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## **Nuclear too costly and SA does not even need it**

by Anton Eberhard, mars 29 2016, 05:36

IT IS time for the gloves to come off. The onus is on those who support the procurement of nuclear power stations to demonstrate that this initiative is not corrupt and will not be ruinous for the economy.

We face a possible credit rating downgrade to junk, which will make us all poorer : it will cost a lot more to service our debt, there will be less money for social programmes, the rand will fall even further, and inflation will rise.

Yet some still promote a huge nuclear programme that is not needed, that is more expensive and risky than alternative energy sources, that is hard to finance, and that will create contingent liabilities for the Treasury when we can least afford them.

SA does not need to procure large chunks of new power now. Electricity demand is not growing : it's falling, and is lower than it was a decade ago. Depressed economic activity is partly the reason, but it's not the most important one.

Electricity and economic growth data no longer track each other. The size of SA's economy has continued to increase, albeit slowly, but electricity consumption has headed in the opposite direction. Countries such as Australia have seen a similar decoupling of energy and economic growth.

Could electricity demand in SA rebound if economic growth revives ? Do we need to cater for depressed electricity demand as a result of Eskom supply constraints ? Possibly. But we also need to recognise that there are profound changes to the energy-intensity of our economy, as smelters and mines close. The structure of our economy is changing. A fourfold increase in electricity prices in the past decade has accelerated energy-efficiency investments and energy conservation.

Official electricity demand forecasts and plans are obsolete. If demand for electricity were to reignite, it would fire off a lower base, and the rate of growth would be lower. When we project demand forward to 2030 or beyond, it's obvious that we need a lot less power than was forecast in the

Integrated Resource Plan of 2010 (the basis for the 9600MW nuclear commitment).

But we also need to replace old coal power plants, and compensate for the decline in the performance of Eskom's existing power stations. I've taken all these arguments into account, and calculate that we need about 17GW of new electricity generating capacity by 2030. Some may calculate a slightly different number, but the required capacity will be close to this.

We have already ordered more power than we need by 2030. The new Eskom Medupi and Kusile coal power stations will add 9.6GW ; its Ingula pumped storage scheme, 1.3GW. Two peaking power stations — Desisa and Avon, ordered by the Department of Energy — will add 1GW.

Contracted industrial co-generation and the department's coal independent power producers (IPPs) will each add 1GW, with plans for more. In addition, 92 projects, totalling 6,347MW, have been contracted in the first four rounds of the department's renewable energy IPP programme. Granted, this is intermittent power and will need to be complemented by gas power plants that the department plans to procure this year. More than 3GW are in the pipeline.

In the meantime, SA has negotiated 2.5GW of hydro power from the Inga 3 development in the Democratic Republic of Congo, and is considering further hydro imports from the region.

Together, these power procurements exceed what we need in the next 15 years.

Nuclear energy is also more expensive than alternative power sources, and the risks of cost overruns are greater. Eskom argues that its Koeberg nuclear power plant is cheap, but this is old, generation II technology, and provisions for multibillion-rand decommissioning costs are not fully accounted for. New power plants will have to incorporate the much more expensive design features of safer generation III+ nuclear technology.

Our cheapest sources of power are now wind and solar energy. The Department of Energy has awarded long-term, fixed-price contracts for wind energy as low as 57c/kWh, far below Eskom's average cost of supply. Renewable energy combined with gas power can offer reliable base load supply at less than R1/kWh. Imported hydro and coal IPPs will also beat this.

I challenge any nuclear power vendor to sign a long-term power contract at less than R1/kWh. Whenever I ask them what nuclear power will cost in the country, they say "it depends", and "it will need to be negotiated".

This is the point : nuclear vendors are loathe to submit to a competitive tendering process based on a long-term, fixed-priced contract in which they take the risks of construction time and cost overruns. But all the other energy technology providers are prepared to do so. This has been the basis of the success of the IPP programme that has delivered such spectacular investment outcomes and price certainty for consumers. So why would we opt for a nuclear procurement programme that aims only to select a strategic partner, with subsequent price negotiations that have uncertain outcomes ?

Nuclear power plants are also hard to finance. A couple of years ago in Davos, President Jacob Zuma was asked how 9,600MW of nuclear power would be financed. His answer, remarkably, was : "I'll speak to my finance minister."

He would have had that conversation by now and it will be clear that there is no fiscal space to finance a programme that will cost more than a half-a-trillion rand, when we raise just more than a trillion rand annually in taxes to fund all SA's needs. Debt financing is now the fastest-growing component of the national budget and interest payments are more than twice the spend on higher education.

Our traditional mechanisms for funding power investments are also constrained. Eskom's balance sheet is stressed, and it is struggling to raise sufficient debt on private capital markets to complete Medupi and Kusile. It has no possibility of raising finance for even one nuclear power station.

The private sector will not finance a nuclear plant in SA. The only possibility is funding from nuclear vendor countries. France will struggle : its nuclear company, