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South Africa

The Republic of South Africa, a major coal producer and exporter, has a highly developed synthetic fuel industry and small reserves of oil. South Africa is Africa's largest energy consumer (primarily coal and petroleum) and Africa's second largest energy producer (mainly coal) behind [Algeria](#). South Africa is a prominent member of the [African Union](#) (AU), the [Southern Africa Development Community](#) (SADC), and the Southern Africa Customs Union (SACU).

Note: Information contained in this report is the best available as of November 2003 and can change.



GENERAL BACKGROUND

Since the end of apartheid and the installation of a democratic government, South Africa has made significant progress toward closing the gap between historically privileged (White) and disadvantaged (non-White) groups. Major institutional transformations of the judicial, educational, health, housing and governance sectors have accompanied and helped facilitate these changes. Despite this progress, nearly 60% of Black South Africans live below the poverty line, income disparity is among the highest in the world, crime has increased dramatically, and the country has one of the world's highest HIV/AIDS infection rates.

South Africa's economic growth averaged 1.8% from 1980 to 2000, but growth has accelerated recently; real gross domestic product (GDP) grew at 3.5% in 2000, 2.8% in 2001 and 3.0% in 2002. Real GDP is predicted to grow by 2.5% in 2003. In the 1980's, South Africa experienced double-digit inflation, but government fiscal policies have helped to reduce inflation significantly. Inflation was 5.5% in 2001 and 9.3% in 2002. Despite these positive trends, Foreign direct investment (FDI) inflows remain below expectations. FDI, which had averaged \$2.7 billion from the previous five years (1997-2001) fell to \$754 million in 2002.

The volatility of South Africa's currency, the rand, has also been a cause of great concern for the government and South African businesses. At the beginning of 2001, the rand was trading at R7.56

to the U.S. dollar; but by December it had fallen to a low of R13.85. In early 2002, the government established the "Myburgh Commission" to investigate allegations that traders, financial institutions and companies had manipulated the currency. The commission's report, released in August 2002, found little to no evidence of collusion or manipulation in the rand's depreciation. Since the second half of 2002, the rand has made a dramatic recovery in the international currency market. From October 2002 through September 2003, the rand has regained close to 40% of its value against the U.S. dollar, 28% against the U.K. pound, and 18% against the euro. The rand's sudden recovery reportedly is creating new problems for the South African economy. Several South African companies have blamed the rand's strong performance for shrinking profits, and commodity exports could decrease as the strong currency erodes South Africa's price competitiveness on international markets. The [Chamber of Mines \(COM\)](#) has stated that several planned key capital projects in the next few years may be under threat. In October 2003, the COM warned that 70,000 jobs are at risk on marginal mines, most of which are likely to suffer losses as a result of the rand's strength. The National Union of Mineworkers (NUM) has called on Minerals and Energy Minister Phumzile Mlambo-Ngcuka to organize an urgent meeting between industry, labor and government to prevent the job crisis.

COAL

Coal is the primary fuel produced and consumed in South Africa and is one of the country's largest sources of foreign exchange. The country's coal reserves are mainly bituminous, with relatively high ash content (about 45%) and low sulfur content (about 1%). South Africa's recoverable coal reserves, estimated at 54.6 billion short tons, are the world's seventh largest (approximately 5% of the world reserves). The South African [Department of Mineral and Energy Affairs \(DME\)](#) has begun a national study to reassess the country's coal reserves and it is expected to be completed by the end of 2003. The DME's Discards Inventory was completed in 2002. The inventory tracks the discard (waste) coal from current and former coal operations in the country by size, location and quality. As much as 1 billion tons of discard coal, South Africa's largest source of industrial waste, is on the surface in South Africa.

Production

According to data from the DME and the COM, coal production in 2002 was 242.7 million short tons (mmst). In 2001, South Africa was the world's sixth largest coal producer behind (in order) [China](#), [United States](#), [Australia](#), [India](#), and [Russia](#). Anglo American's coal division Anglo Coal (Anglo), BHP Billington subsidiary Ingwe Coal (Ingwe), domestic mining firms Eyesizwe Coal (Eyesizwe), Kumba Resources (Kumba) Sasol Mining (Sasol), and Swiss-based Xstrata Coal South Africa (XCSA) are the largest (in terms of tonnage) coal producing companies in South Africa. Coal production in South Africa is concentrated in a few regions, with the Mpumalanga province accounting for 83% of the national total. The provinces of Free State (9%) Limpopo (7%) and KwaZulu-Natal (1%) are the other coal-producing areas. Elitheni Coal is studying the possibility of re-developing coal deposits in the Eastern Cape province, where coal was first mined from 1857 to 1917. Coal from the Molteno-Indwe field would be used to generate electricity at a refurbished Western Cape power plant.

In July 2003, Anglo and Sasol announced plans to proceed with the development of Kriel South coalfield. Anglo will establish a new opencast operation on the northern portion of the coalfield and Sasol has been granted access to the southern portion of the Kriel South coalfield, through the expansion of its existing underground operations at the Syferfontein colliery. Anglo and Sasol will each produce 5.5 mmst annually from the new development. Together they are expected to yield over 220 mmst of thermal coal for supply to Sasol Synfuels facilities in Secunda over twenty years. Anglo Coal will invest \$96 million and Sasol \$40 million in the project. Production is expected to commence in July 2005.

