

Urgent reforms are needed for responsive power sector

25 Nov 2013 | Anton Eberhard

The era of big coal and big nuclear is at an end. What we now need is leadership and active participation of all in the sector to work towards a secure, competitively priced, environmentally sustainable and transparent power sector, writes Anton Eberhard

AFTER Eskom issued an unprecedented warning of strain on the power grid, alerting key industrial customers that they could be required to cut usage by 10%, we are reminded yet again that urgent reforms are needed in South Africa's energy planning and investment paradigm.

We have learned the lesson — through Eskom's new coal power stations, Medupi and Kusile — that what you get with mega plants is not what you planned for: the cost of huge capital infrastructure, especially new, bespoke designs, often ends up being more than double initial estimates and is commissioned long after it is first needed, compromising electricity supply security.

Those who have long enough memories, or have researched Eskom's 1970s and 1980s build programme, know there were time and cost overruns in that programme too. Eskom's mistake was to think big coal would always be less expensive. Its other mistake was to believe it could manage all the risks of mega projects adequately.

The initial investment decision to build a new coal power station, Medupi, was made in 2005. Since then, the price tag has steadily increased to R105bn and is likely to rise to R150bn (including interest during construction and the costs of pollution control), with completion set, rather vaguely, for "sometime in the second half of 2014".

The 1998 Energy Policy White Paper anticipated electricity demand would outstrip supply by 2007 and indeed, the first supply shortages became apparent around that time and culminated catastrophically in the week-long load-shedding in January 2008.

Since then, electricity demand has been flat and we have been spared serious power cuts — until last week, that is. The demand-supply balance will remain precarious — at least for another three years — and it is reasonable to suggest constrained electricity supply is one of the reasons for South Africa's sclerotic economic growth.

This experience with coal power investments has to make us think more carefully and deeply about our planning processes, how we procure and contract new power and within what kind of market structure.

In the past, Eskom was solely responsible for generation expansion planning. In practical terms it still is, but it produces integrated resource plans (IRPs) under the guidance of the minister of energy, who has statutory responsibility to determine how much new generation is required, from which resources, when, and who should produce it.

The current IRP (IRP2010) is widely regarded as being out of date. Its demand forecasts no longer reflect reality. In addition, options such as gas were not adequately considered, and cost assumptions for nuclear and renewable energy are at variance with revealed market prices. The most recent nuclear power contract — Hinkley Point in the UK — has investment costs of \$7,900/kW. The IRP assumes \$5,800/kW. The most recent renewable energy tenders in South Africa reveal wind prices as low as 66c/kWh, less than half the cost of nuclear energy.

Despite these data deficiencies, there have been repeated statements that IRP2010 is our present plan and South Africa is committed to investing in a fleet of new nuclear power stations, despite international evidence that nuclear is both uncompetitive and unaffordable.

Add to this that the planning and procurement processes around nuclear energy are not transparent. Nuclear is explicitly excluded from new generation regulations under the Electricity Regulation Act and instead has a special Cabinet national nuclear energy executive co-ordinating committee.

Fortunately, we now have an example of a starkly different model of procuring new power — the Renewable Energy Independent Power Producer Programme (REIPPP). An extraordinary success, the REIPPP has resulted in competitive bids for grid-connected renewable energy in South Africa.

In the space of the past two years, we have gone from fewer than a handful of IPPs to 64 new solar, wind and biomass projects with more than R100bn of private investment committed. This is a significant achievement. Not only have we demonstrated that the private sector is willing to invest in power in South Africa, we have also seen prices fall dramatically. Bid prices for solar photovoltaic power have fallen 68% and wind energy 42% over the past two years. In contrast, the costs of coal and nuclear plants continue to rise.

The experience of procuring renewable energy could not be more different than that for big coal and big nuclear. It's been a transparent and competitive process. We know exactly what the price will be for the next 20 years. The private sector has been willing to invest and it has assumed the major cost risks. If equipment or construction costs rise, the investors take a haircut, not the consumers.

The renewable energy programme has also involved a greater diversity of smaller projects that will be constructed in record time. And there is a pipeline of nearly 50 more projects — totalling 5,000MW — that are ready to be contracted.

Critics will say we cannot compare renewables — with their variable and low capacity factors — with the base load of big coal and big nuclear power. But ultimately, the test is price and reliability of supply. Renewables can be successfully integrated into the grid, especially when complemented by other flexible technologies such as gas power.

It is questionable and, frankly, potentially disastrous for our economy, to rely on an IRP that incorporates wrong cost assumptions and depends on huge, capital-intensive multiyear investments in the context of uncertainty over future demand and costs. We need a new, more responsive planning and investment paradigm in the face of uncertainty. Several reforms are necessary.

First, we need an updated IRP and, thankfully, the Department of Energy has asked Eskom to do this. We also need to translate planning scenarios, in a less dirigiste manner, into investment decisions. The powers vested in the minister at present are unrealistically ambitious. The IRP or plan should be indicative, rather than mandatory, and the regulator should be allowed to license new IPPs even if they are not in the IRP, provided they contribute to supply security and are cost-competitive.

Third, we need to restructure the electricity supply industry to create a more level playing field between Eskom and private investors, and to create sustainable institutional capacity to plan, procure and contract new power. The proposed Independent System and Market Operator Bill is a step in the right direction, but it would be better if transmission were also separated from Eskom.

The National Development Plan lays out a credible and pragmatic future, suggesting that, in 2030, coal will contribute proportionately less to primary-energy needs, while gas and renewable energy IPPs, and imported hydroelectricity, will play a much larger role. Liquefied natural gas imports, or offshore gas, or shale gas, or pipelines from our neighbours, or a combination of these options, will probably transform our energy sector. The initiative of the Department of Energy to develop a national gas infrastructure master plan is thus welcome.

The era of big coal and big nuclear is at an end. What we now need is leadership and active participation of all in the sector to work towards the vision that we all want: a secure, competitively priced, environmentally sustainable and transparent power sector to fuel economic growth and improve the welfare of all our people.

• *Eberhard is a professor at the UCT Graduate School of Business.*

~ o O o ~