

# WATER HUNGRY COAL

## **Burning South Africa's water to produce electricity**

Safe, affordable and accessible water is regarded as one of our planet's scarcest natural resources. This is particularly true on the African continent, where water insecurity is often an everyday reality. At the same time, equitable access to water is fundamental to life and human health and well-being.

South Africa already struggles with water scarcity, and it is predicted that the country will face a significant water crisis in the coming decade. Thus water scarcity could well become a fundamental development constraint in the future.

Within this context, a range of choices are being made. Choices with major implications for water availability, poverty alleviation, job creation, electricity generation and energy access. One of these choices relates to the energy future of this country, which has economy-wide implications.

The South African government and Eskom are making a clear energy choice at the moment: in favour of coal expansion, at the expense of access to scarce water resources, people's health and affordable electricity. The coal mining and electricity industry contribute substantially to waterpollution and scarcity, jeopardizing the country's ability to deal with an impending water crisis.

Tragically, competition for this scarce resource may well culminate in conflicts over water. This means that the linkages between coal-fired electricity generation and water can no longer be ignored.

However, the country continues to try to solve the symptoms of these crises instead of addressing the causes. Eskom and the South African government continue to deal with the electricity crisis by building new coal-fired power stations, pushing the price of electricity upwards due to rising coal costs, generating substantial environmental and health impacts, worsening climate change, and thereby accelerating impacts on water scarcity. And the moves to label coal ‘a strategic resource’ puts South Africa’s water resources at severe risk. It is very likely that building more coal-fired power stations like Medupi and Kusile, and increasing coal mining to supply them will essentially send South Africa into a water deficit, given that the country’s total available water resources may well have already been allocated to the maximum.

Coal-fired electricity generation currently contributes to over 90% of South Africa’s electricity, with Eskom accounting for a staggering 62.3% of South Africa’s emissions in 2011. Burning coal to produce electricity is an incredibly water intensive process, with a number of serious implications for both water quantity and quality.

Coal-fired power stations use significantly more water compared to the water needed for most almost 'water-free' renewable energy technologies.

Eskom itself admits that in the process of generating electricity, the utility is a significant user of the country's fresh water.

In one second, Eskom uses the same amount of water as a single person would use within one year, based on access to the minimum 25 litres of water per day. And in seven seconds, the utility uses nearly the same amount of water as a household would use in an entire year, based on the free basic water allocation.

Within this context, in 2012 there are still nearly a million households without access to the minimum 25 litres of water per person per day.

According to the National Water Act (Act no. 36 of 1998) the government, as trustee of the nation's water resources, must allocate water equitably, and in the public interest.<sup>18</sup> These allocation decisions are becoming ever more crucial against the backdrop of an impending water crisis, which makes transparency and accountability in the water sector even more important. However, there is a serious lack of transparency regarding water management plans and water licenses in South Africa. Most of this information remains confidential, and inaccessible to the public.

Of the 22 mines that supply Eskom with coal, half were operating without a valid water licence in 2010, which creates clear threats to the accountability of users and the protection of this country's water resources. And there are still more questions than answers. A recent inquiry by Greenpeace Africa shows that in 2012 the Department of Water Affairs has issued 83 water licences for coal mining, while the Department of Mineral Resources lists 119 operational coal mines. The Department of Water Affairs did not provide an answer clarifying this gap in licensing by the time of publication of this report.

South Africans have a right to know how water is being allocated, managed and polluted. Confidentiality in the water sector essentially disempowers the people of this country, effectively removing their ability to hold industry accountable for its water use. This is particularly true given the fact that no part of the country's water resources are regarded as 'private property', and the National Water Act (Act no.36 of 1998) clearly states in its preamble that "water is a natural resource that belongs to all people". The current allocation of water to the coal mining industry and to Eskom for coal-fired electricity is not a transparent, accountable or sustainable decision. And it is definitely not in the public interest, given that there are very effective alternatives to coal, but there are no alternatives to water.

The vast majority of renewable technologies use substantially lower amounts of water than coal-fired electricity generation.

Wind and solar photovoltaics (PV) are virtually ‘water-free’ technologies. Not considering these alternatives is economically irresponsible, given the high opportunity costs. In fact, investing in another new coal-fired power station (Kusile) equates to a hidden cost of an estimated R42 billion per year that it would operate - and this is only taking into account the water use of the power station. At the high end, the estimated total social damage cost (or externality cost) of Kusile is economically very significant, and could amount to R60.6 billion per year that it operates.

The real solution to South Africa’s water and electricity crisis is not incremental improvements in coal technology, it is an Energy [R]evolution: a shift away from coal and nuclear energy, and towards renewable energy and energy efficiency. This report finds that implementing an Energy [R]evolution in South Africa would not only deliver sustainable electricity to all citizens, but would drastically decrease the amount of water required for electricity production in the country: to half of what would be required for coal mining and coal power combined, and to a level even lower than a 2007 baseline. By shifting away from coal and nuclear energy and towards renewable energy systems, substantial amounts of scarce water could be saved, and diverted to other sectors where it is urgently needed, avoiding water insecurity and potential conflict.

Eskom is the only recognised ‘strategic water user’ of national importance in South Africa. But the utility’s unnecessary water-use for its coal-fired power stations will push this country closer to a water crisis. The utility consistently makes seemingly convincing public statements about how it takes concerns about its water use and environmental sustainability ‘seriously’. However, Eskom simply continues to prioritise coal to the exclusion of all other options. And the ‘solutions’ the utility proposes are not solutions at all, they are simply expensive technology-fixes designed to maintain the status quo.

In light of global water scarcity and catastrophic climate change, incremental improvements in the technology used to burn coal to create electricity are simply not good enough. In reality, Eskom has failed to recognise that the way it currently generates, transmits and distributes electricity is flawed and unsustainable, with substantial, unavoidable and long-lasting impacts. The connection that is not being made is that reducing the country’s coal addiction may actually help to cultivate economic growth and create sustainable jobs through renewable energy.

It is often argued that South Africa’s significant coal dependency results in a number of serious ‘environmental’ impacts. However, it is easy to dismiss these impacts as ‘environmental’ in nature.

Although the right to have access to an environment that is not harmful to people's health or well-being is enshrined in the country's constitution,<sup>34</sup> 'environmental impacts' are often viewed as a necessary evil to allow for development, job creation and a stronger economy. The reality, however, is that it is impossible to survive without water, and all South Africans have an inalienable right of access to sufficient, clean, safe drinking water. The country's coal dependency is a clear illustration of how decisions made today can have long-term unintended consequences.

A significant water crisis is looming in South Africa, and investing in new coal-fired power stations instead of renewable energy and energy efficiency puts all South Africans at risk. Water is not just an environmental issue. It is a fundamental issue at the very heart of justice, development, economics and human rights.

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