XCSA, formerly Duiker Mining, is undertaking several projects to increase productivity. XCSA's WitCons Colliery is currently undergoing a 50% production expansion at a cost of \$4.8 million. Upgrades include an addition of a continuous mining section, an upgrade to the conveyor system and enlargement of the processing plant facilities. Similar upgrades are being installed at XCSA's Tavistock Colliery. Upon completion, annual production capacity at Tavistock will rise from 1.2 mmst to 2 mmst. Work has also begun at XCSA's new Goedgevonden Colliery. Goedgevonden will initially operate as a small contractor open-pit facility and will utilize production facilities at XCSA's nearby South Witbank mine. A feasibility study for the full-scale operation at Goedgevonden is currently being undertaken.

In January 2003, Ingwe announced that it had sold its Delmas colliery in Mpumalanga to Kuyasa Mining, a small [empowerment](#) firm for \$3 million. Delmas, which employs approximately 450 people, has an expectant life span of at least 15 years. The COM reported coal sales of 1.5 mmst from Delmas in 2002. The sale of Delmas leaves Ingwe with operational control of seven mines in South Africa. Ingwe owns and operates four of the mines, and it manages operations of three that are jointly-owned with XCSA. In October 2003, BHP Billiton said it had informed NUM of its plans to cut some 700 jobs from its Ingwe subsidiary. A BHP Billiton spokesman stated that the reduction was an effort to find cost-savings to help combat a tough market for coal exacerbated by the rand's strength against the dollar, high interest rates and high inflation.

Exports

Data from the DME and the [International Energy Agency \(IEA\)](#) shows that South Africa was the world's fourth largest coal exporter (76.3 mmst) in 2001. The top recipients of South African coal in 2001 were (in order of tonnage received) the Netherlands, [the United Kingdom](#), [Spain](#), [Israel](#), [Italy](#), [France](#), [Germany](#), [Morocco](#), [India](#), [Turkey](#), Belgium, [Taiwan](#), [Portugal](#), Denmark, [Brazil](#) and [Japan](#). These countries received more than 93% of all South African exports.

The vast majority (95% in 2001) of South African coal exports are shipped through the Richards Bay Coal Terminal (RBCT), the world's largest coal export facility. Only shareholding members of the RBCT company can use the export facility. Current shareholders include Ingwe, Anglo, XCSA, Tesa (Total Exploration South Africa), Sasol, Kangra and Eyesizwe. Ingwe, Anglo and XCSA combined own 86% of the RBCT. RBCT currently has the capacity to export 79.4 mmst of coal annually.

To help facilitate the participation of small independent and [empowerment](#) companies in the coal export sector, a new coal export facility was planned. The South Dunes Coal Terminal (SDCT), was to be located at Richards Bay, but apart from the RBCT. The planned capacity of the SDCT was 13.2 mmst of coal exports annually. SDCT partners include: Kumba, Eskom Enterprises and Golang Coal. In June 2001, the RBCT exporters and the SDCT partners reached an agreement to expand the RBCT and not construct a new export facility. The expansion will increase the annual export capacity of RBCT by 11 mmst, and the SDCT firms entitlement will be 7.2 mmst per year. the expansion of the RBCT is considered the most cost-effective method of expanding South Africa's coal export capability as no new rail infrastructure is needed. Ingwe and Anglo, the two largest shareholders in the RBCT, will forego their participation in the expansion of the export facility. In March 2002, the SDCT firms secured \$41 million (R475 million) in financing to help expand the RBCT. Total cost of the expansion is \$52 million (R600 million), with the remaining \$11 million (R125 million) to be financed by RBCT shareholders. The RBCT expansion is expected to be completed in 2005.

The expansion of the RBCT has hit some snags. A disagreement on how much of the current RBCT capacity should be made available to non shareholders in the terminal has become a major

stumbling block for South Africa's National Ports Authority (NPA) to authorize the expansion. The NPA wants to secure access to the export market for small-scale coal mine operators, and as part of this is looking to secure export channels for **empowerment** participants in the coal industry. The NPA wants RBCT members to give up 4.4 mmst of its existing 79.4 mmst coal export capacity to non shareholders. RBCT shareholders want to give up about 1.1 mmst of capacity. An agreement was reached in the fall of 2003 granting non-RBCT mines access to 1.1 mmst of the facility's capacity.

Other port facilities utilized for coal exports are the Durban Coal Terminal (DCT) and the Matola Coal Terminal (MCT) located in Maputo, **Mozambique**. DCT had coal exports of 2.2 mmst in 2001. Kumba currently exports its coking coal through the DCT. 1.4 mmst of South African coal was exported through MCT in 2001. Exports through MCT could increase in the future as infrastructure is upgraded and added. The rail link between South Africa and Maputo is undergoing a \$13.8 million upgrade, and there are plans to dredge the harbor to accommodate larger vessels. MCT management anticipates the facility to have the capacity to export 5.5 mmst of coal by 2006. Increased rail charges could hinder or possibly curtail exports from the DCT and the MCT. Spoornet, South Africa's state-owned rail company, announced it plans to increase its coal freight charges to the MCT and DCT by 30% on average over the next three years.

