

Coal Fact Sheet



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1. Introduction

Coal is the major primary energy source for South Africa. More than 90% of the country's electricity, approximately 30% of the liquid fuel, and approximately 70% of its total energy needs are produced from coal. Coal also plays a significant role in supply to the South African chemicals industry, is an essential component of its steelmaking industry and provides in excess of R 35 billion in export revenues.

South Africa has an estimated 32 billion tonnes of coal reserves, with approximately 70% of these resources found in the Waterberg, Witbank, Highveld and Ermelo coal fields, with the remainder in the Sasolburg, Free State, Springbok Flats and other smaller fields. Given existing and planned power generation expansion in the country, domestic coal demand is expected to grow, at least within the short to medium term. Eskom's demand is projected to increase by about 40% to 2020. Analysis of existing operations and new projects indicates potential increase in South African coal production to 359 Mt by 2020.

1.1 Global Market Overview

Global coal trade is also set to grow significantly during the next two decades. Absolute growth in coal consumption continues to substantially exceed all other energy sources. Coal accounted for nearly 30% of world energy consumption in 2010, its highest share since 1970, while its share is now over 70% in China and nearly 53% in India. According to International Energy Association figures, coal consumption has grown over 4.8% per annum on average over the last ten years (7.6% in 2010, while both China and India increased coal consumption by over 10%).

Current forecasts are of energy demand growth of around 50% and electricity demand growth of around 85% to 2035. Reflecting these increases, over the last 10 years, seaborne thermal coal trade has increased by 75%, showing average growth of 26 Mt a year. Nevertheless, over this period, South Africa's coal exports have stagnated (RBCT exports in 2000 were 66.9 Mt, vs 63.4 Mt in 2010). Seaborne coal demand is expected to grow at a 5.8% compound annual growth rate (CAGR) over the next twenty years reaching 2.1 billion tonnes by 2030.

Coal can be transported to demand centres quickly, safely and easily by ship and rail. A large number of suppliers are active in the international coal market, ensuring a competitive and efficient market. Coal markets today are very dynamic: a variety of qualities are traded, new price indexes have been created for different qualities in different regions and an

increasing amount of paper trading is taking place. Coal is traded all over the world, with coal shipped huge distances by sea to reach markets. Overall international trade in coal reached 1383 Mt in 2014; while this is a significant amount of coal it accounts for about 25% of total coal consumed.

Most coal is used in the country in which it is produced. Transportation costs account for a large share of the total delivered price of coal, therefore international trade in steam coal is effectively divided into two regional markets:

Atlantic market - made up of importing countries in Western Europe, notably the UK, Germany and Spain.

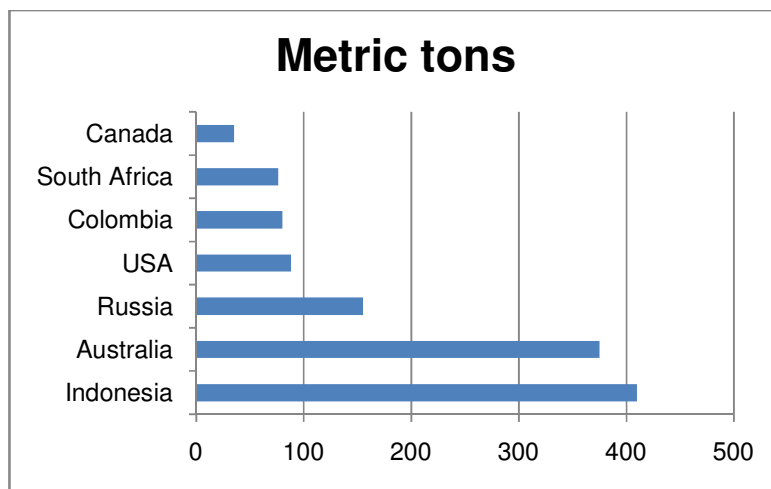
The Pacific market- this consists of developing and OECD Asian importers, notably Japan, Korea and Chinese Taipei. Indonesia remains the world's largest coal exporter. It exported 410 Mt of coal in 2014. Australia remains the world's largest supplier of coking coal - exporting 180 Mt of coking coal (as well as 194 Mt of steam coal).

Transportation

The way that coal is transported to where it will be used depends on the distance to be covered. Coal transportation is generally carried out by conveyor or truck over short distances. Trains and barges are used for longer distances within domestic markets, or alternatively coal can be mixed with water to form coal slurry and transported through a pipeline.

