

Medupi coal power plant South Africa

Sectors: Coal Electric Power Generation

Active

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By: BankTrack


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[Project website](#)

Sector	Coal Electric Power Generation
Location	
Status	Planning Design Agreement Construction Operation Closure Decommission
Website	http://www.eskom.co.za/

About Medupi coal power plant

The **Medupi Power Station** is a coal-fired power plant located in Lephalale, South Africa, which was [completed](#) in mid-2021. The plant comprises six 794 megawatt units to provide a total installed capacity of 4,764 megawatts. It is owned and operated by the South African public utility company Eskom, [the world's most polluting power company](#), and is expected to be operational for 50 years. It is the [fourth largest](#) coal power plant in the world (with another new Eskom power plant, Kusile, coming third).

Medupi's coal supply is sourced from [Exxaro's Grootegeluk coal mine](#), which will have to increase production by 14.6 million tonnes a year to supply the new power plant.

Medupi was meant to come online in [2013](#), but the first power to be produced by the plant came from only one of its six units in [March 2015](#). Eskom adjusted its expectations for full synchronisation to the power grid of all six units several times and [announced](#) the completion of the power plant's last unit on July 31, 2021.

Latest developments

Explosion put Medupi's unit 4 out of service for at least a year, says Eskom

Aug 8 2021

After billions in cost overruns, design flaws, delays and load shedding, Medupi is complete

Aug 2 2021

Why this profile?

Contrary to Eskom's claim and justification for continuing to build new coal power plants, the Medupi coal power plant will not

support poverty alleviation but will instead add costs onto ordinary South African energy customers. In addition, the company is seeking [exemptions](#) to minimum emission standards while pollution from the power plant would already lead to 1.4 [deaths](#) and an additional 144 hospitalisations per year. At full capacity, the Medupi plant is projected to emit between [25](#) and [30](#) million tonnes of carbon dioxide per year, making it one of the most carbon intensive power plants in the world.

What must happen

Following the [Global Coal Exit List](#), financial institutions should refrain from providing any financial services to Eskom, especially if funding would be allocated to maintenance, repairs (e.g. Unit 4) or expansion of the Medupi power station. Banks should urge Eskom to decommission its coal power stations sooner than the [2050 goal](#) set by the utility and direct their capital at energy efficiency and renewable energy financing opportunities.

Impacts

Social and human rights impacts

Energy access and prices

South Africa has suffered several [severe energy shocks](#) in recent years, which cause significant damage to the South African economy. This reflects many years of little or no investment in energy infrastructure. [Eskom](#) and the South African Government have suggested that new coal-fired capacity will enable South Africa to guard against future power shortages, support industry and sustain growth. This, in turn, they claim, will assist South African development, and alleviate poverty.

However, the Medupi project will not support sustainable development and poverty alleviation but will instead add costs onto ordinary South African energy customers. Over the last decade, South Africans faced [repeated electricity price increases](#) as well as significant [energy access challenges](#), including millions of electricity disconnections and periodic [load shedding](#). Despite the progressive production at Medupi power station, Eskom is still [failing to address power shortages](#) due to numerous defects.

While the extractive sector benefits from cheap electricity thanks to multi-decade special purchase agreements, the [cost](#) of constructing the coal plant is likely to be borne by all South African [citizens](#). A 2018 [report](#) from the Energy Research Centre at the University of Cape Town states that the cost overruns at the new coal-fired plants contributed to the rapidly increasing electricity prices. Between 2011 and 2021, the average yearly electricity price increase has been [close to 10%](#). In addition, South Africa's mines and smelting operations use around 40% of the country's energy and export their profits, contributing to South Africa's huge current account deficit.

Health

A 2006 report by Eskom, which it was forced to disclose after the Centre for Environmental Rights filed a Promotion of Access to Information Act application in 2014, contained [information about the health aspects](#) of the Medupi power plant. It stated that when operational, Medupi would be responsible for 1.4 [deaths](#) and an additional 144 hospitalisations per year, among those living within 25 km of the power station. Several studies underlined the [consequences](#) of the Medupi pollution including [premature deaths, chronic bronchitis, and asthma](#).

Health risks due to air pollution could be decreased if flue gas desulphurisation (FGD) technology, known as scrubbers, was installed. Scrubbers indeed allow for a reduction of sulphur dioxide (SO₂) emissions and were a condition of Eskom's loan agreement with the World Bank. Yet Eskom [failed](#) to install the ZAR38 billion FGD equipment and in July 2021, the World Bank approved the [extension of the FGD implementation deadline](#) from 30 June 2025 to 30 June 2027. According to Lauri Myllyvirta, lead analyst at the Centre for Research on Energy and Clean Air, the [emission-compliance exemptions](#) sought by Eskom will cause a high number of [premature deaths](#) and therefore constitute "a [health and economic burden](#) that far exceeds the costs of the equipment required to comply with the standards".

Working conditions

The project has been subject to several strikes over the years, with workers demanding better working conditions and [wages](#), and complaining about [discrimination](#). A strike in March 2015 led to contract termination of [1,000 employees](#).

