technological advances have somewhat mitigated the environmental impacts traditionally associated with mining, eliminating the impacts is impossible, as the coal value chain needs water for its processes, while the processes, in turn, adversely affect the quality and quantity of clean water. Further, in South Africa, coal-rich areas are often located in water-stressed areas or in wetlands that are already degraded or in areas where rivers are overused.

Coal mining companies have attempted to deal with the situation by adopting a two-pronged approach to water management. This entails either minimising the volume of water extracted, polluted and discharged into the environment through reuse and recycling or managing impacts through monitoring, mitigation and offsets. Where water has been treated – in a water treatment plant or through methods such as passive wetland systems – it can be used in the industry for beneficiation and processing, dust suppression and fire control, and as potable water.

Despite coal mining companies' efforts to mitigate their environmental impacts, environmental lobby groups are becoming increasingly robust in their opposition to the development of coal mines. In May 2018, for example, eight community and civil society organisations lodged a judicial review application in the Mbombela High Court, in Mpumalanga, to set aside an environmental authorisation (EA) granted to Indian-owned Atha-Africa Ventures for its proposed Yzermyn coal mine, which they claim is located in a protected area and strategic water resource area. The community and civil society organisations, which are represented by the Centre for EA, say the environmental authorisation was granted despite long-standing recognition of the strategic environmental importance of the area, especially as a water source. They contend that mining would dry up the numerous wetlands in the area, contaminate surface and groundwater and result in the decanting of acid mine drainage.

The review application was coupled with an interdict preventing the start of any activities at the proposed mining site pending the outcome of the review.

Atha-Africa plans to export up to 67.40% of the saleable coal from the mine, with the balance of 32.60% to be sold to Eskom.

Other coal mining projects whose development has been delayed by environment-related challenges include MC Mining's Makhado project, in Limpopo. The project, which MC Mining is developing in partnership with a community trust, a black industrialist and the State-owned Industrial Development Corporation, was successfully interdicted by environmental campaigners in 2014. The order was, however, reversed in June 2018.

In January 2018, MC Mining applied to the DMR and the Limpopo Department of Economic Development, Environment and Tourism (Ledet) to amend the Makhado project's environmental authorisation so that it aligns with a revised project plan, whereby saleable coal will be transported to the Musina rail siding by road instead of rail. Both regulators announced on September 3, 2018, that they had approved the amendment. Shortly thereafter, however, a fresh appeal against the environmental authorisation was lodged by what MC Mining has described as a "narrow interest group". The appeal has been lodged by the same group that had previously unsuccessfully appealed against the original Makhado environmental authorisation.

Civil society organisations have also opposed the Thabametsi and Khanyisa independent power stations, to be built in Limpopo and Mpumalanga respectively. Energy Minister Jeff Radebe said in August 2018 that the privately owned coal-fired power stations must feature the latest technology to reduce harmful emissions.

Meanwhile, in September 2018, coal expert Professor Rosemary Falcon called for greater research in the country on clean coal technologies to reduce the impact of coal during mining and in energy generation. Falcon, who is Fossil Fuel Foundation director and recently retired Department of Science and Technology-National Research Foundation South African Research Chairs Initiative Clean Coal Technology chair, told *Mining Weekly* in September 2018 that, apart from State-owned power utility Eskom's latest power stations, there was no clear or sufficient focus on these technologies in the country. She attributed the limited research on clean coal technologies to South Africa's largely being hard-rock mining country. Moreover, top overseas clean coal technology institutions have shown little or no interest in research and development in Southern Africa, owing to a lack of capacity, encouragement or funding from the region. The institutions that provide funding tend to limit their activities to carbon capture and storage, despite the fact that South Africa has little opportunity to ultimately store the quantities of carbon that are currently produced in the country.

The few clean coal initiatives currently under way include pilot-scale projects being undertaken by the Clean Coal Technology Research Group at the University of the Witwatersrand (Wits) to rehabilitate mined land and use plants such as bamboo species for co-firing in coal-fired power stations to reduce carbon dioxide emissions. The group is collaborating with research and development organisation Mintek, the Wits School of Animal and Plant and Environmental Sciences, as well as the National Bamboo Association of South Africa, several mines and local and international specialists and consultants.

Picture by Creamer Media

Outlook

Despite concerns about greenhouse-gas emissions, coal – which is used to generate about 37% of the world's electricity and plays a crucial role in industries such as iron and steel manufacture – will continue to be a significant energy source for decades to come. Consulting firm BMI states in its 'Industry trend analysis: global forecast to 2027' report that, while coal demand growth in China, the largest user, will slow to an average of 0.50% a year over the next decade, consumption in that country will increase from 3.40-billion tonnes in 2018 to 3.50-billion tonnes in 2027.