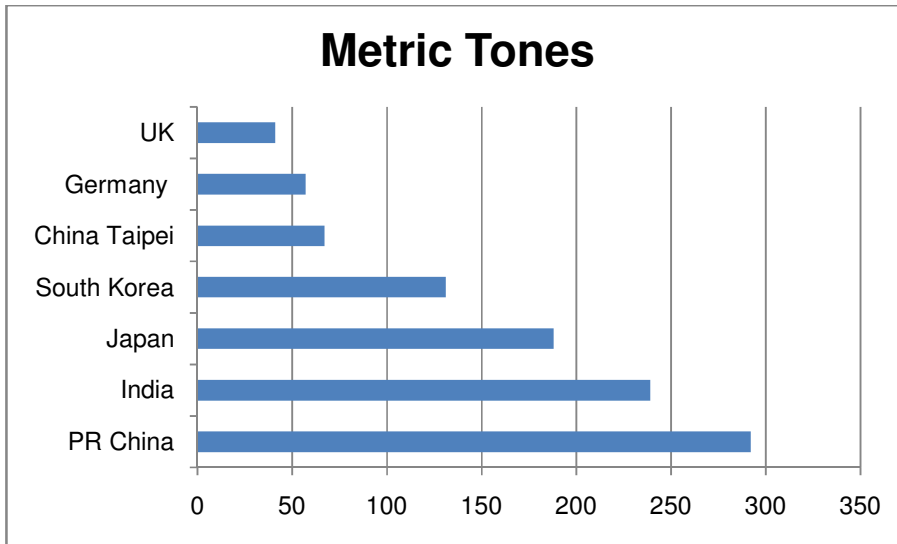
Top coal exporters and importers

Figure 1: Top exporters in metric tonnes



Source: IEA

Figure 2: Top importers in metric tonnes



Source: IEA

Coal pricing

Coal prices have historically been lower and more stable than oil and gas prices. Coal is likely to remain the most affordable fuel for power generation in many developing and industrialized countries for decades. In countries with energy intensive industries, the impact of fuel and electricity price increases is compounded. High prices can lead to a loss of competitive advantage and in prolonged cases, loss of the industry altogether. Countries with access to indigenous energy supplies, or to affordable fuels from a well-supplied world market, can avoid many of these negative impacts, enabling further economic development and growth. Without robust demand growth from China and the developed economies, there is likely to be little support for prices. Hence, the world is unlikely to see a return of US\$100/t prices for thermal coal, prices are instead expected to stay around US\$60/t FOB to 2020. The net effect of prices at these levels will be that export-oriented countries, such as Australia, Indonesia and Colombia, will have to focus on reducing operating costs to stay competitive in the seaborne market. These countries will increasingly close their higher-cost smaller coal mines, with large expanding opencast mines taking their place.

1.1.1 World Production Statistics

Total world coal production

World coal production declined in 2014 for the first time this century as production fell by 0.6% or 45 Mt after 14 straight years of growth. This decrease accelerated in 2015 to 221 Mt, or 2.8% lower, as combined production of all coal types fell to its lowest level since 2010. This reduced level; however, was still 3.07 Gt (66.2%) higher than production in 2000.

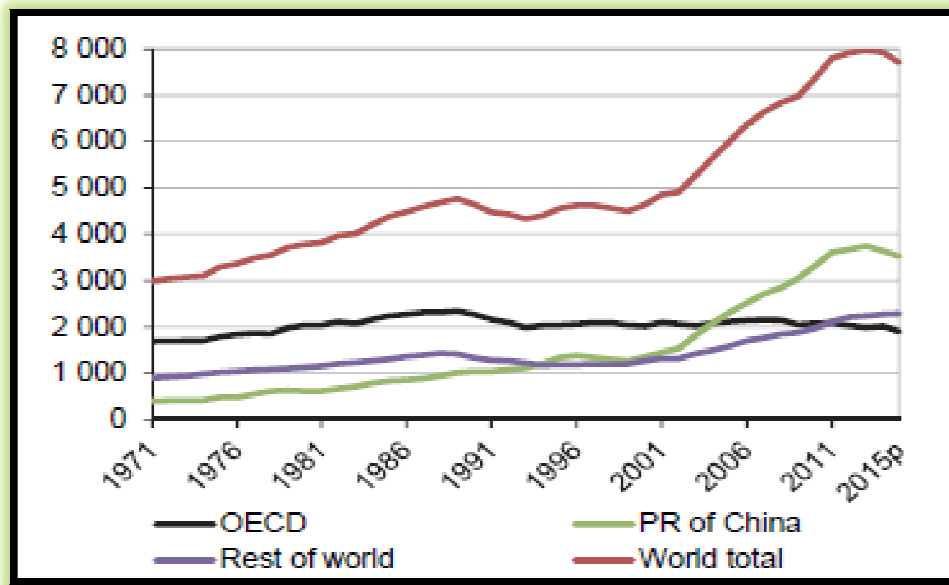
Table 1: Total World Coal Production (Mt) by coal type

	2013	2014	2015
Steam Coal	6064.1	6006.2	5811.4
Coking Coal	1076.5	1107.6	1089.9
Lignite	834.0	815.9	807.4
Total	7974.6	7929.7	7708.7

The People's Republic of China has remained the world's leading coal producer, as it has been since 1985, with 3 527.2 Mt of total coal produced – a decline of 113.0 Mt from 2014. This annual decrease was nearly matched in magnitude by the United States as their total coal production decreased by 105.4 Mt or 11.5% to 812.8 Mt, as demand for coal exports from the United States fell sharply by 24.0% and national demand decreased by 15.0%. This disparity between supply and demand also resulted in 42.6 Mt of coal being added to stock build. Putting these two declines in some context, there are currently only ten coal producing countries that produce more than 100 Mt/y, and so, China's decline was more than the entire 2015 production of Kazakhstan, and the United States decline was more than the entire 2015 production of Colombia, the world's 4th largest coal exporter.

Other countries with notable declines in 2015 included Ukraine with a tentative estimated fall of 22.8 Mt, and Indonesia (-15.4 Mt). Declines in Ukraine were due to turmoil in the Eastern Oblasts of Donetsk and Luhansk in the second half of 2014 continuing through 2015, while declines in Indonesia were partly due to current weaker demand for Indonesian coals in China, and followed on from a smaller decline of 5.1 Mt in 2014. On the other side of the ledger, India (+33.8 Mt), Australia (+19.9 Mt) and the Russian Federation (+16.3 Mt) all increased production in 2015.

