Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemarkingsdepartement

Private Bag X3, Rondebosch 7701, South Africa
Welgelegen House, Chapel Road Extension, Rosebank, Cape Town
Tel: +27 (0) 21 650 5427/5428/5674 Fax: +27 (0) 21 650 5628

www.uct.ac.za

14 June 2018

New coal power will cost SA billions, UCT study finds

South Africa does not need new coal-burning power plants

A study by the University of Cape Town's (UCT) Energy Research Centre (ERC) has revealed that newly built coal power plants will add billions to South Africa's power bill over the course of their lifetime, and force cheaper and cleaner renewable-energy alternatives out of the system for years to come.

The report, *An assessment of new coal plants in South Africa's electricity future,* is aimed at quantifying the effects of the inclusion of the coal independent power producer (IPP) in South Africa's electricity system over the period from 2022 to 2052. Jesse Burton and Gregory Ireland co-authored the report.

Burton comments: "Our group, in particular, looks at the relationship between energy systems, development pathways and the economy."

The authors focused on two planned coal plants, Thabametsi in Limpopo and Khanyisa in Mpumalanga, and determined that the plants will cost the country an additional R19.68 billion in present value terms over their lifetimes, compared to an optimal and least-cost energy system that combines wind, solar and gas.

Thabametsi and Khanyisa are the preferred bidders within the first bid window of the coal-baseload IPP procurement programme, and are required to begin operating by December 2021. The two coal plants were forced into South Africa's Integrated Resource Plan (IRP) of 2010 – a document that is still in effect, despite being, in the words of Burton, "irrelevant and outdated".

The world has changed significantly since the IRP was gazetted in 2011, with renewable energy prices having decreased by up to 90%.

Burton says: "It's a completely different ball game. And we know how much these two coal plants are going to cost, because they had to bid into a process. So, you can see that even current renewables are already 40% cheaper than these two new coal plants. But given the IRP of 2010, the Minister of Environmental Affairs is still pushing ahead with these two plants."

Ireland adds: “We know for a fact, no matter how you roll the dice for this, it is going to cost us more. It’s going to have extra, unnecessary emissions, and we need to take that into account.”

The ERC report is based on modelling that seeks to map out a least-cost energy system.

“What these models do is build you an energy system that is the lowest-cost one, subject to various constraints. All of them say we don’t need new coal, we don’t need new nuclear. That is one of our key findings, again, that supports the other independent analysis that exists,” says Burton.

At the time the current IRP was gazetted, the two IPPs were declared to be ‘clean coal’ – with lower carbon dioxide (CO2) emissions than many Eskom’s other plants. But a landmark court case that questioned the environmental impact of the Thabametsi power plant resulted in a judge ordering a climate change impact assessment for the station.

“What you can do is force those plants into your model, and you can directly see what the difference is. You can see all of the deviation from your optimal plan,” explains Ireland.

The assessment revealed the presence of other, more potent greenhouse gases in the mix, including nitrous oxide (N2O), which is roughly 300 times more powerful per unit of volume than CO2. In the team’s reference scenario, the two plants contributed an additional 200 million tonnes of emissions during their lifetime.

The study has shown that the planned IPPs are not necessary. Where the IRP of 2010 expected electricity demand to grow rapidly, demand has remained constant over the past 10 years. In fact, the country already has surplus electricity.

These two plants are supposed to be signed into operation for 30 years, with a fixed power purchase agreement in place. This would mean that Eskom would be forced to purchase a set amount of power from the IPPs, instead of selling power from its already underutilised fleet. Such a scenario would be disastrous for the company, which is already in dire financial straits. It also means that South Africa’s already costly electricity would increase in price.

Read the full report.

Ends

Issued by: UCT Communication and Marketing Department
Thami Nkwanyane
Media Liaison and Monitoring Officer
Communication and Marketing Department
University of Cape Town
Rondebosch
Tel: (021) 650 5672
Cell: (072) 563 9500
Email: thami.nkwanyane@uct.ac.za
Website: www.uct.ac.za