The South African Coal industry

Presented by

XMP Consulting CC
1. Introduction
2. Global Coal
3. Local Market
4. South Africa’s Export Coal Markets
5. Status of the Industry
Coal Demand 1980-2018

Coal demand trends and projections

Source: IEA Medium Term Coal Market Report 2013
• The World’s proven reserves of coal total about 860 billion tons (World Coal Association 2013)

• This equates to close to 118 years of future supply at current levels.

• Additional coal resources are 17.1 trillion tons, 17 times the current reserves. These could be further explored and developed depending on future trends.
World Coal Production

• Every year for the last 10 years world coal production has increased to meet growing demand.

• In 2013, world steam coal production only increased by 1% to 5,979.3Mt.

• All of this increase has been mainly in Indonesia 485.8Mt, China 3,034Mt and India 526.3Mt. China now accounts for 50.7% of the world steam coal production.

EA Coal Information 2014
World coal consumption in 2013 showed 3% increase over the previous year – due to the impact of the current economic recession.

China, the USA, India, the Russian Federation, Japan, South Africa, Korea, Germany, Poland and Australia account for 87% of the world consumption.

Export of all types of coal rose by 4.2% to reach a record of 1 333.3Mt.
Total Global Hard Coal Production
including steam and coking coal

- 2013 - 7 823Mt
- 2011 - 7 627Mt
- 2009 - 5 789Mt
- 1990 - 3 493Mt
More than 75% of coal reserves lie in the northern hemisphere.

<table>
<thead>
<tr>
<th>Country</th>
<th>Reserves at end 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>108 501</td>
</tr>
<tr>
<td>China</td>
<td>62 200</td>
</tr>
<tr>
<td>India</td>
<td>56 100</td>
</tr>
<tr>
<td>Russia</td>
<td>49 088</td>
</tr>
<tr>
<td>Australia</td>
<td>37 100</td>
</tr>
<tr>
<td>South Africa</td>
<td>32 156</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>21 500</td>
</tr>
<tr>
<td>Ukraine</td>
<td>15 351</td>
</tr>
<tr>
<td>Colombia</td>
<td>6 746</td>
</tr>
<tr>
<td>Poland</td>
<td>4 178</td>
</tr>
<tr>
<td>Canada</td>
<td>3 474</td>
</tr>
<tr>
<td>Other</td>
<td>6 805</td>
</tr>
</tbody>
</table>

World: 403 199
Major World Hard Coal Producers

Source: IEA Coal Information 2014
South Africa is the
- 7th largest producer of coal in the world
- 5th largest exporter of coal
- 8% of world coal reserves (BP Statistical Review 2014)

Coal in South Africa accounts for
- 1st highest foreign exchange earnings in the country
- 2nd largest mining income-earning commodity, beating gold
- 95% of SA energy production
- >90% of carbon reductants in the metallurgical industry
- >40% of petrol and diesel requirements
- >200 major chemicals for 1000s of carbon-based products
South Africa’s Coal Chain 2013

Run-of-Mine Production 333.6 Mt

Stocks
11.9 Mt
209.4 Mt

“Washing”

Screening
124.2 Mt

Local Use 25.9 Mt

Exports 78.7 Mt

69.8 Mt
Discards 74.8 Mt
5.0 Mt

11.9 Mt
Synfuels 42.9 Mt
31.0 Mt

35.0 Mt
Electricity 128.2 Mt
93.2 Mt

11
## Local Sales by User 2013

*(main users)*

<table>
<thead>
<tr>
<th>USER</th>
<th>Mass (Mt)</th>
<th>Price (R/t)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRICITY</td>
<td>128.2</td>
<td>223.7</td>
<td>46.52</td>
</tr>
<tr>
<td>EXPORTS</td>
<td>78.7</td>
<td>691.9</td>
<td>28.56</td>
</tr>
<tr>
<td>SYNTHETIC FUELS</td>
<td>42.9</td>
<td>262.6</td>
<td>15.57</td>
</tr>
<tr>
<td>INDUSTRIES</td>
<td>10.2</td>
<td>401.2</td>
<td>3.70</td>
</tr>
<tr>
<td>MERCHANTS AND DOMESTIC</td>
<td>10.0</td>
<td>451.1</td>
<td>3.63</td>
</tr>
<tr>
<td>METALLURGICAL</td>
<td>5.6</td>
<td>814.3</td>
<td>2.03</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>275.6</strong></td>
<td><strong>392.4</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### Mass (%)