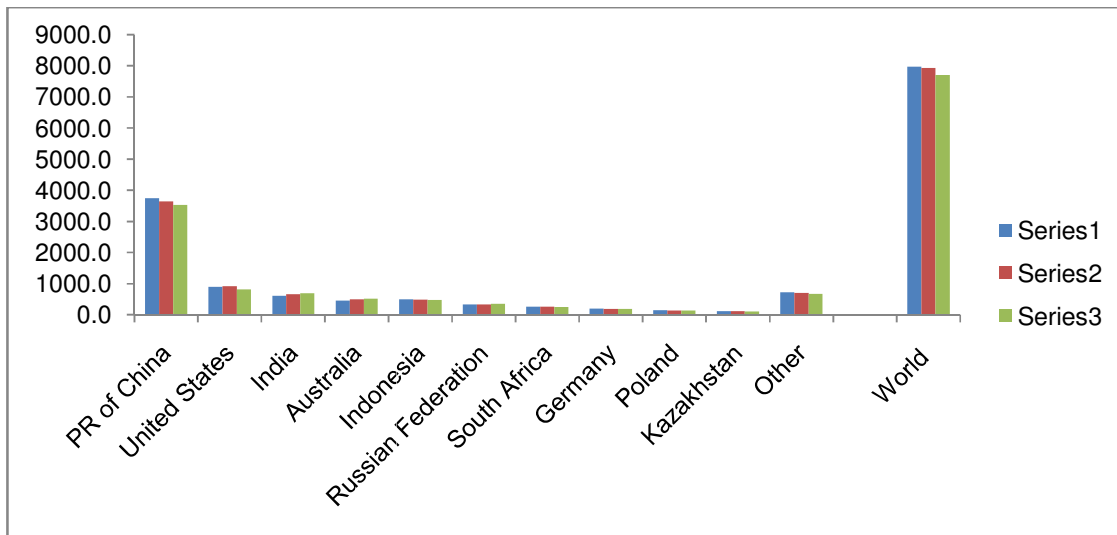
Figure 3: World Total Coal Production (Mt)



Source: IEA

Global production of all primary coal types passed 3 Gigatonnes (Gt) in 1972, 5 Gt in 2003, 7 Gt in 2010 and peaked 26 Mt shy of 8 Gt in 2013. The extremely rapid growth between 2000 and 2011 was largely due to growth in production in (and later, trade to) the People's Republic of China. Since 2000, production in China has still increased by 160.3%, despite falling by 5.9% since 2013, while production also increased in the rest of the non-OECD countries by 80.2%. In comparison, growth in total coal production in the OECD was 0.2% between 2000 and 2014, however it declined by 5.9% in 2015p, which was the largest annual decline on record for OECD production in both absolute (-120.1 Mt) and relative terms. Historically, OECD coal production as a percentage of global production was 56.5% in 1971 when world data began, and declined relatively steadily to be 43.5% in 2000, before falling sharply to be 24.7% in 2015.

Figure 4: Major coal producers (Mt)

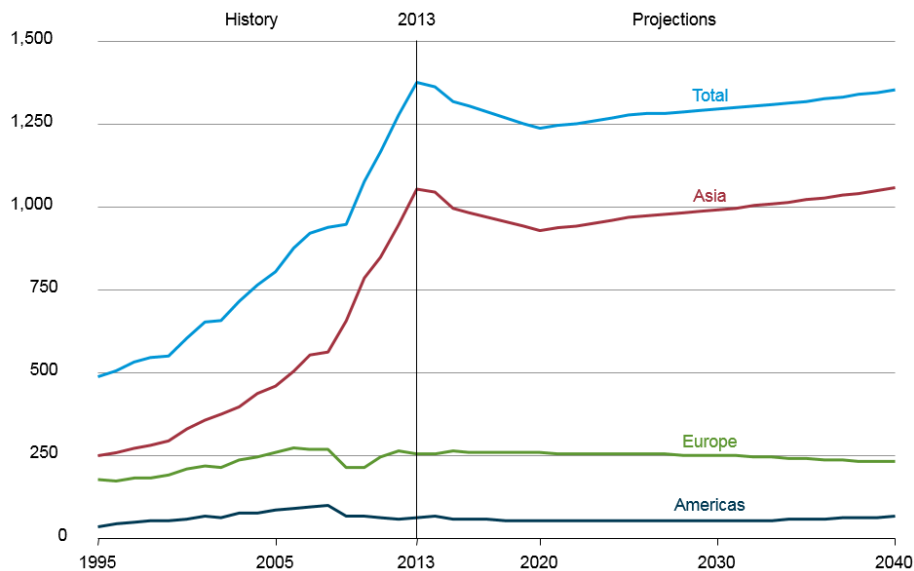


Source: EIA

1.1.2 World Coal Imports, Exports, Earnings and Composition

For the three major coal-importing regions represented in IEO2016, overall demand for coal imports in the Reference case is nearly the same in 2040 as in 2013, with total coal imports to Asia slightly higher in 2040, imports to Europe/Other slightly lower, and imports to the Americas in 2040 about the same as in 2013.

Figure 5: World Coal Imports by major importing regions, 1995-2040



Source: EIA

Asia is the predominant destination for coal exports, with the region's share of total world international coal imports ranging from a low of 75% in 2020 to a high of 78% in 2040. The projected trend for Asian coal imports mirrors that of global demand for coal imports, declining from 1,053 MMst in 2013 to 927 MMst in 2020 and increasing to 1,057 MMst in 2040. The initial decline in Asia's coal imports through 2020 is the result of declining imports to China and India, by 183 MMst from 2013 to 2020. From 2020 to 2040, coal imports to Asia increase by 130 MMst. Coal imports to China and India combined stabilize, with imports to India (primarily coking coal) increasing by 58 MMst and imports to China declining by 50 MMst. Much of the overall growth in coal imports to Asia between 2020 and 2040 is projected for Vietnam, South Korea, Taiwan, and Malaysia. Vietnam's electricity demand is expected to increase substantially in future years, and the government's energy plan indicates that much of the increase will be met by generation from new coal-fired power plants. Coal-fired generating capacity in the countries of non-OECD Asia (including Vietnam, Taiwan, and Malaysia but excluding China and India) increases by 33 gigawatts from 2020 to 2040. In South Korea, coking coal accounts for nearly all of the 25 MMst of incremental growth in coal imports from 2020 to 2040. In the Europe/Other region, total coal imports increase slightly, from 255 MMst in 2013 to 263 MMst in 2015, then decline to 230 MMst in 2040. Coal becomes a less significant component of the region's fuel mix for electricity generation, with most European countries placing greater emphasis on renewable energy and natural gas for electricity generation. The relatively modest change in imports through 2040 belies some significant shifts within the region. Growth in coal imports for some countries, such as Turkey and Morocco, partially offsets declines for other countries in the region, including the United Kingdom, Germany, Spain, and France.