Consumption

South Africa's domestic consumption of coal in 2001 was 176.6 with the DME reporting domestic coal sales of 167.8. Electric power generation and the synthetic fuel industry account for approximately 90% (source DME) of South Africa's coal consumption. Other major coal consuming sectors include: the non-synfuels industrial sector (3.8% of local consumption), metallurgical industries (3.5%), and the merchant & domestic sectors (2.4%).

SYNTHETIC FUELS

South Africa has a highly developed synthetic fuels industry, which takes advantage of the country's abundant coal resources and offshore natural gas and condensate production in Mossel Bay. The two major players are Sasol (coal-to-oil/chemicals) and the Petroleum Oil and Gas Corporation of South Africa (PetroSA), formerly Mossgas, (natural gas-to-petroleum products). Sasol has the capacity to produce 150,000 barrels per day (bbl/d), and PetroSA 50,000 bbl/d.

Sasol is the world's largest manufacturer of oil from coal, with coal liquefaction plants located at Secunda (oil) and Sasolburg (petrochemicals). Started by the government in the 1950s to help reduce South Africa's dependence on imported oil, the company was privatized in 1979. In 1996, Sasol began an upgrade and expansion program at its Secunda facilities to reduce costs and to help it remain competitive. The project was completed in 2001 following the installation of the ninth new synthetic fuel reactor.

In early 2000, Sasol launched a study of the feasibility of replacing coal with natural gas as the synthetic-fuel feedstock, utilizing natural gas reserves in neighboring Mozambique. Sasol estimates that the switch to natural gas will reduce investment expenditures in its coal mining operations and the high costs of compliance with environmental regulations associated with coal. The project is expected to start delivering natural gas to South Africa during the first half of 2004. The project consists of several major components including the development of the Pande and Temane gas fields in Mozambique. The 536-mile (865-kilometer) transport pipeline will run from the Mozambican fields to Secunda. The pipeline will be owned by a joint venture between Sasol, South African government, and the government of Mozambique. Sasol will convert its existing pipeline-gas network to natural gas, and supply natural gas to industries in South Africa, including its own facilities. Sasol will switch its Sasolburg plants from coal to gas feedstock and utilize natural gas at

Secunda to supplement coal-based growth there. If natural gas supplies are sufficient, Sasol is also considering the possibility of constructing a gas-to liquids (GTL) facility in Secunda. The facility, similar to proposed Sasol facilities in [Nigeria](#) and [Qatar](#), would boost the company's fuel output by 10%.

On May 3, 2002, President Chissano of Mozambique and President Mbeki of South Africa, officially launched the project at a ceremony held at the Temane gas field in the Inhambane Province of Mozambique. Construction of the Sasol Natural Gas Project (SNGP) is on schedule. Construction of the Central Processing Facility (CPF) at Temane in Mozambique, where the gas will be cleaned before it is piped to Secunda, has advanced and work on the control room, substation and underground piping is nearing completion. Drilling operations at the Pande and Temane gas fields in Northern Mozambique commenced early in March 2003. A total of 18 vertical wells will be drilled at the Pande gas fields and 15 at Temane. The first of three gas processing trains, to accept gas from the wells at Temane, was expected to be functional by mid August 2003. Pande will be brought on line three years after Temane commences production, when the pressures of the Temane reservoir drop to a level equivalent to the Pande field.

PetroSA began production in 1993 and remains state-owned. The PetroSA plant receives feedstocks of natural gas and condensate from gas fields in Mossel Bay through a pair of 56-mile (91-kilometer) pipelines. The facility also has the ability to process up to 8,000 bbl/d of imported condensate. The onshore plant is situated approximately 8 miles (13 kilometers) west of Mossel Bay. PetroSA converts the gas into a variety of liquid fuels including motor gasoline, distillates, kerosene, alcohols and LPG.

In July 2003, reports in the local press indicated that PetroSA signed a memorandum of understanding (MOU) with the National Oil Company of Iran (NIOC) with regards to developing joint GTL projects. The joint venture (JV) will involve the construction of a mini GTL plant at Mossel Bay in South Africa, which will begin construction in December 2003, followed by the establishment of a more significant plant in Iran, which would have a capacity of 60,000 bbl/d.

OIL AND NATURAL GAS

South Africa has recently begun to develop and exploit its reserves of conventional oil. The country imports crude oil primarily from the Middle East, with [Saudi Arabia](#) and [Iran](#) as its chief suppliers. South Africa has been trying to diversify its [sources of imported crude](#) and to reduce its dependence on oil imports from Iran, which previously dominated South African oil imports. Nigeria is now the third largest supplier of imported oil to South Africa. Other major oil sources of imported crude oil in 2002 were [Kuwait](#), [Russia](#) and [Angola](#).