BMI's forecast of a continued significant role for coal in the world's electricity generation mix is corroborated by many coal-sector analysts, including those at the World Coal Association (WCA) and the International Energy Agency (IEA). WCA CEO Benjamin Sporton has said that "coal will actually be the single-largest energy source in 2040".

According to the IEA's projections, coal will continue to account for 27% of the world's electricity supply to 2040. It also forecasts that coal-based electricity supply will increase by about 9% by 2040, owing largely to electrification and economic growth, as well as industrialisation, in Asia.

According to Boston Consulting Group (BCG), even though there have been multiple coal-fired power station project cancellations in countries such as India, about 100 GW of capacity is currently under construction in the region. The bulk of this capacity is being constructed in India, Indonesia, Taiwan, Vietnam, Malaysia, the Philippines, Pakistan and Bangladesh, with more projects on the drawing board.

Although on a smaller scale, coal-based electricity demand is also expected to increase in Africa, especially in South Africa, Tanzania, Ghana, Nigeria and Kenya.

Therefore, the future of thermal coal depends on developing countries, as consumption has been declining in developed countries. In Europe, for example, Germany, France, Italy, the UK, Austria, the Netherlands, Portugal and Finland are considering the elimination of coal-fired power stations from 2025 to 2030. Regulatory measures on the continent, including the introduction of a carbon dioxide price as high as $15/t, could drive coal out of the market.

Meanwhile, in the US, shale gas has had a huge impact on coal, leading to yearly declines of about 4.70% in the volumes of coal used for electricity generation over the past decade. Consulting firm BCG predicts that this trend is likely to continue in developed countries, with the degree of substitution varying by region.

BCG notes that, while the growth in Chinese demand for thermal coal is decreasing, the decline is unlikely to be dramatic, pointing to the country's significant addition of coal-fired power station capacity from 2000 to 2016. Consequently, the average age of China's coal-fired power stations is only 11 years. As coal-fired power stations operate for about 60 years, these plants will continue to operate for decades. Further, BCG contends, the coal sector in China is a major employment provider, making it politically unpalatable to implement a dramatic, large-scale shift to renewables.

Evolving technology is also expected to significantly impact on thermal coal demand in the future. According to the WCA, modern plants are increasingly becoming supercritical or ultra-supercritical, compared with the subcritical power stations built in the past, which feature inefficient technology and produce less electricity for every lump of coal burnt. The benefits of the new technologies include better energy value for every lump of coal burnt, which results in the burning of less coal for the same amount of energy output, thus producing fewer emissions. Some emission abatement technologies are currently available and these can be retrofitted to existing power stations.

Meanwhile, South Africa-based coal analyst Xavier Prevost says long-term forecasts of Richards Bay Coal Terminal thermal coal prices of $89.50/t to 2021 point to a decline in export demand as a result of environmental constraints. Consequently, South African coal miners will no longer be able to depend on exports as their main revenue source. They will thus need to refocus on State-owned power utility Eskom by conforming to transformation targets, sell coal to independent power producers or new clients in the inland market, or hope that clean coal technologies will revitalise coal demand.

Meanwhile, BMI forecasts that Chinese consumption of coking or metallurgical coal will decrease from 652-million tonnes in 2018 to 647-million tonnes in 2027 as demand from its steel mills wanes. However, demand for coking coal in the country will continue to be significant, equating to two to three times the demand of the second-largest consumer, India, by the end of the forecast period. China will, however, lose its share of coking coal consumption to India, Japan, Kazakhstan, Ukraine and Turkey. According to BMI's projections, China's share of coking coal consumption will decline from 63% in 2018 to 57% in 2027, while India's share will increase from 11% in 2018 to 17% in 2027 on the back of a strong domestic steel sector.

In terms of price, BMI forecasts that thermal coal prices will decline in 2019 before starting to rise steadily to 2027 as the commodity's supply deficit – caused primarily by strong demand from emerging economies and the trend towards a low-carbon future – increases fivefold from 181-million tonnes in 2018 to 912-million tonnes in 2027. According to the consultancy's projections, the thermal coal price will average \$89/t in the next ten years, compared with \$80/t from 2008 to 2017. However, the coking coal price is expected to average \$156/t in the next decade, compared with \$165/t for the past decade, with the decline attributable to lower demand from the stainless steel industry.

Picture by

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