Environmental initiatives in Europe include efforts to reduce emissions of sulfur dioxide, nitrogen oxide, and particulates, leading to some significant retirements of coal-fired generating capacity and the phasing out of domestic hard coal production in Germany by 2018. Restrictions on carbon dioxide emissions, primarily based on the European Union's Emissions Trading System (ETS), are another potential issue for Europe's coal consumption and imports. Thus far, however, carbon dioxide emission prices have been relatively low and have not significantly affected Europe's coal demand. In contrast, the United Kingdom's recent doubling of its Carbon Price Support (CPS) tax (to \$28 per metric ton CO₂ equivalent in early 2015, which is in addition to the European Union's standard ETS costs) did lead to substantial declines in both coal-fired electricity generation and coal imports for the year..

The countries of OECD Europe accounted for more than 90% of total seaborne coal imports to the Europe/Other region in 2013, and they will account for only slightly less than 90% in

2040. Although there is significant overland coal trade among several countries in the non-OECD Europe and Eurasia region, only seaborne shipments of coal for Europe and Asia are represented in EIA's projections, primarily because of data availability problems and the increased complexity associated with modeling non-seaborne coal trade.

Coal imports to the Americas decline from 62 MMst in 2013 to a low of 52 MMst in 2020, followed by an increase to 67 MMst in 2040. Steam coal imports decline from 37 MMst in 2013 to 32 MMst in 2020, then rise to 37 MMst in 2040, while coking coal imports increase from 25 MMst in 2013 to 29 MMst in 2040. Brazil, which has substantial iron ore resources and was the world's ninth-largest producer of pig iron in 2013, accounts for nearly all the growth in coking coal imports to the Americas region. Relative to global coal trade, the coal import market for the Americas is relatively small, accounting for only about 5% of the world total in both 2013 and 2040.

Exports

Based on the relatively flat outlook for world coal imports, both worldwide and in each of the three major coal-importing regions, exports from some regions increase while exports from other regions decline. The lack of growth in total world coal imports represents a substantial change to the long-term historical trend of continuous annual growth, which led to substantial increases in coal exports for a number of regions. In the IEO2016, regions whose coal exports increase from 2013 to 2040 include Australia (85 MMst), Southern Africa (23 MMst); Eurasia (19 MMst), and South America (27 MMst). On the other side of the ledger, declines in exports from 2013 to 2040 are projected for Indonesia (-95 MMst), the United States (-59 MMst), and Vietnam/North Korea (-28 MMst).

Most of the world's coal trade consists of steam coal. In 2013, the top five exporters of steam coal were Indonesia, Australia, Eurasia (primarily Russia), South America (primarily Colombia), and Southern Africa (primarily South Africa). Indonesia, which was the world's largest exporter of steam coal in 2013, remains the top exporter through 2040. The three top exporters of coking coal in 2013 were Australia, the United States, and Canada; and despite a substantial drop in coking coal exports from the United States and increases in exports from Southern Africa and Eurasia, the same countries continue to be the top three exporters of coking coal through 2040.

A substantial portion of the growth in coal exports projected for Australia and Southern Africa from 2013 to 2040 is attributable to increases in coking coal imports to Asia. Australia's exports of steam coal also grow somewhat, primarily as the result of recent improvements in

coal mining productivity that have improved the cost competitiveness of their exports relative to those from other regions. The projected increase in coking coal exports from Southern Africa is attributable primarily to investments in new mining capacity and transportation infrastructure that are underway in Mozambique with the goal of exploiting its substantial deposits of coking-quality coals

Due to its necessity as a fuel for the generation of electricity and other commercial usage in the world, coal is a highly traded commodity. Besides being the primary source of electricity in South Africa, coal is also converted into liquid through the Fischer- Tropsch process by SASOL to produce liquid fuel (synthetic fuel), providing the country with a third of the liquid fuel requirements. Its price has risen from 30 US dollars per ton in 2000 to around 123.50 US dollars per ton in June, 2008.

Despite the global commodity boom in coal trade in recent years, the South African coal mining sector experienced a decline in exports of 6.3 percent exporting only 63.7 million tons in 2008. The decline was mainly due to lower coal transportation (rail), inadequate rolling stock and operational constraints, all attributed to TRANSNET. The other causes of decline in coal trade included production shortages (permits and rain problems) and the diversion of some export quality coal back to ESKOM in order to improve power station depleted stock levels.

The Intercontinental Exchange (ICE) coal trade has Rotterdam as the centre for Europe and Richards Bay for South Africa as trading coal terminals. Coal is traded in either contracts or spot prices in United States dollars (USD) in units of 5 000 tons. The Richards Bay Coal Terminal handling capacity has been 72Mtpa and has presently reached 91Mtpa in 2010.

2. South African Coal Industry Overview

The key role players in the South African coal-mining industry supply chain comprise mining companies, government departments responsible for minerals and environmental affairs, domestic and export coal customers; rail logistics company TRANSNET, the main coal export terminal at Richards Bay and the Chamber of Mines of South Africa. The critical roles played by the leading domestic customers/consumers (ESKOM and SASOL) and export coal are emphasised.

ESKOM

ESKOM is a South African government-owned power utility company that consumes the bulk of coal produced in the country as fuel for the generation of electricity through its current 13 coal-fired power plants which generate about 88 per cent of the national electricity. ESKOM consumes approximately 50 percent of the coal produced in South Africa and approximately 66 percent of the total domestic coal consumption.

TRANSNET

TRANSNET is featured as one of the most important logistics companies in the coal industry. The railway service is predominantly used to transport export coal to the Richards Bay Coal Terminal, a distance of approximately 650 kilometres from Mpumalanga coalfields. It also transports some coal to the ESKOM power plants. TRANSNET is in the ESKOM plan of delivering coal to the power stations in the Mpumalanga region as a way of streamlining coal supplies to the power stations in future. This is due to the environmental damages experienced in transportation of coal by road'. The rail line to Richards Bay Coal Terminal has a capacity of 74Mtpa plus 10Mtpa to the other smaller terminals, adding up to 84Mtpa.