Exploration

PetroSA (formerly Soekor) plans to concentrate its exploration efforts on South Africa's western and southern coasts. Several discoveries have been made on Block 9, which is located within the Bredasdorp Basin. The FA, EM and EBF natural gas fields currently supply feedstocks to the PetroSA synfuel facility. Oribi, the first significant and commercially viable oil discovery on Block 9 was made in 1990. Two other significant finds, Oryx and Sable have been made on the block. PetroSA, and its Sable field partner Pioneer Natural Resources (Pioneer), announced the results of their Boomslang discovery in February 2001. The find, located on the southern portion of Block 9, tested at a combined rate of 3,120 bbl/d of oil, 26 million cubic feet of natural gas per day (Mmcf/d), and 300 bbl/d of condensate. PetroSA and Pioneer plan to drill additional wells (appraisal) on Boomslang, as well as on the EBB discovery. EBB, discovered in 1991, originally tested at 46 Mmcf/d of natural gas and 1,830 bbl/d of condensate. Pioneer also holds the rights to offshore Block 7.

Two natural gas discoveries are located on Block 11A, which lies east of Block 9. PetroSA made the Ga-A find in 1969. The discovery had a combined flow rate of 24 Mmcf/d from two reservoirs. The Ga-Q field was discovered in 1983, and it had an initial test flow rate of 11.4 Mmcf/d. Additional appraisal drilling is planned on Block 11A.

An offshore natural gas discovery was made in March 2000 close to South Africa's border with [Namibia](#). Located in Block 2A, off South Africa's western coast, the find is not too far from the Kudu prospect (operated by ChevronTexaco and Energy Africa) off the coast of Namibia. Denver-based Forest Oil Corporation (Forest) reported that the find, AK-1, flowed at a rate of 52.8 Mmcf/d of natural gas and 342 bbl/d of condensate. Forest's initial estimates placed recoverable reserves at 200 billion cubic feet (bcf) of natural gas. Forest drilled three appraisal wells in 2000-2001, of which two were successful. One appraisal well flowed at 71.4 Mmcf/d of natural gas and 1,376 bbl/d of condensate, while the other had flows of 53 Mmcf/d and 182 bbl/d respectively. Forest revised its estimate of total reserves for the discovery, renamed the Ibhubezi field, to 25 trillion cubic feet (tcf). In August 2003, PetroSA announced it was taking a 30% share, valued at \$40 million, in the Ibhubezi Gas Field project. PetroSA CEO Mpumelelo Tshume said his company would possibly utilize gas from Ibhubezi for its Mossel Bay GTL plant.

South Africa's recent offshore success is sparking interest in further developments. Sasol holds the rights to Blocks 3A and 4A, which are adjacent to the West Coast and south of Forest's holdings. In February 2002, Colorado-based Global Energy Holdings (GEH) announced the formal approval of its prospecting agreement for Block 3B/4B from the DME and the South African Agency for Promotion of Petroleum Exploration and Exploitation (Petroleum Agency SA). The seven and one-half year agreement for Block 3B/4B covers 7.1 million acres (29,000 square kilometers) offshore western South Africa in waters ranging in depth from 900 feet to 4,000 feet (300 to 1,200 meters). In January 2002, Petroleum Geo-Services (PGS) and Petroleum Agency SA (PASA) announced a joint cooperation agreement to promote deepwater exploration acreage in South Africa. The area, Block 2B and acreage west of Blocks 5 and 6, contains 39.5 million acres (160,000 square kilometers). PGS will shoot and market 2D seismic data, with the survey commencing in the first half of 2002. In December 2002, a consortium of Jebco Seismic, PetroSA, and Global Exploration Services identified a new petroleum system off the east coast of South Africa. Initial work has shown the presence of wet gas and oil. Jebco Seismic plans to acquire 2D seismic over the area, known as the Tugela Cone. The survey includes the northernmost part of block 16 and blocks 17 and 18. This part of South Africa's offshore will remain closed to exploration until the data is made available. PASA will then accept industry proposals to license acreage.

Production

The Oribi oil field began production from a floating production, storage and offloading vessel (FPSO) in 1997, South Africa's first conventional oil production. The field currently produces a light oil (API 42°) at the rate of 10,000 bbl/d with 15 Mmcf/d of associated gas, which is flared. The Oryx oil field lies 3.7 miles (6 kilometers) from the Oribi field and was tied back to the Oribi's FPSO production facility. Oryx began production in May 2000, and currently produces at 12,000 bbl/d. The Oryx reservoir is similar in type and age to Oribi.