- **46%** ELECTRICITY
- **28%** EXPORTS
- **16%** SYNTHETIC FUELS
- **4%** INDUSTRIES
- **4%** MERCHANTS AND DOMESTIC
- **2%** METALLURGICAL
# Inland Coal Prices 2014

<table>
<thead>
<tr>
<th>Size</th>
<th>Quality</th>
<th>Area</th>
<th>Price FOT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slurry</strong></td>
<td>D Minus</td>
<td>Delmas</td>
<td>R 45.00</td>
</tr>
<tr>
<td></td>
<td>D Minus</td>
<td>Witbank</td>
<td>R 120.00</td>
</tr>
<tr>
<td></td>
<td>D Minus</td>
<td>Middleburg</td>
<td>R 90.00</td>
</tr>
<tr>
<td><strong>Duff</strong></td>
<td>C Grade</td>
<td>Delmas</td>
<td>R 500.00</td>
</tr>
<tr>
<td></td>
<td>B Grade</td>
<td>Delmas</td>
<td>R 550.00</td>
</tr>
<tr>
<td></td>
<td>B Grade</td>
<td>Witbank</td>
<td>R 550.00</td>
</tr>
<tr>
<td></td>
<td>A Grade</td>
<td>Delmas</td>
<td>R 580.00</td>
</tr>
<tr>
<td></td>
<td>A Grade</td>
<td>Middleburg</td>
<td>R 580.00</td>
</tr>
<tr>
<td><strong>Peas</strong></td>
<td>C Grade</td>
<td>Delmas</td>
<td>R 600.00</td>
</tr>
<tr>
<td></td>
<td>B Grade</td>
<td>Delmas</td>
<td>R 670.00</td>
</tr>
<tr>
<td></td>
<td>B Grade</td>
<td>Witbank</td>
<td>R 650.00</td>
</tr>
<tr>
<td></td>
<td>A Grade</td>
<td>Delmas</td>
<td>R 720.00</td>
</tr>
<tr>
<td></td>
<td>A Grade</td>
<td>Middleburg</td>
<td>R 670.00</td>
</tr>
<tr>
<td><strong>Small Nuts</strong></td>
<td>C Grade</td>
<td>Delmas</td>
<td>R 580.00</td>
</tr>
<tr>
<td></td>
<td>B Grade</td>
<td>Delmas</td>
<td>R 650.00</td>
</tr>
<tr>
<td></td>
<td>B Grade</td>
<td>Witbank</td>
<td>R 650.00</td>
</tr>
<tr>
<td></td>
<td>A Grade</td>
<td>Middleburg</td>
<td>R 670.00</td>
</tr>
</tbody>
</table>
Potential New Coal for Eskom

(mainly high-ash Thermal coal)

<table>
<thead>
<tr>
<th>Coalfield</th>
<th>MTIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATERBERG</td>
<td>15 476.0</td>
</tr>
<tr>
<td>WITBANK</td>
<td>10 197.0</td>
</tr>
<tr>
<td>HIGHVELD</td>
<td>3 144.8</td>
</tr>
<tr>
<td>V-SASOLBURG</td>
<td>1 614.3</td>
</tr>
<tr>
<td>SOUTPANSBERG</td>
<td>1 203.0</td>
</tr>
<tr>
<td>SOUTH RAND</td>
<td>1 033.7</td>
</tr>
<tr>
<td>TULI</td>
<td>944.0</td>
</tr>
<tr>
<td>ERMELO</td>
<td>283.0</td>
</tr>
<tr>
<td>KLIP RIVER</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>33 995.8</strong></td>
</tr>
</tbody>
</table>
Seaborne coal demand has been the lowest in years. Prices follow suit. With global demand for coal increasing more than any other energy source.