Richards Bay Coal Terminal (RBCT)

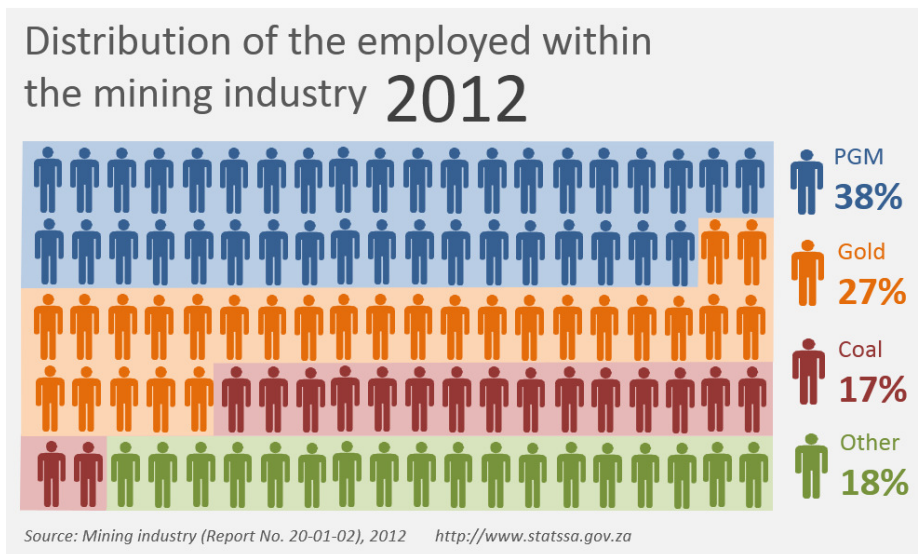
The port of Richards Bay is situated 170 kilometres north of Durban on the Indian ocean coastline. It was opened in 1976 and commenced with an export capacity of 10Mtpa. This capacity grew over the years and reached a capacity of 72Mtpa on completion of eleven caissons by 2008. Richards Bay Coal Terminal (RBCT) is the largest single coal export terminal in the world, exporting more than 69 million tons annually. The port's export handling capacity in 2009 was 76mtpa and this reached 91mtpa in 2010 (Prevost 2009:7). The port is owned by 11 coal mining companies with the five leading mining companies Anglo Coal, BHP Billiton, Xstrata, Exxaro and Sasol owning most of the shares. The RBCT set a new world record in September 2006 by loading and exporting 409 809 tons of coal in a 24-hour period. The port has also grown into a 24-hour operation with export capacity.

SASOL

South African Synthetic Oils (SASOL) is a South African public company founded in 1950 and is listed on both the Johannesburg stock exchange (JSE) and New York Stock Exchange (NYSE). The company supplies a third of South Africa's liquid fuel requirements. Sasol is one of the top six companies on the JSE and South Africa's largest locally domiciled company. It is also the country's single largest industrial investor, as well as the largest chemical feedstock producer.

2.1.1 SA Coal Industry Employment Statistics

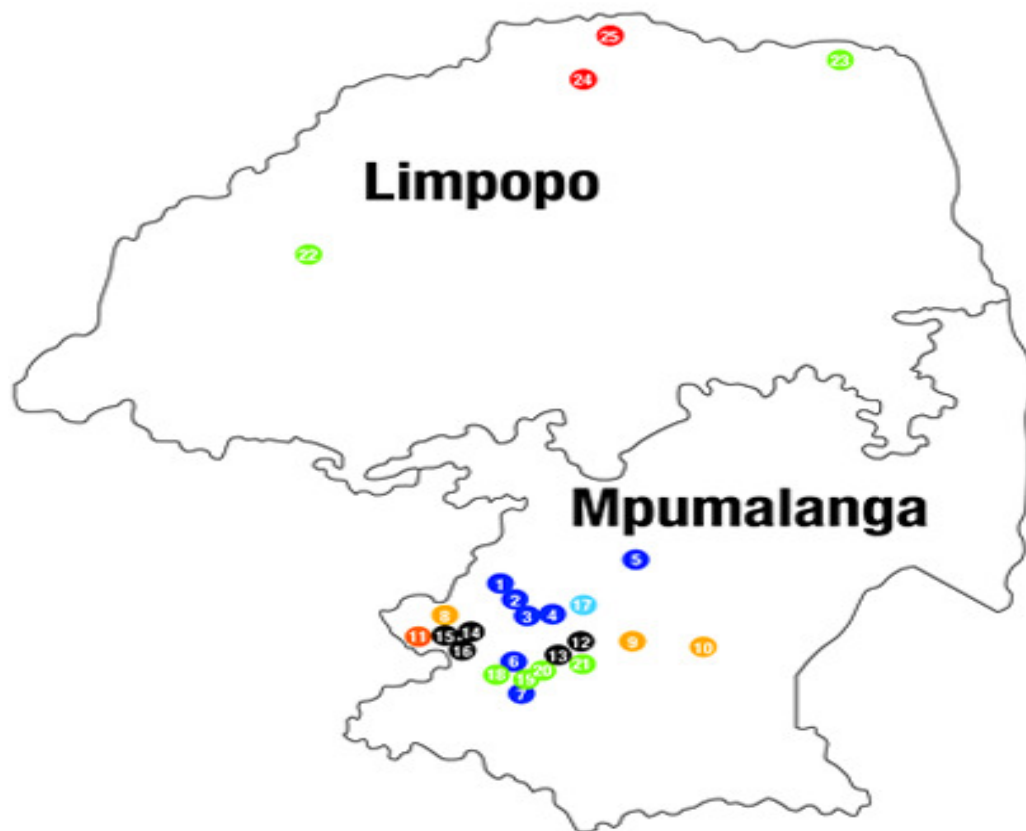
The coal mining industry is an important employer. The mining industry as a whole employed a total of 535 457 individuals at the end of June 2012. The coal mining industry was the third largest employer, employing 91 605 individuals (17% of the total mining workforce). The Platinum Group Metals industry ranked first (206 764 or 38%), followed by gold (144 084 or 27%).



