

COAL IN SOUTH AFRICA

Internationally, coal is currently the most widely used primary fuel, accounting for 36% of total fuel consumption for electricity production. Coal is expected to maintain its share of the overall electricity generation market for a number of years. The five largest coal users - China, USA, India, Japan and South Africa - account for 82% of total global coal use.

Coal as Industrial Energy Source

Coal has traditionally dominated the energy supply sector in South Africa, from as early as 1880 when coal from the Vereeniging area was supplied to the Kimberly diamond fields. The later gold discoveries in the Witwatersrand and the growing rail infrastructure placed increasing demands on coal. As South Africa evolved into a mining giant, coal was used more and more to generate steam, compressed air and then electricity.

In modern times the coal consuming industry has diversified, with coal providing the primary energy needs for electricity generation, petro-chemicals and steel production, as well as a host of other industries, from brick making to cement and lime calcining.

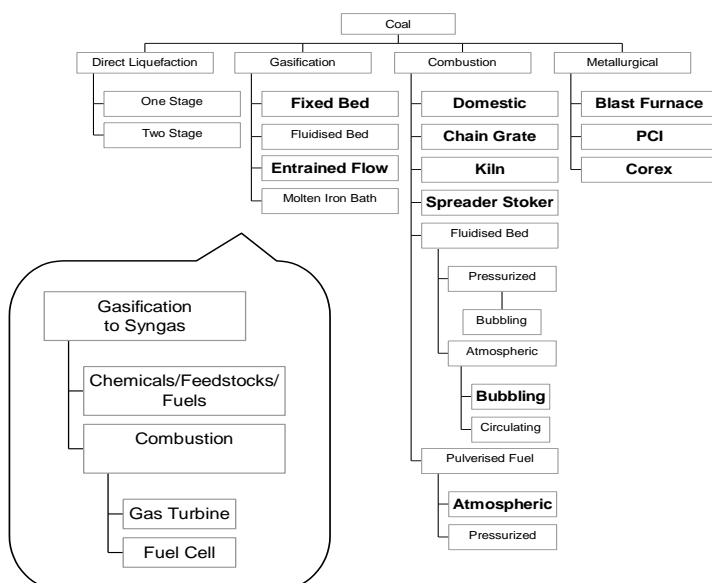
Presently, about 72.1% of our country's primary energy needs are provided by coal. This is unlikely to change significantly in the next decade, due to the relative lack of suitable alternatives to coal as an energy source. South Africa produces an average of 224 million tonnes of marketable coal annually, making it the fifth largest coal producing country in the world. 25% of our production is exported internationally, making South Africa the third largest coal exporting country.

The remainder of South Africa's coal production feeds the various local industries: 53% is used for electricity generation, 33% for petrochemical industries (Sasol), 12 % for metallurgical industries (Arcelor-Mittal) and 2% for domestic heating and cooking. The key role played by our coal reserves in the economy is illustrated by the fact that Eskom is the 11th largest electricity generator in the world, and Sasol the largest coal-to-chemicals producer.

South Africa's coal reserves are estimated at 53 billion tonnes and with our present production rate there should be almost 200 years of coal supply left.

Challenges facing coal as energy source

Environmental concerns pose the main challenge to coal as energy source. Not only does the burning of coal cause air pollution, the mining activities to extract the coal also have a severe impact on the environment. The advances in technology are providing us with more feedback from our environment on the effects of our actions. This information is now starting to guide international and local industries in how they can control the use of fossil fuels, coal in particular. There are many existing and emerging clean coal technologies that will enable the production, processing, conveyance and utilisation of coal in a more environmentally compatible manner. The figure below illustrates the various avenues for just coal utilisation, where the technologies used in South Africa are highlighted.



What are the Alternatives?

Natural gas resources in South Africa are very limited. Although resources exist in the Southern African region, the economic viability of generating electricity using imported natural gas compared to other alternatives is a concern.

Hydroelectric capacity in South Africa is limited, although some potential also exists in the SADC region, providing opportunities to import electricity. The medium to long term potential exists in Zambia (1000MW), Mozambique (5000 MW) and in the very long term after 2025, Angola and the Democratic Republic of Congo (DRC) can provide over 20 000 MW to the region. SADC offers significant clean generation capacity and growth opportunities for Eskom and South Africa. Supporting delivery on key projects in the region will build momentum and help Eskom unlock further options in the region and we will actively pursue priority SADC options in Mozambique and Zambia.

The use of *nuclear power* is one of the most marked changes projected for primary energy use in international electricity production. At present, Eskom's Koeberg Nuclear Power Station is the only one of its kind on the African continent and at 1800 MW capacity it can provide 6.9% of South Africa's electricity.

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