In years to come China and India’s increase in coal imports will account for more than a third of the predicted increase in global energy demand:

- China has overtaken the USA as the world’s largest energy consumer;
- Asia’s two fastest-growing major economies are burning more of the fuel as economic expansion raises demand for electricity; and
- Asian state-run and private companies were seeking to invest in mines in South Africa and other Southern African countries.
Coal Prices 2014

globalCOAL Indices: Last 3 months (US$)
globalCOAL Weekly Indices: Last 12 Months

- NEWC
- DES ARA
- RB

Graph showing the weekly indices of coal from December 2013 to November 2014, with lines representing the prices in US$ per mt for each region.
globalCOAL Weekly Indices: Last 12 Months

NEWC  DES  ARA  RB
A 50,000t January shipment changed hands at $66.90/t via globalCOAL, with one source saying it was done at around a 20 cent discount to the equivalent swap price, a January 50,000t SA cargo went through at $67/t FOB, 10 cents higher than a trade executed Monday. An identical deal at the same price was then conducted on-screen early afternoon at the same price. Platts assessed the FOB Richards Bay Q1-15 contract at $67.30/t, up 30 cents from Monday, and the Cal-15 at $67.55/t, 45 cents higher. SA 6,000kcal/kg NAR prices maintained their recent upward momentum, with a 50,000t December shipment changing hands at $66/t FOB, up 30 cents from Thursday’s close. A trading source said he did not believe that SA producers would push out their tons to the heavy extent they have done during previous year-ends in order to meet export targets. I think the majority of spot RB tonnage is in the hands of traders, not producers, he commented.

Platts assessed FOB Richards Bay coal basis 6,000kcal/kg NAR for loading within the next 7-45 days, November 28-January 5, at $65.85/t, up 15 cents on-day.

— Gareth Carpenter — Jaime Concha
Would You Add Coal to Your Portfolio?

Nov 14, 2014 (Zacks.com via COMTEX News Network)

Although stricter measures to control pollution have had an impact on the use of steam coal for electricity, coal still holds an advantageous position due to its wide availability and lower cost compared to other fossil fuels and renewable sources of energy.

World Coal Association says we currently have 860 billion tons of proven coal reserves i.e. there is enough coal to last nearly 118 years at current rates of production.

Coal dominates power generation; used to generate 40% of the electricity in the USA, absorbing about 93% of total USA coal consumption. Plants and industries use coal to make chemicals, cement, paper, ceramics and metal products, to name a few. Methanol and ethylene, which are made from coal gas, are used to make products such as plastics, medicines, fertilizers and tar.

Hard coal (metallurgical or coking coal) is key ingredient in the production of steel. Nearly 70% of global steel production depends on coal.

The increase in coal demand in China and India has been a key price driver since the end of the USA recession in 2009. This trend is to continue in the future due to the growing energy needs in India, China and South Korea. IEA coal fired units in 2012 were 1 627GW. They are expected to increase by 1 112GW at the end of 2035. A major portion of these additions will be in India and China.
The USA has reduced emissions much faster than Australia and that the gap will grow. Obama and China's President have started the ball rolling.

The Australian National University says their emissions are planned to fall by only about 0.2% a year. Obama's will cut emissions by 2.5% a year. Australia will have to make big cuts to keep pace with the USA. Of course the USA has been blessed with a boom in low-carbon shale oil gas, and Obama will implement his tough policy of compulsory cuts to emissions from power plants.

Xi Jinping's declaration that China intends to reach peak carbon emissions in 2030 will change the debate for Australia as much as Obama's pledge, but in a different way. The key issue is what China's pledge will mean for Australia's coal exports. Coal is not dying soon but the consensus is that China's coal use will drop well before 2030 if it is to hit the timing announced.

