

## Cost of health and water impacts of coal still missing from energy plans



The Life after Coal/Impilo Ngaphandle Kwamalahle campaign and Greenpeace Africa welcome research done by the (CSIR) with regards to its through coal-fired power plants.

This research on [coal](#) has been described as a “comprehensive alternative” to the draft Integrated Resource Plan base case (IRP) published for comment by the Department of Energy (DoE) in November 2016.

Two scenarios are developed by the Council for Scientific and Industrial Research (CSIR) team for their alternative IRP, calculated on the basis of “least cost” and “decarbonised”.

Both scenarios result in an energy plan that favours [renewable energy](#), supplemented by storage and gas – with no new coal or [nuclear](#) plants.

These outcomes confirm the position of the Life after Coal campaign and Greenpeace Africa that there should be no new investment in coal-fired power plants, and that a just transition to renewable energy should be prioritised.

However, it is important to note that, despite these outcomes, just like the DoE's draft IRP, even the CSIR's alternative IRP fails to adequately take into account the health and water cost of existing and new investments in coal.

This is a fundamental flaw that means that both of these plans not only wholly underestimate these costs, but show a profound disregard for the high cost of coal on the economy, the citizens of South Africa, and the environment.

The inclusion of these costs starkly demonstrates that the need to move away from coal is more urgent than either the DoE or the CSIR contend.

## Health impacts

Distressingly, the CSIR's alternative IRP makes no mention of health costs at all.

The DoE's draft IRP includes some figures for the "cost of externalities", attributing costs for nitrogen oxides, sulphur oxides, mercury and particulate matter.

However, a report by air quality and health expert Dr Mike Holland from the UK-based consulting firm Ecometrics Research and Consulting, which formed part of the comments on the draft IRP submitted by groundWork, found that:

- The health impacts of [coal-fired power plants](#) in South Africa create a substantial burden on human health, leading to premature death and increased illness quite widely within the population;
- The total quantifiable economic cost of air pollution from coal-fired generation in South Africa is in the region of R33 billion pa. This is made up of impacts in terms of early death, chronic bronchitis, hospital admissions for respiratory and cardiovascular disease, and a variety of minor conditions leading to restrictions on daily activity, including lost productivity; and

- These health impacts are likely most severe on the more disadvantaged members of society, particularly those whose underlying health condition is worst.

A study conducted in 2012 on the external health and environmental costs of supplying coal to the Kusile coal-fired power station indicated a conservative annual damages cost for the health and environmental impacts (simply from the mining and transportation of the coal to Kusile) of R10.5 million, with a high annual damages cost of R15 million.

A 2014 report on the health impacts and social costs of Eskom's coal-fired power stations concluded that atmospheric emissions from those stations were then causing an estimated 2 200 premature deaths pa, due to exposure to fine particulate matter (PM2.5).

This included approximately 200 deaths of young children. The economic cost to society was estimated at R30 billion per year, including premature deaths from PM2.5 exposure and costs from the neurotoxic effects of mercury on children.

## **Water impacts**

Neither the CSIR nor the DoE have included in their calculations the full costs of coal mining and power generation on South Africa's precious freshwater resources. This includes coal mining, coal washing, post-mine [acid mine drainage](#), and acid rain.

These costs, much of which will have to be incurred in perpetuity, have not yet been quantified, even by the Department of Water and Sanitation, but are estimated to be significant. The Anglo American eMalahleni Water Reclamation Project to treat acid mine water cost R1.4 billion in investment capital for phase 1 and phase 2, highlighting the unreported cost of coal.

The draft IRP base case indicates a water consumption of 1.15 litres/kWh (246 TWh/yr energy produced and 282 billion litres/yr water consumed).

This is contradicted by the actual water consumption by Eskom for 2016, which was 1.44 litres/kWh sent out, with a net water consumption of 314.685 million m<sup>3</sup>.

This casts further doubt on the credibility of the water consumption values used by both the DoE and the CSIR, and raises the question whether the water consumption values are deliberately underestimated, or were simply not based on the best available information on the actual water consumption values from the various power plants.

The first option suggests a profound disregard to the ongoing water crisis in South Africa and the second suggests a gross negligence in the scientific rigour.

Moreover, Eskom pays far less for water than other water users. If Eskom had to pay a reasonable household tariff of R10 per kilolitre[13] instead of the greatly-reduced industrial rate, the 2016 water bill would be R3 147 billion, 15 times more than the 2016 system cost of R203 billion.

Subsidising Eskom's water tariff instead of using the real value of water further distorts the cost estimates. Should the true value of water be included in the energy plans, this would further justify a rapid transition away from coal-based energy to water-efficient renewable energy.

## **Conclusion**

The Constitution and the National Development Plan require the inclusion of the health and water costs of coal into future energy planning for South Africa.

Failing to do so would underestimate the costs of coal, and overestimate the cost of alternative options.

Not considering health and water impacts undermines rational, defensible and lawful decision-making about our future energy mix.

*Feature image credit: Eskom (Eskom's Tutuka power station in Mpumalanga, South Africa)*

<https://www.miningreview.com/news/cost-of-health-and-water-impacts-of-coal-still-missing-from-energy-plans/>