PetroSA and Pioneer announced plans for the development of the Sable field in June 2001. The field will be developed with six subsea wells tied back to a FPSO. The FPSO will have the capacity to process 60,000 bbl/d of oil, re-inject 80 Mmcf/d of natural gas and recover natural gas liquids. Total recoverable oil reserves are estimated to be 25 million barrels. Associated gas, which will be re-injected to improve liquids recovery, may be recovered at a later date as part of a planned natural gas development project. In August 2003, it was announced that production on the Sable field had commenced. Initial output was 30,000-40,000 bbl/d, enough to reduce the country's oil imports by

approximately 7%. Oil will be transferred from the FPSO to a shuttle tanker every three weeks, which will then sail either to the ports of Saldanha Bay, Durban or Cape Town for refining for sale on the South African market. In June 2003, PetroSA said that it would reduce its interests in the Sable field by 9%, selling that portion to an empowerment group. PetroSA said it would call for bids from interested groups, preferably those that have not benefited from previous empowerment initiatives. They hoped to conclude the deal by the end of 2003. PetroSa currently holds a 60% interest and Pioneer has the remaining 40% interest on the Sable field.

The FA natural gas field currently produces at a rate of 194 Mmcf/d gas and 9,500 bbl/d of condensate. The FA production platform is one of the largest single structures ever constructed in South Africa. Nine production wells have been drilled from the platform. Four production wells on the FAR and FAH satellite gas fields are linked to the platform by subsea systems. The production wells on the EM and EBF gas fields are connected to the FA platform by a 32-mile (52-kilometer) pipeline, 18 inch diameter pipeline that has been designed for the future tie-in of other gas fields in the area.

Refining and Downstream Oil Activities

South Africa has the second largest refining capacity in Africa. South Africa's total refining capacity (excluding synthetic fuel plants) of 489,547 bbl/d is surpassed only by [Egypt's](#). Its refined products are both sold in the local market and exported, mainly to other parts of Southern Africa, but also into both the Indian and Atlantic basin markets.

Shell and BP, the co-owners of South Africa's largest refinery, plan to invest \$100 million in the facility over the next five years. The Sapref refinery, located in Durban, will be upgraded to meet environmental requirements. The investment will not increase refining capacity, but will instead reduce emissions. Durban's other refinery, the 125,000 bbl/d Engen facility, is set to be expanded. Engen announced, in March 2003, that it had gained environmental approval to expand the facility. Upon completion, scheduled by the end of 2003, the Engen refinery's capacity will have increased by 20% to 150,000 bbl/d.

Multinational companies, including BP, Shell, Caltex (ChevronTexaco), Engen (subsidiary of Malaysia's Petronas) and Total are major participants in South Africa's downstream petroleum markets. In March 2003, Sasol announced plans to launch a retail chain of gasoline stations in December 2003. Sasol owns approximately 100 gasoline stations, but these are leased to other oil companies, as Sasol is prevented from operating its own retail network under an agreement with the country's oil sector. The agreement expires in December, and Sasol plans to re-brand its stations and invest \$135 million in developing a further 100-200 stations. In October 2003, Sasol and Exel Petroleum (Exel) applied to the South Africa's Competition Commission for approval to merge their businesses. Exel currently has a network of 189 service stations throughout South Africa. Sasol plans to continue to use the successful Exel brand and continue to roll out service stations under the Exel banner. A decision from the Competition Commission is expected before the end of the year. Several other local firms also are involved in South Africa's downstream including the Black-owned firms, Naledi Petroleum and Afric Oil. Worldwide Africa Investment Holdings(WAIH) owns 55% of Afric Oil and Engen holds the other 45%. WAIH has also taken an [empowerment](#) stake (20%) in Engen.

On April 2, 2003, a new petroleum pricing mechanism went into effect. The Basic Fuel Price (BFP) formula replaced the In-Bond-Landed-Cost (IBLC) component of the pump price. The IBLC formula was introduced in the 1950s and was last revised in 1994. The formula change became necessary when an investigation by DME, in conjunction with the South African Petroleum Industry Association (SAPIA), found that the previous formula had become outdated. Under the

BFP method, domestic retail prices will still be linked to international crude oil prices, but the new benchmark will be based on spot prices published by Platts. The IBLC method combined spot and contract prices. Basic gasoline prices will be based 50% on Platts' spot price assessment in the Mediterranean spot market and 50% on Platts spot price in Singapore. The basic prices of diesel and kerosene will be based on 50% of prices in the Persian Gulf and 50% of prices in the Mediterranean refining area. Previously, the government used posted prices from refineries in Singapore and Bahrain and spot prices from Singapore.

The first privatization in South Africa's gas distribution sector was completed in August 2000, when a consortium led by the U.S.-based Cinergy and the Black [empowerment](#) group, Egoli Empowerment Holdings, was chosen to purchase [Johannesburg's](#) Metro Gas Company. Renamed Egoli Gas, the consortium announced in September 2000 the signing of a 20-year contract with Sasol Gas. In terms of the supply agreement, Sasol Gas will provide the Johannesburg area with 2.5 million cubic feet per year, with an option to increase the supply up to 7 million cubic feet per year. Egoli Gas plans to increase its customer base from the current 13,000 customers to 100,000 customers by 2010.