China will have to cut coal, not with renewable energy but with nuclear and relatively low-carbon imported natural gas. Australia says that developing countries are worse than rich countries because their economies are less efficient and have a smaller low-emissions sector. "It would imply that all of the effort would happen in developing countries and Australia could sit and wait for the rest of the world to catch up."
A report of the IEA has revealed that Australia would play a major role in meeting the world’s growing energy demands, specifically in coal. In its ‘World Energy Outlook 2014’, the IEA said that primary energy demand would be about 37% higher by 2040, More demand to come from India, South-East Asia, the Middle East and sub-Saharan Africa. Then, primary energy supply is expected to be divided into four almost-equal parts: oil, gas, coal and low-carbon sources. Responding to the report, the Minerals Council of Australia (MCA) said that for Australian coal was “clearly positive”, as it predicted that Australia would be the world’s top coal exporter by 2030. Global coal trade will grow by 40% by 2040, with high-quality Australian coal supplying 2/5 of that growth. The MCA said that this hit activists’ claims that coal risked becoming a “stranded asset”, adding that claims of the Greens, were in tatters. The demand would be driven by the Asian region, with China’s coal capacity increasing by 420 GW in 2040, 40% more than the entire existing USA coal generation capacity, and India the world’s largest coal importer by 2025, with imports trebling by 2040. Coal demand in South-East Asia would quadruple by 2040, with coal use overtaking the USA, while coal demand would also grow in Africa, Latin America and Eastern Europe. Queensland CEO Michael Roche said the outlook was positive despite the current downturn in prices. The IEA said fossil fuels would still make up about 75% of global energy supply by 2040. The MCA said that the strong outlook for Australian energy exports over the medium term meant jobs, economic growth and revenue growth for federal and state governments across the country.
The Minerals Council of Australia (MCA) has repeated PM Tony Abbott’s views that fossil fuels will remain an integral part of Australia’s energy mix. “For the foreseeable future, coal is the foundation of our prosperity,” Abbott said. “Coal is the foundation of the way we live because you can't live without energy. For now and the foreseeable future, the foundation of Australia's energy needs will be coal.”

Abbott said that to raising living standards in less developed countries, and to maintain or improve living standards in Australia, “making the best use of coal” had to be seriously believed.

The MCA said that renewable energy would contribute to energy, the total demand could not be met without the use of fossil fuels. “There is no escape from extreme poverty without cheap energy and coal is the best option. In Asia the cost of electricity from coal is half the cost of gas, and more affordable than any alternative.” The new coal technologies are rapidly reducing carbon dioxide (CO2) emissions from coal, and new plants are delivering electricity at nearly half the CO2 emissions of the global average. Pearson said that contrary to “hysterical” claims by the Australian Greens, a strong future for coal and lower CO2 emissions were not mutually exclusive.
Indian Prime Minister Modi will invite Australia to play a key role in supplying India's immense appetite for energy. In an address in English, the leader will call for stronger economic ties between the nations. The PM seen by many Indians, as a transformative leader for the nation - wants to bring electricity to India's 300 million citizens without it while building power its expanding industrial and IT sectors. He supports a new mega-mine in Queensland to be operated by India's Adani.

Australia and India are negotiating a "comprehensive economic agreement" but the trade relationship is seen as poorly developed. Two-way trade between the countries was $15 billion in 2013, just one tenth of the trade between Australia and China.
BRISBANE, Australia, Nov 16 (Reuters) - Australian Prime Minister Tony Abbott said on Sunday the Group of 20 leading economies had signed off on package of measures to add an extra 2.1% points to global growth over five years, with progress to be reviewed by the IMF and OECD.

Abbott also said the G20 would launch a global infrastructure initiative, and said energy ministers of the group would meet for the first time next year.

Australia, as the G20 host, had sought to keep the focus on economic issues, but much of the meeting has been overshadowed by the crisis in Ukraine and the issue of climate change.
It's easy to be cynical about summit meetings. Once in a while, however, something really important emerges. And this is one of those times: The agreement between China and the USA on carbon emissions is, in fact, a big deal. But the principle that has just been established is a very important one. Until now, those of us who argued that China could be induced to join an international climate agreement were speculating. Now we have the Chinese saying that they are, indeed, willing to deal.
China’s recent coal policy measures to protect its domestic coal industry, may reduce growth in coal imports. The changes did not mean a decline in coal use, the Bureau of Resources and Energy Economics said. China imported 13.4Mt of metallurgical coal during the 3rd quarter, down 26% on the 2nd quarter and down by 31% on the previous period. In thermal coal, China said that it may affect the import of thermal coal. The announcement of restrictions on consumption of high ash and sulphur coal from Jan 1, 2015, is expected to have a limited effect on imports and was more likely to affect domestic coal. In Oct, China applied a tariff of 6% on thermal coal imports to support the domestic industry. China’s imports of thermal coal declined by 18% year-on-year during the 3rd quarter, to 49.7Mt. Australia’s exports to China increased by 1.3% year-on-year to 11.8Mt. While the volumes increased, thermal coal export values declined by 17%.
Thermal coal steadies as top coal exporter plans temporary mines closure

