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Realise that Eskom alone cannot solve our power crisis

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The intermittent nature of wind and solar energy is easily complemented by gas turbines to meet demand, writes Anton Eberhard

MOST South Africans are better off than they were in 1994. The growing middle class has done well. It is adept at finding alternatives to inadequate state services through private healthcare, schooling and security. Now it faces a new challenge: its electricity supply may not be secure.

Eskom has again embarked on load-shedding as a result of unplanned outages — Orwellian Newspeak for power cuts because power stations are broken. No one likes fumbling in the dark to find candles, or to have their lives disrupted by not being able to watch TV or cook their evening meal. The urban elites are being forced to discover the lives of the urban and rural poor.

It's a future they do not want. They are becoming angry. They will be even angrier over the next three to five years as power cuts continue.

We now know that Eskom cannot supply all our power needs. Electricity sales are still below 2007 levels. Eskom cannot add enough new power generation capacity in time and the performance of its existing power plants is declining precipitously.

Consider the following: Eskom has about 42GW of installed power generation capacity plus an additional 2GW, or more, of power purchases from independent power producers and imports. Summer demand at present is about 31GW. Hence, we would expect Eskom to meet our demand easily. But it cannot. More than 8GW of power station capacity is unavailable due to equipment failures. Eskom power stations used to generate electricity, on average, more than 90% of the time. That has fallen to less than 75%.

Recently, a silo that feeds coal to Majuba power station collapsed. Eskom staff have managed to rig temporary coal feeders to the power units, but more than half the capacity of the station remains unavailable at a time when it is needed most. A further 3.5GW need to be reserved for maintenance. The system is on a knife edge.

Eskom is losing capacity faster than it can build new power stations. It began construction of its two coal-fed mega power stations — Medupi and Kusile — as long ago as 2007-08. They should already have been online, adding 9.6GW and preventing power cuts. The latest target date for synchronisation with the grid of the first of six power units at Medupi probably will not be met. Informed sources in Eskom predict that the first 0.8GW unit will produce full power late next year and that the second unit will be commissioned only two years later.

Eskom's power stations are also costing more than twice originally budgeted. Eskom is facing an unprecedented financial crisis. In its 90-year history it never relied on government funding; it always managed to fund its capital expenditure through raising debt in private capital markets. But in 2008 this changed; for the first time, the government provided a R60bn subordinated loan, the largest yet to a state-owned entity.

This quasi-equity injection has not been sufficient to restore Eskom's balance sheet and the finance minister has now promised R20bn more. Nevertheless, Moody's has downgraded Eskom's credit rating to junk and the other agencies rank it precariously at the bottom of investment grade.

Eskom's new power stations are late, the performance of its existing power units is declining, its costs are increasing, electricity sales are flat, and its financial and technical performance may continue to deteriorate. Eskom will do its best to keep the lights on. There will be days when there are no power cuts and we may become complacent again. But what is clear as daylight is that blackouts will return. We now have to accept that Eskom alone cannot solve the power crisis.

Marvelously, in this time of crisis, we have seen a successful programme run by the Department of Energy, supported by the Treasury, to procure R120bn in private investment in 64 renewable-energy independent power projects totalling 3.9GW. Between the first and third tender rounds, the tariffs for solar photovoltaic power plants fell 68%, and for wind farms 42%.

These projects are also delivering significant economic benefits. Bids were evaluated 70% in terms of price and 30% in terms of local content, employment, black economic empowerment, and community development criteria. Many of these wind and solar projects are already feeding electricity into the grid. They are all in rural areas and will deliver benefits worth more than R11bn to local communities.

However, some in the African National Congress's economic transformation committee have argued against the growth of private investment in power production and have disputed the localisation, employment and black empowerment benefits. While the latter concerns need careful interrogation, monitoring and, if necessary, renewed incentives or sanctions, it appears that incorrect data have been peddled and the opposition to private investment is misguided.

Delays in finalising contracts in the present tender rounds are prejudicial for our investment climate and for new electricity supply.

Eskom is broke. It cannot consider any new major investments in power generation. Its focus has to be on completing its new power stations and to turn around the deteriorating performance of its existing fleet. In this context, it is peculiar that the Cabinet's energy security committee appears to focus only on nuclear power when the update to the Integrated Resource Plan (IRP) suggests that, because of lower electricity demand, this decision is premature. Reliance on the 2010 version of the IRP is now irrational and potentially disastrous for our economy.

If data errors in the updated IRP were to be corrected, the model would recommend that even more wind energy should be built, at the expense of nuclear power. Proponents of nuclear

power disagree and make three main arguments: that it is cost-effective, provides base-load power, in contrast to intermittent renewable energy, and that it is essential for meeting our climate change mitigation aspirations. None of these arguments holds up to scrutiny.

Nuclear energy is more expensive than alternatives. Contracted wind energy is now less than 70c/kWh and will soon be less than 60c/kWh. Nuclear power cannot compete.

The intermittent nature of wind and solar energy is easily complemented by load-following gas turbines to meet demand. The weighted average cost of wind plus solar plus gas is below that of nuclear energy and, in combination, these can meet demand as reliably. Further, IRP modelling scenarios show that a diverse mix of options (excluding nuclear, but with renewable energy, gas, hydroelectric imports and replacing some coal power stations) can still meet our climate change mitigation aspirations.

Nuclear power is a dangerous and costly diversion. It will do nothing to resolve our immediate or medium-term electricity security concerns and will most likely saddle us with debt for our children.

We need to rethink the structure of our electricity market. To oppose private participation is Neanderthal. We have to improve Eskom's performance while facilitating private investment in supply. If we don't solve this challenge, the middle and upper classes, and industry and commerce, will defect from national and municipal utilities. They will contract their own power supplies and will become angrier at the failures of Eskom and local government. And that will give rise to an additional challenge — a political one.

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