Alleged disturbance and destruction of graves

The construction operations of the Medupi power station are also linked to the [alleged destruction of graves](#). A [memorial site](#) was created in 2016 to allow affected families to commemorate their deceased.

Environmental and climate impacts

Climate change

At full capacity, the Medupi plant is projected to emit between [25](#) and [30](#) million tonnes of carbon dioxide per year, making it one of the most carbon intensive power plants in the world. Putting these emissions in context, the total carbon emissions of South Africa are [between 400 and 450 million tonnes per year](#). Eskom alone currently emits [over 210 million tonnes](#) of CO2 equivalent a year. South Africa's power sector is [one of the most carbon intensive](#) in the world, and the country is responsible for about 40% of the entire total of African emissions.

Demand for coal from power stations such as Medupi is also likely to drive coal mining expansion in South Africa, with devastating local environmental impacts. The Medupi power plant is expected to consume [around 15 tonnes](#) of coal per year. If all Eskom's plans go ahead, the company's own consultants anticipate that [35 new mines will be required](#) to support them.

Water resources

The Medupi power plant will also be extremely water-hungry, taking up essential water supplies in a country where scarce water resources are already compromised by mining activities. The plant has been built in the [water-scarce region](#) of Lephalale in the Limpopo province. The Mokolo Dam is currently providing the water supply for all agricultural, mining and power generating activities in the vicinity. The capacity of this dam is insufficient to meet the water requirements of the Medupi power plant. Eskom's current licence allows the company to take [10.9 million cubic metres](#) of water a year from the dam, and the FGD equipment is expected to generate an additional demand of 4.5 million cubic metres a year.

The [investigation report](#) of the World Bank inspection panel, dating back to November 2011, confirms that the plant will put additional strain on water consumption and create additional pollution risks.

To address industrial water needs, the Mokolo and Crocodile River Water Augmentation Project (MCWAP) plans to increase pipeline capacity from the Mokolo Dam from 13.5 million to 50.4 million cubic meters of water per year (Phase 1) and to construct a pipeline of approximately 130 km to transfer water from the Crocodile River (West) to the Lephalale area (Phase 2A). However, this water augmentation project is expected to have significant [effects](#) on farming water resources. The MCWAP-2A obtained an environmental impact assessment (EIA) authorisation from the Department of Environmental Affairs in December 2018 but the decision was [appealed](#) by Earthlife Africa and Groundwork.

Illegal sand mining

The significant amount of concrete needed to build Medupi also caused disproportionate sand mining activities in the lower Mokolo riverbed, close to Lephalale. Local farmers argued that sand mining put the [health of the river](#) and crop irrigation at risk. According to [Groundwork](#), just under 500 000 m³ of sand were extracted to build Medupi. Moreover, the World Bank [Inspection Panel](#) already acknowledged in 2011 that the allegations of harm caused by sand mining on ground water availability were credible.

Governance

Brief history

Due to power shortages in 2007, the South-African state-owned electricity company Eskom [awarded contracts](#) to build two identical coal-fired power plants. Known as Medupi and Kusile, each plant was designed to have a generating gross capacity of around 4,800 megawatts. The combined output of the plants would represent about 25% of South Africa's power generation capacity.

Both plants faced significant delays. In August 2015, Medupi's first unit (Unit 6) was [commissioned](#). Four other units followed between 2017 and [2019](#). The last unit [attained commercial operation status](#) on July 31, 2021. However, an [explosion](#) that occurred on August 8 2021 at Unit 4 led to severe damages on the generator and turbine. Fortunately, no injuries were reported among the staff.

The plant has indeed been plagued by a [series of technological issues](#), among others with the boilers, steam piping pressure, mill crushers, and [ash system blockage](#). In February 2019, [Eskom reported](#) that ZAR8 billion would be needed to fix design defects at Medupi and Kusile. Repairs were [made](#) in the first half of 2020. More repairs were scheduled later on in 2020.

Medupi has attracted widespread criticism in South Africa and has been at the centre of a local and international campaign targeting the World Bank at the beginning of 2010.

Updates

Explosion put Medupi's unit 4 out of service for at least a year, says Eskom

Aug 8 2021

The Medupi coal-fired power plant in Limpopo experienced an [explosion](#) at its unit 4 generator on 8 August. While the explosion caused severe damage to the generator, seven employees were treated for shock, but no injuries or fatalities were reported.

After billions in cost overruns, design flaws, delays and load shedding, Medupi is complete

Aug 2 2021

Six years after the first unit began supplying power to the grid, the sixth and last generating unit at Eskom's Medupi coal power station in Lephalale, Limpopo, has reached [commercial operation](#).

Eskom contractors fire more than 1,000 workers over "illegal Medupi strike"

Mar 25 2015

More than 3,000 contract workers went on [strike](#) today to complain about poor pay and discrimination. As a response to the strike, Eskom has halted operations on the power plant for safety and security reasons.

First unit of Medupi power plant online

Mar 2 2015

[According to Eskom](#): Medupi has achieved a significant stage in its construction by the synchronisation of its first unit on 2 March 2015 to the National grid. Within the next three to six months, South Africa will see Medupi unit 6's full potential of 794 megawatt being fed into the South African national grid.