The number of employed has grown. Employment in the coal mining industry rose by 75% between 2002 and 2012, falling a close second behind the PGM mining industry (78%). Employment in the gold mining industry dropped by 29% over the same period.

2.1.2 Raw Material Availability

Legend	
●	Anglo American
●	South32
●	Universal Coal
●	Glencore
●	Sasol
●	Exxaro
●	Coal of Africa



1 Landau	5 Mafube	9 Klipspruit	13 Izimbiwa	17 Twistdraai	21 North Block Complex
2 Greenside	6 Kriel	10 Wolvekrans	14 Impunzi	18 Leeuwpan	22 Grootgeluk
3 Kleinkopje	7 Isibonelo	11 Kangala	15 Tweefontein	19 Matla	23 Tshikondeni
4 Goedehoop	8 Khutala	12 Umcebo	16 Goedgevonden	20 Arnot	24 Makhado
					25 Vele

Source: Chamber of Mines South Africa

South Africa's coal resources are contained in the Ecca deposits, a stratum of the Karoo Supergroup, and date from the Permian period between 280 and 250 Ma. In general terms they are largely located in the north-eastern quarter of the country. The coal measures are generally shallow, largely unfaulted and lightly inclined, making their exploitation suitable for open-cast and mechanised mining.

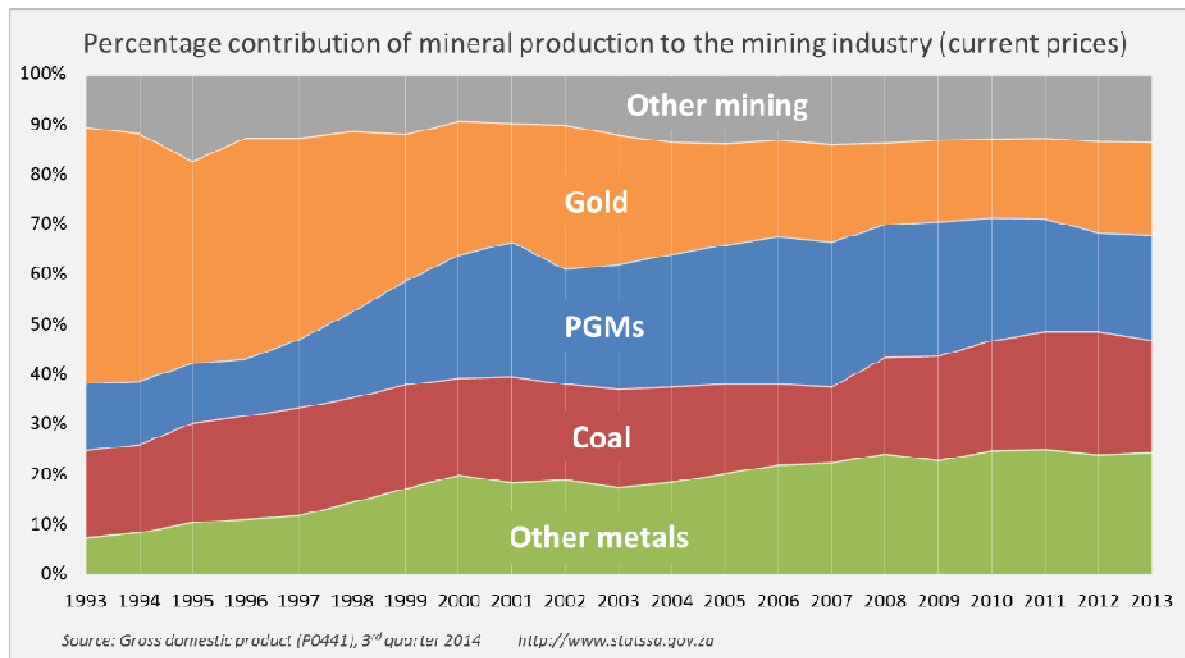
At current rates of production, South Africa has reserves sufficient to satisfy its needs for more than a century. However the locus of production is gradually shifting away from the traditional Witbank or Emalahleni coal field as collieries approach the end of their productive lives. Emphasis is being placed on exploring and developing the Waterberg coal field as well as others in the Limpopo province.

In general South African coal has a comparatively medium ash content which can be reduced by washing before sale. Higher grades of final product are delivered to export markets, with the lower grade product burned by Eskom's specially designed power station boiler hearths.

2.1.3 South African Coal Exports in Rand Value

Coal as a source of economic value

It might come as a surprise to many that coal is now more important to the South African economy than gold. The coal mining industry contributed approximately R37 billion to the economy in 1993, with gold contributing R115 billion (value added at constant 2010 prices). In 2013, coal contributed R51 billion to South Africa's economy, compared with gold's R31 billion.



In terms of mineral sales, coal contributed 27% to sales in 2014, followed by PGMs (21%), iron ore (16%) and gold (13%).