14-Nov-2014 20:23 Sarah McFarlane; Reuters Messaging

LONDON - Thermal coal prices held above a more than seven-year low on Friday as a temporary mines closure by the world's largest exporter of thermal coal, Glencore helped support prices. Glencore plans to close its Australian mines for three weeks to help erode the global supply glut that pushed prices to multi-year lows. The company states that more than 30% of Australia's coal sector runs at a loss. The coal market has been oversupplied for years, with prices steadily declining since 2011 as production increased. Traders said the 5Mt reduction in output would have little impact on the billion tons a year global market.

Investec said that Glencore "appears to have taken the decision to help balance the market, hoping that others may follow suit".

China, the world's top producer/consumer of coal, is studying a proposal to cut coal export taxes to 3% from the current 10% to help local miners. Such a cut would have limited impact on Asian seaborne supplies as Chinese miners have high production costs and exports would still be uncompetitive compared to the top two coal shippers, Australia and Indonesia.
LONDON, Nov 17 (Reuters) - Russian coal miner Kuzbassrazrezugol will cut its production by 2.3Mt in 2015 due to "unfavourable international market conditions", the company said.

Kuzbassrazrezugol produced 30.8Mt of coal for export in 2014 from its mines in Siberia.

Glencore Plc GLEN.L, the world's largest exporter of thermal coal, said last week that it plans to shut its Australian mines for three weeks, cutting output by 5Mt in 2014.

Coal prices have been hitting multi-year lows due to demand growth failing to keep pace with production increases.
In South Africa, Iron ore and Coal fire up resurgence of mining

Mining output made a surprising rebound in September, soaring to an annualised 5.3% from a revised 9.2% fall in August. The main contributors to the growth were iron ore, coal, and manganese ore. Seasonally adjusted mining production increased by 7% month on month while it increased by 0.7% in the third quarter compared with the previous one.

Nedbank said despite the improvement in production in September, mining activity was likely to remain soft in the coming months as a slowdown in global growth fed into lower commodity prices while infrastructure constraints locally keep output relatively weak.

The SA Chamber of Mines (CoM), said: "It was a pleasing result. There was a momentum on volumes but prices are still weak." CoM said coal production was up 35% to date because of volumes of exports.
Turkey has one of the fastest growing global economies. Its rapid economic expansion, along with a growing population and increasing industrialisation has triggered a general increase in energy demand. Energy resources are limited to lignite and smaller amounts of hard coal. As a result, there is a heavy dependence on imported sources of energy.

The main hard coal producer is the Turkish Hardcoal Enterprise (TTK), responsible for hard coal: essentially all reserves are owned by this company. As new coal-fired generating capacity comes online, the scale of coal imports is expected to increase. Restructuring the hard coal sector is aimed at increasing production to around 12Mtpa by 2023. Although this would help, the country will still need to rely on imports for the rest. There are a lot of coal-related developments in the pipeline and some ambitious targets to be met. Even if some of these fail to materialise, the next few years will be interesting and busy, for the Turkish energy sector.
Cost pressure, weak international demand, low commodity prices and labour unrest negatively affected the SA mining industry in 2014. These are the findings of PwC sixth edition of SA Mine, a series of publications highlighting trends in the industry. According to the report, the decrease in profitability resulted in the contraction in market capitalisation of South African mining stocks. This decrease follows international trends. Mining companies worldwide are plagued by higher input costs and lower prices. The weak Rand protected the South African industry from slipping into serious decline but having the comfort of a fragile currency is not sustainable in the long term.