Delay of first unit

Jul 8 2013

In July 2013 Eskom announced that synchronization of the first unit of the power plant to the South African electricity grid would be [delayed until 2014](#), and full operation by 2017, due to rising costs.

World Bank report

Nov 21 2011

An investigative report of the Inspection Panel of the World Bank has reported several issues in regards to the Medupi power plant: significant water consumption, raising issues of both scarcity and pollution in the local area; emission of gases and particulates causing increased health problems in the local area; added burden on the limited institutional and financial capacity of local authorities that have to cope with rapid industrialization of the area, especially as related to public and social infrastructure and environmental management; and emissions of greenhouse gases by the Medupi Power Plant. [Read more](#)

Debt – corporate loan	EUR 1,185 million	December 2009
ECA/Coface-covered loan to fund turbine contracts with Alstom for the Medupi and Kusile plants <i>source:</i> link		
Debt – corporate loan	USD 103 million	22 May 2009
Part of a USD 722 million syndicated loan from European Banks - Proceeds were used to fund part of the Medupi boiler contract with Hitachi <i>source:</i> IJGlobal link		
China Development Bank China profile Details ▼		
Debt – corporate loan	USD 1.5 billion	6 July 2017
State-owned company Eskom has secured USD1.5 billion loan from China Development Bank. The financing will be used for the construction of the Medupi coal-fired power plant. <i>source:</i> IJGlobal link		
Debt – corporate loan	USD 500 million	3 October 2016
<i>source:</i> IJGlobal		
Commerzbank AG Germany profile Details ▼		
Debt – corporate loan	USD 103 million	22 May 2009
Part of a USD 722 million syndicated loan from European Banks - Proceeds were used to fund part of the Medupi boiler contract with Hitachi <i>source:</i> IJGlobal link		
Crédit Agricole France profile Details ▼		
Uncategorised	EUR 63.7 million	August 2010
Export credit - ECA/Coface-covered loan used for the control and instrumentation contract supplied by Alstom <i>source:</i> link		
Debt – corporate loan	EUR 1.185 million	December 2009
ECA/Coface-covered loan to fund turbine contracts with Alstom for the Medupi and Kusile <i>source:</i> link		
Debt – corporate loan	USD 103 million	22 May 2009
Part of a USD 722 million syndicated loan from European Banks - Proceeds were used to fund part of the Medupi boiler contract with Hitachi <i>source:</i> IJGlobal link		
Crédit Mutuel France profile Details ▼		
Debt – corporate loan	EUR 1,185 million	December 2009
Part of €1,185 million syndicated loan (December 2009) ECA/Coface-covered loan to fund turbine contracts with Alstom for the Medupi and Kusile plants <i>source:</i> Agence France Presse, "S.Africa power firm gets loans from French banks", Agence France Presse, 28 December 2009.		
HypoVereinsbank Details ▼		
Debt – corporate loan	USD 103 million	22 May 2009
Part of a USD 722 million syndicated loan from European Banks - Proceeds were used to fund part of the Medupi boiler contract with Hitachi <i>source:</i> IJGlobal link		

JPMorgan Chase United States [profile](#)[Details](#) ▼

Advisor April 2010
Advising Eskom on its funding options
source: [link](#)

KfW IPEX-Bank Germany [profile](#)[Details](#) ▼

Debt – trade finance USD 353 million 10 September 2008 - 10 September 2020
export credit - Funding was used to partially finance six boilers that the Hitachi Power consortium supplied
source: IJGlobal
[link](#)

Debt – corporate loan USD 103 million 22 May 2009
Part of a USD 722 million syndicated loan from European Banks - Proceeds were used to fund part of the Medupi boiler contract with Hitachi
source: IJGlobal
[link](#)

Natixis France [profile](#)[Details](#) ▼

Debt – corporate loan EUR 1,185 million December 2009
ECA/Coface-covered loan to fund turbine contracts with Alstom for the Medupi and Kusile plants
source: [link](#)

Debt – corporate loan USD 103 million 22 May 2009
Part of a USD 722 million syndicated loan from European Banks - Proceeds were used to fund part of the Medupi boiler contract with Hitachi
source: IJGlobal
[link](#)

Société Générale France [profile](#)[Details](#) ▼

Debt – corporate loan EUR 1,185 million December 2009
Part of € 1,185 million syndicated loan - ECA/Coface-covered loan to fund turbine contracts with Alstom for the Medupi and Kusile
source: [link](#)

Export credit agencies**Coface**[Details](#) ▼

Debt – corporate loan EUR 1,185 million December 2009
Covering a 5 French banks syndicated loan
source: [link](#)

Debt – corporate loan EUR 63.7 million
Covering Credit Agricole loan
source: [link](#)

Investment funds**Public Investment Corporation (PIC)**[Details](#) ▼

Approached, interested USD 1.2 billion May 2010
No recent information/confirmation could be found on these investment plans. (March 2015)
source: [link](#)