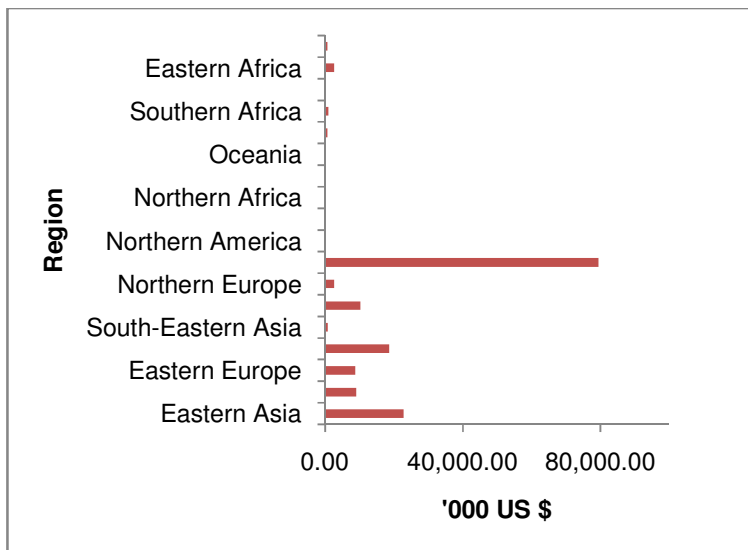
South Africa is the fourth largest coal producer in the world, according to the *South Africa Yearbook 2013/14*, published by Government Communications. 28% of South African coal production is exported. With an estimated 116 years of proven coal reserves remaining, the mineral is set to remain a valuable resource for South Africa's economy for as long as demand remains.

2.1.4 SA exports to the World

Coal is not a uniform commodity as it is marketed in various qualities depending on use, for example the ESKOM grade coal for power generation, coking coal for use in metallurgy for steel making, high quality grade anthracite and so on.

The South African coal trade is dominated by the five leading coal mining companies (Anglo Coal, BHP Billiton, Exxaro, SASOL and Xstrata) amounting to 83 percent of the South African coal trade. The rest 17 percent of coal trade is by the Black Economic Empowerment companies which emerged after the Mining and Petroleum Resources Development Act (MPRDA) Act of 2002.

Total Exports from South Africa in '000 US \$



SA exports to Africa

South Africa's export to the African region is \$ 4, 1 Billion which is the smallest share of South African coal exports to the world.

SA exports to the Americas

South Africa's export to the Americas region is \$ 80 Billion which is the largest share of South African coal exports to the world.

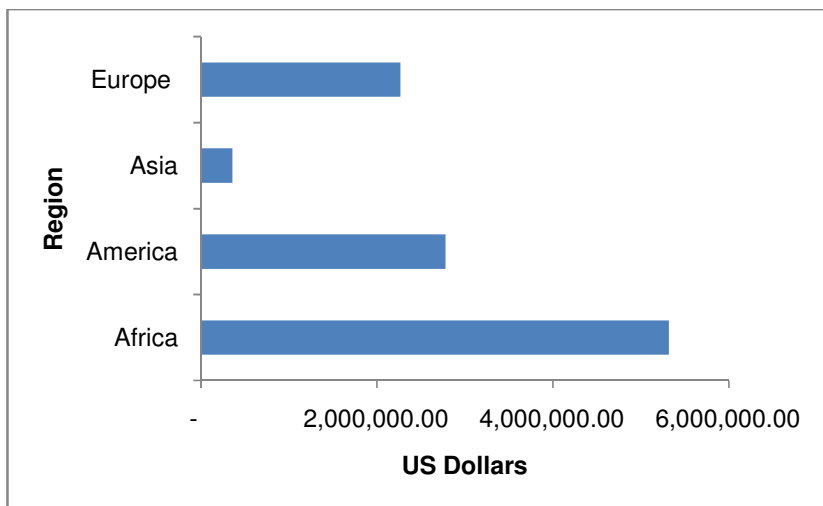
SA exports to Asia

South Africa's export to the Americas region is \$ 42 Billion which is the second largest share of South African coal exports to the world.

SA exports to Europe, Oceana & Unallocated

South Africa's export to the Americas region is \$ 30 Billion which is the third largest share of South African coal exports to the world.

2.1.5 SA Imports from the World



Source: Trade Map

SA Imports from the World

South Africa imports \$ 174 Million worth of coal from the rest of the world

2.1.3.1.1 SA Imports from Africa

Of the total imports from the world South Africa imports \$5, 3 Million worth of coal from the African region states which is the highest share to the total imports.

SA Imports from Americas

South Africa imports \$2,8 Million worth of coal from the America's region which is the second largest import value from the world market

SA Imports from Asia

South Africa imports a meagre \$ 360,000.00 worth of coal from the Asian region which is by far smallest import value from the world market, this is due to the fact that Asia is a big consumer of coal.

SA Imports from Europe, Oceania and Unallocated

South Africa imports \$2,2 Million worth of coal from the Europe region which is the third largest import value from the world market

3. Barriers to entry

Finance

Financing is one of the principal barriers to entry in coal mining, which is a highly capital-intensive enterprise. Large sums of money are required to construct mines and production facilities, and to sustain the exploration and development needed to replenish reserves.

Regulatory Framework

Coal like other minerals and the mining industry are regulated at the government through legislation relating to minerals found onshore and offshore within coastal waters.

Labour Framework

The South African mining industry is rooted on a previously exploitive nature which has resulted in a volatile environment in the current dispensation.

4. Regulatory Environment

THE KYOTO PROTOCOL

The Kyoto Protocol is a 1997 international treaty which came into use in 2005. The treaty emanated from the United Nations Framework Convention on Climate Change (UNFCCC) and binds most developed nations, except the United States, to a cap and trade system for major greenhouse gases. The treaty required the 36 industrial countries which signed it to reduce carbon emissions by an average of 5 percent from the 1990 levels by 2012.

THE COPENHAGEN ACCORD

The Copenhagen conference aimed at reducing human carbon emissions. The United Nations Framework Convention on Climate Change (UNFCCC) Accord in Copenhagen, Denmark (UNFCCC 2009: 6-7) stated *inter alia* that climate change is one of the greatest challenges of the present time and the global nations should aim to achieve the objective of the Convention by stabilising greenhouse gases at a level that would increase the global temperature below 2 degrees Celsius.