Other projects to use natural gas are planned for South Africa. Negotiations are continuing between the South African government and operators of Namibia's offshore Kudu gas field. Shell pulled out of the project in August 2002, stating that the estimated reserves were not large enough to support the development it had planned. ChevronTexaco replaced Shell, but in December 2003 it informed the Namibian government and its partner Energy Africa that it was also withdrawing from the Kudu project. Energy Africa plans to assume 100% interest in the project and pursue its development. Initial plans call for the gas to be piped from the Kudu field to Cape Town, where it will supply fuel for a power station. The government would like for gas supplies to be available to other buyers, possibly extending the pipeline to the PetroSA synfuel facilities at Mossel Bay. PetroSA has expressed interest in becoming a partner on the Kudu field. Sasol and Belgian-based Tractebel have signed a memorandum of understanding (MOU) for the development of gas-fired co-generation in South Africa.

ELECTRICITY

Parastatal company Eskom, one of the largest utilities in the world, generates nearly all (approximately 95%) of South Africa's electricity. Eskom's generating capacity of 38,211 megawatts (MW), which is primarily coal-fired (33,878 MW), also includes one [nuclear power](#) station at Koeberg (1,930 MW), two gas turbine facilities (342 MW), six conventional hydroelectric plants (661 MW), and two hydroelectric pumped-storage stations (1,400 MW). Eskom also has four mothballed coal-fired facilities that have a capacity of 3,800 MW. South African municipalities own and operate 2,436 MW of generating capacity, of which the majority (1,932 MW) is coal-fired. An additional 836 MW of generating capacity is privately held.

In December 2001, U.S.-based AES completed its purchase of a 600-MW coal-fired power plant. The Kelvin (AES Kelvin) power plant was purchased from the Greater Johannesburg Metropolitan Council (GJMC) for the price of \$23 million. The Kelvin plant has been operating at less than 25% of its design capacity. AES will own 95% of the facility, and its local empowerment partner, Global African Power (GAP), will hold the remaining 5%. GJMC will retain a 50% interest in AES Kelvin with shareholder rights limited to protecting the employment of workers for three years. AES has committed to invest about \$15 million to refurbish the plant, including a new bag filtration system, and expects to spend another \$11 million for worker transition costs over the first three years of operation. AES Kelvin will sell its entire output to City Power Johannesburg, the distribution company for Johannesburg under the terms of a 20 year power purchase agreement. In December 2002, AES sold its 95% interest in the Kelvin facility to CDC Globeleq. CDC Globeleq will

complete the \$25 million investment being made to refurbish the plant.

Cape Town is looking for a similar development for its Athlone generating facility. It is considering IPP (independent power producer), and public /private partnerships to take over the operations of Athlone. The Elitheni Coal proposal for Athlone is one of many it is considering. The plan calls for the modification, upgrade and expansion of Athlone. The plant will have a generating capacity of 890 MW , and would also utilize recently discovered offshore natural gas reserves as a fuel for peak-hour electricity generation.

The Greater Pretoria Metropolitan Council (GPMC) has awarded a contract for the refurbishment and operation of its Pretoria West power station. The contract, awarded to a consortium that includes ABB, U.K.-based PDC Investments and Consolidated Coal, calls for the upgrade of the facility from 204 MW to 240-260 MW, operation of coal mine that supplies the facility, and the installation of a facility to treat waste ash for use in construction materials.

South Africa's [National Electricity Regulator](#) (NER) is responsible for the licensing of electricity generators, transmitters and distributors in the country. NER is also overseeing the restructuring of South Africa's electricity supply industry (ESI) in accordance with existing [legislation](#) and the Energy Policy White Paper. The legislation and regulation is crucial to the government's continuing [electrification](#) program. The NER licensed Eskom as the National Transmitter for South Africa. The transmission license provides for: non-discriminatory access by generators being dispatched centrally, offering a transmission service to parties who are in a position to take supply directly off the transmission system, central dispatch of power stations participating in the National Power Pool, and organizing the exports and imports of electricity to South Africa. A transmission license was issued to a private company, Montraco, to provide a specific transmission service from the National Transmission System to specific supply points in Mozambique and Swaziland.

NER's plan for South Africa's electricity distribution scheme is taking shape. NER's original plan was to merge the distribution assets of Eskom with the country's municipal distributors to form six regional electricity distributors (REDS). Eskom and the municipalities were to own shares in the new distributors based on the assets each contributed to the REDS. The REDS would come under the umbrella of a newly created, government-controlled holding structure called EDI Holdings (EDI). This plan was changed with the introduction of a new draft Electricity Distribution Industry Restructuring Bill. The new plan, put forth in the spring of 2003, still calls for the establishment of EDI and six REDS, but Eskom will not hold a stake in the REDS. Eskom will still merge its distribution assets into the REDS. NER also envisions EDI to be a transitional entity with a life span of 3-5 years. EDI will be wholly-owned by the South African government, and would in turn hold a percentage of shares (representing Eskom's contribution of net assets) in the REDS. EDI's functions would include that of project manager and advisor, overseeing and coordinating the implementation of the REDS during the first critical years, providing support as necessary, as well as monitoring and reporting of implementation progress to South African government, and reporting on the South African government's financial stake in the REDS. After the transitional period, EDI would be dissolved, leaving a number of nominally independent REDS, with their shareholders being the South African government and the various municipalities that contributed net assets into the particular RED.