“The mining industry still adds significant value to the SA economy with regards to GDP contribution, employment, tax and export revenues. Leadership will be required from all participants to ensure long-term optimisation of the industry as opposed to the threat of instant gratification claims,” says Hein Boegman, PwC Mining African Leader.
Historical Trade and Price Trends 2014

Traditional Export Flows

› Atlantic: South Africa, Colombia and USA to Europe
› Pacific: Australia and Indonesia to North Asia with surplus to Atlantic Basin

Recent Trends

› Decreasing Asian demand, especially from China
› Decreasing demand for ARA (reflecting EU new policies.)
› Influx of Russian coals to Europe
› South African diverted to India and Middle East consumers.
› In 2013 SA exports to Asia rose to 34Mt, exports to EU decreased to 10.5Mt.
› In 2014 exports to Asia were 30.3Mt, to EU 14.3Mt (from Jan to Oct)
The EU, once main market for SA exports, shows an increase to 25%, while the Far East a decrease to 60%. Future trends focus on the Middle East and Africa, while the EU market, depending on future prices could still be a potential big market for SA.
Last year exports, show the difference between SA exports to the main markets i.e. Europe and the Far East.
Delivered Steam Coal Prices to ARA

ICR Coal Statistics Monthly

[Graph showing trends in coal prices from 1992 to 2014]
Delivered Steam Coal Prices to Asia

ICR Coal Statistics Monthly

Delivered Steam Coal Prices to Asia

Jan-98  Jan-00  Jan-02  Jan-04  Jan-06  Jan-08  Jan-10  Jan-12  Jan-14

0  40  80  120  160  200  240
South Africa Coal Future

• Despite the rapid increase in renewable energy sources to 1.6% of the total, fossil fuels still provide the major share of power generation with coal alone accounting for 85.6% of South Africa’s electricity, a situation that will not change in the near term.

• As a result of the current lack of incentives and capital to implement new coal projects, the production has remained static, but because some of the older big mines resources are almost exhausted, production will soon will drop drastically. (Coal cliff.)

• Inland prices have increased continuously and some better grades fetch now higher prices that similar grades in the seaborne market.

• Exports are constrained by lack of demand and extremely low prices.
Coal mining provides jobs for the long-term.
According to the DMR, coal mining provides more than 86,478 jobs now, this figure will increase, as more smaller mines need be opened in the future, if the investment situation improves.

Coal mining jobs fuel other jobs.
For every coal mining job, many additional are created elsewhere as coal is the mainstay of the economy. In other words, coal mining keeps some millions of people – including coal miners – on the job supporting themselves and their families.

Coal mining jobs are relatively well paid and stable.
If mines were closed down, or become unprofitable all those jobs will be lost, creating unemployment and poverty.

Coal is abundant and affordable.
Coal supplies 85.6% of the electricity consumed by SA. Electricity cost in SA still is one of the lowest in the world (in spite of the regular increases).
South African Resources and Reserves

- Coal seams are being worked out in current traditional mining areas – considerable resources are available in further afield coalfields.
- Coal qualities are reducing as the better qualities are being mined out and/or exported – new technologies are being introduced which can utilise low grade coals – UCG, FBC, Supercritical PF, IGCC, etc.
- Alternative coalfields are a greater distance from the business hub and lacking in water and logistics – dry technologies are fast developing; on-site processing with transmission lines is under review.
Conclusions

• Most collieries are now optimising their coal production to supply coal to the inland or export market, depending on the revenue.

• Exports (in my view) will never recover the glamour they used to have. Due to limited tonnages exported, more low-ash coal (and high-ash) will be traded inland, at higher prices, very competitive to export prices.

• The Waterberg Coalfield, with potential very large resources, can not be exploited until the area’s infrastructure is suitable upgraded.

• New mines are needed now to supply more coal to Eskom and future independent power producers (IPPs). Export coal cannot increase until the present coal glut vanishes.

• Although there are other sources of energy in the country, they will never be able to compete with coal in price and reliability of supply.
Thank You!

Xavier Prevost
Senior Coal Analyst