In pursuance of various government legislations, the South African mining companies ensure the relative sustainability of the operations, mitigation of impacts on the environment, as well as long-term sustainability for the immediate surrounding communities currently

dependent on the mining activities (Bloy 2005: 38). Every mine has its own environmental management plan (EMP) based on the principle of integrated environmental management as laid down by the National Environmental Management Act, (Act No. 107 of 1998) NEMA. Auditing and monitoring of EMP form an integral part of the principles. The other requirements are the performance assessment and monitoring focus in compliance with the EMP and the appropriateness and effectiveness of EMP. The minerals Act requires integration of systems such as ISO 14 000. Mines applying for ISO 14 000 have greatly reduced reporting responsibilities in terms of the Act (Lloyd 2002:16).

The slow pace of transformation in the mining industry is partly blamed on the legislative environment. The Minerals and Petroleum Resources Development Act (MPRDA) Act of 2002 is said to be contradictory on such issues as tenure of mines and the lengthy licensing process. The Minister of Mineral Resources appears to concur with the claim and has imposed a six month moratorium on licensing effective 1 September 2010 – 28 February as the Act is being reviewed (Government Gazette 2010: 3).

Department of Mineral Resources (DMR)

The Department of Mineral Resources (DMR), previously Department of Minerals and Energy (DME), has provided the Mineral and Petroleum Resources Development Act – Act 2002 (Act No. 28 of 2002) that was promulgated in April 2004. The Act provides guidelines to the South African mining industry.

National Energy Regulator of South Africa (NERSA)

The National Energy Regulator was established in October 2005 to regulate the energy sectors in electricity, piped gas and petroleum. Prior to 2005 it was called the National Energy Regulator (NER) responsible for regulating the electricity-related industry only. It is actually this role of regulating electricity that is of concern in this research as it relates to the fuel used (coal) in the generation of electricity. In addition to the regulation of electricity, NERSA regulates the petroleum pipeline and piped gas including coal bed methane (CBM).

Established under Section 3 of the National Energy Regulator Act, 2004 (Act No. 4 of 2004), NERSA's mandate is to maintain a delicate balance between the regulated energy industries, users and consumers (NERSA 2008:16). The regulatory body advises the electricity and other energy institutions on the tariffs they charge the consumers and arbitrates grievances between the consumers and the energy distributors, among other roles. This ensures that the end users and consumers receive appropriate service and pay the correct rates recommended by the government.

The energy regulator also has a programme of issuing and monitoring licenses to independent power producers (IPPs) which has been mandated to generate electricity from renewable sources sold to ESKOM for inclusion to the national grid. The programme is called Renewable Energy Feed-In Tariff (REFIT).

5. Coal Companies

Table 2: Top Ten Largest Coal Mines in the World (Ranked by Output in Million tonnes per annum)

Rank	Country	Mine name	Owner	Production capacity (Mtpa)	Production (Mtpa)	Year
1	US	North Antelope Rochelle Mine	Peabody Powder River Mining Llc (Peabody Energy)		107	2014
2	US	Black Thunder Mine	Arch Coal		91.8	2014
3	Indonesia	Tabalong coal concession	Adaro Indonesia (Adaro Energy)		55.3	2014
4	Indonesia	Sangatta coal mine	Kaltim Prima Coal (Bumi Resources)		45.5	2013
5	China	Huolinhe mine	Inner Mongolia Coal Co.	40	43.0	2013
6	Kazakhstan	Bogatyr mine	Bogatyr Coal, LLP	"50 mm tons" (45.4 million tonnes)	40	2012
7	Poland	Bełchatów coal mine	PGE	40-42	40.1	2012
8	Germany	Hambach coal mine	RWE	40	40	2014
9	Germany	Garzweiler coal mine	RWE	35-40	37	2014
10	China	Daliuta-Huojitu mine	Shendong Coal Mine Group (Shenhua Group)		35.8	2014

Coal Mining Companies in South Africa

Over 80% of South Africa's saleable coal is produced by five prominent coal mining companies, namely:

- BHP Billiton's Energy Coal South Africa (BECSA)
- Anglo American Thermal Coal
- Xstrata Coal
- Exxaro Resources
- Sasol Mining

Of these major coal mining companies, BHP Billiton is one of Eskom's biggest suppliers, and one of the largest suppliers to the seaborne energy coal market. Anglo American's coal business owns and operates nine mines, and is currently working on several projects aimed at boosting output to 90 million tons per annum, while of the top five coal mining companies, Xstrata Coal is South Africa's third largest coal exporter.

Formerly part of Kumba Resources and now merged with Eyesizwe Coal and Namakwa Sands, Exxaro is among the most diversified coal mining companies. It currently has several Greenfield and expansion projects under way, including a coal mine in the Waterberg field that will supply between 13 and 15 million tons of coal per year for export, and a proposed 1,200 MW coal-fired power station, near Lephalale in Limpopo, for which it has begun undertaking an environmental impact assessment and public participation process. Sasol Mining, which uses the majority of its coal in Sasol's Secunda-based coal-to-liquids synthetic fuels plant, rounds out the top five major coal mining companies.

The role and influence of empowered coal mining companies has been steadily increasing, particularly since the 2004 implementation of the Mineral and Petroleum Resources Development Act (MPRDA), and other active coal mining companies include Optimum Coal, Shanduka Resources, Kangra Coal, Total Coal South Africa, and Wescoal, among others

6. Provincial Overview

The existing coal production capacity in South Africa cannot sustain the forecasted growth in coal demand. Since 2003, South Africa's coal production has remained stagnant at levels around 250 million tonnes a year, only posting small incremental changes at best. Depleted coal mines in the Witbank, Ermelo and High Veld coalfields in the Mpumalanga province, difficult geological conditions, declining coal recovery grades, high operating costs, and infrastructural constraints at Transnet are some of the factors for the stagnation in coal production and exports. Industry sources indicate that most of the existing coal mines in the Mpumalanga province will be exhausted by 2020, whilst the two collieries in KwaZulu Natal have already closed; the province's main role in the sector is the coal export terminals.

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