[ENVIRONMENT](#)

In 2001, 75.4% of total [energy](#) consumption in South Africa was from coal consumption. This reliance on coal, a highly carbon-intensive fossil fuel, has negative environmental impacts. For example, electricity generation from coal combustion in the industrial sector is the prime contributor to air [pollution](#). Mining, itself, adversely effects the environment through the disruption

of ecosystems and the pollution of groundwater.

The South African government is in the process of developing and implementing laws aimed at curbing environmental damage and pollution. Legislation on fuel formulation takes effect in 2006. The use of leaded gasoline will end and all motor fuels (diesel and gasoline) will contain less than 500 ppm (parts per million) of sulphur. Motor fuel sulphur content would be reduced to 50 ppm by 2010. Unleaded gasoline became available in South Africa in 1996. Several petroleum retailers in South Africa have switched from lead to MMT (a manganese-based additive) to boost octane, but manganese is also a toxic metal. In September 2003, BP introduced South Africa's first unleaded fuel that is free of heavy metals. BP planned to offer the fuel at 340 sites in the country by the end of October. The new fuel is a result of a \$100 million investment at their Sapref refinery to produce cleaner petrol and diesel. SAPIA estimates that the refining industry will need to invest some \$950 million (R10 billion) to reach these new fuel specifications.

The National Environmental Management Air Quality Bill (NEMAQ) was scheduled to be enacted in November 2003, replacing the Atmospheric Pollution Prevention Act of 1965. NEMAQ provides for the Department of Environmental Affairs and Tourism's (DEAT) establishment of national norms and standards for ambient air quality, emissions, air quality monitoring and air quality information management. DEAT's minister will establish a National Air Quality Advisory Committee, an advisory board, to assist on the implementation of NEMAQ. Air quality officers will be appointed at national, provincial and municipal levels to aid with implementation and coordination of matters relating to air quality management in their jurisdictions. Administrations at these levels will have to prepare an air quality management plan and report on the implementation annually.

South Africa has a nascent, but growing, environmental protest movement. In recent years, environmental groups have: challenged strip-mining operations in a sensitive wetland area, including a landmark legal decision; drawn international attention to pollution and conditions at the country's refineries; and legally-challenged the establishment of South Africa's [pebble-bed modular reactor \(PBMR\)](#) program.

Sources for this report include: Africa Energy Intelligence; African Energy; Afroil; AFX News; Agence France Presse; AllAfrica.com; Associated Press; Business Day (South Africa); Business Wire; CIA World Factbook 2003; Coal Week International; Department of Minerals and Energy; Economist Intelligence Unit ViewsWire; Eskom; Factiva; Financial Times; Hart's Africa Oil and Gas; International Monetary Fund; Inter Press Service; McCloskey Coal News; Mining Journal; National Electricity Regulator Electricity Supply Statistics: 2001; Oil and Gas Journal; The Oil Daily; Petroleum Argus; Petroleum Intelligence Weekly; Reuters; South African Chamber of Mines; South African Petroleum Industry Association (SAPIA); South African Press Association; U.S. Energy Information Administration; World Bank; World Gas Intelligence; Xinhua

COUNTRY OVERVIEW

President: Thabo Mbeki (since June 1999)

Deputy President: Jacob Zuma

Independence: May 31, 1910 (from United Kingdom)

Population (2003E): 42.8 million

Location/Size: Southern Africa/1.2 million square kilometers (471,445 square miles, nearly twice the size of Texas)

Major Cities: Pretoria (capital), Johannesburg, Durban, Cape Town

Languages (official): Afrikaans, English, Ndebele, Northern Sotho, Southern Sotho, Swazi, Tsonga, Tswana, Venda, Xhosa, Zulu

Ethnic Groups: Black (75.2%), White (13.6%), mixed race (Colored) (8.6%), Asian (2.6%)

Religions: Christian (Dutch reformed, other Protestant and Catholic denominations) 68%, Hindu, Jewish, Muslim and traditional African religions

ECONOMIC OVERVIEW

Minister of Finance: Trevor Manuel

Minister of Trade and Industry: Alec Erwin

Currency: 1 rand (R) = 100 cents

Market Exchange Rate (12/08/03): US\$1 = 6.32 R

Nominal Gross Domestic Product (2002E): \$104.5 billion

Real GDP Growth Rate (2002E): 3.0% **(2003F):** 2.1% **(2004F):** 3.6%

Inflation Rate (consumer prices) (2002E): 9.3% **(2003F):** 6.3% **(2004F):** 3.2%

Merchandise Exports (2002E): \$29.2 billion

Merchandise Imports (2002E): \$22.1 billion

Trade Balance (2002E): \$7.1 billion

Major Exports (2002): Gold, diamonds, other metals and minerals, machinery and equipment

Major Imports (2002): Machinery, foodstuffs and equipment, chemicals, petroleum products, scientific instruments

Major Trading Partners: European Union, Japan, United States

Current Account Balance (2002E): \$0.3 billion

ENERGY OVERVIEW

Minister of Mineral and Energy Affairs: Ms. Phumzile Mlambo-Ngcuka

Proven Oil Reserves (1/1/03E): 15.7 million barrels

Oil Production (2003E): 200,000 barrels per day (bbl/d), of which about 182,000 bbl/d is synthetic

Oil Consumption (2003E): 470,000 bbl/d

Net Oil Imports (2003E): 270,000 bbl/d

Crude Refining Capacity (1/1/03E): 489,547 bbl/d

Natural Gas Reserves (1/1/03E): 1 billion cubic feet (bcf)

Natural Gas Production/Consumption (2001E): 63.6 bcf

Recoverable Coal Reserves (2001E) : 54.6 billion short tons

Coal Production (2002E): 242.7 million short tons (mmst)

Coal Consumption (2001E): 176.6 mmst (domestic sales)

Coal Exports (2001E): 76.3 mmst

Electricity Generation Capacity (1/1/01E): 41.4 gigawatts (GW) operational, with an additional 3.8 GW mothballed

Electricity Generation (2001E): 195.6 billion kilowatthours (bkwh), of which 182.9 bkwh was thermal, 10.7 bkwh nuclear and 2.1 bkwh hydroelectric

Electricity Consumption (2001E): 181.2 bkwh

ENVIRONMENTAL OVERVIEW

Minister of Environmental Affairs and Tourism: Mohammed Valli Moosa

Total Energy Consumption (2001E): 4.6 quadrillion Btu* (1.14% of world total energy consumption)

Energy-Related Carbon Emissions (2001E): 105.2 million metric tons of carbon (1.6% of world carbon emissions)

Per Capita Energy Consumption (2001E): 103.8 million Btu (vs. U.S. value of 341.8 million

Btu)

Per Capita Carbon Emissions (2001E): 2.4 metric tons of carbon (vs. U.S. value of 5.5 metric tons of carbon)

Energy Intensity (2001E): 10,391 Btu/\$1995 (vs. U.S. value of 10,728 Btu/\$1995)**

Carbon Intensity (2001E): 0.24 metric tons of carbon/thousand \$1995 (vs. U.S. value of 0.17 metric tons/thousand \$1995)**

Fuel Share of Energy Consumption (2001E): Coal (75.4%), Oil (20.5%), Nuclear (2.3%), Natural Gas (1.5%), Hydroelectricity (0.5%)

Fuel Share of Carbon Emissions (2001E): Coal (81.9%), Oil (17.1%), Natural Gas (1.0%)

Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified August 29th, 1997). Not a signatory to the Kyoto Protocol.

Major Environmental Issues: Lack of important arterial rivers or lakes requires extensive water conservation and control measures; growth in water usage threatens to outpace supply; pollution of rivers from agricultural runoff and urban discharge; air pollution resulting in acid rain; soil erosion; desertification.

Major International Environmental Agreements: A party to the Antarctic-Environmental Protocol, Antarctic Treaty, Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Wetlands and Whaling.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power.

**GDP based on OECD Purchasing Power Parity (PPP) figures for 2001

ENERGY INDUSTRY

Organization: *Anglo Coal, Ingwe Coal, Eyesizwe Coal, Kumba Resources, Sasol Mining, Xstrata Coal South Africa (XCSA)* - major private coal producers; *Eskom* - parastatal electric power company; *Sasol* - coal-to-liquid synthetic fuels & chemicals group (privatized in 1979); *Petronet* - petroleum pipelines and tank farm; *Petroleum Oil and Gas Corporation of South Africa (PetroSA)* - gas-to-synthetic fuels plant; oil and gas exploration/development; *Strategic Fuels Fund* - strategic oil storage facility and state oil imports;

Major Coal Fields: Waterberg, Witbank, Highveld

Major Coal Ports: Richards Bay Coal Terminal, Durban

Oil Refineries (1/1/03E Capacity): Shell/BP - Durban (172,000 bbl/d); Caltex - Cape Town (105,000 bbl/d); Engen - Durban (125,000 bbl/d); National Petroleum - Sasolburg (87,547 bbl/d)

LINKS

For more information from EIA on South Africa, please see:

[EIA - Country Information on South Africa](#)

Links to other U.S. government sites:

[CIA World Factbook - South Africa](#)

[U.S. Department of Energy's Office of Fossil Energy's International section - South Africa](#)

[U.S. State Department's Consular Information Sheet - South Africa](#)

[U.S.-South Africa Data Exchange Page](#)

[Country Commercial Guide - South Africa](#) provided by the U.S. Department of Commerce

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[MBendi Country Profile - South Africa](#)

[Atomic Energy Corporation of South Africa](#)

[Chamber of Mines](#)

[Department of Environmental Affairs and Tourism \(DEAT\)](#)

[Department of Minerals and Energy \(DME\)](#)

[National Electricity Regulator \(NER\)](#)

[Engen](#)

[Energy Africa](#)

[Eskom](#)

[Sasol](#)

[South African Petroleum Industry Association \(SAPIA\)](#)

[Petroleum Agency South Africa \(PASA\)](#)

[Petroleum, Oil and Gas Corporation of South Africa \(PetroSA\)](#)

[Petronet](#)

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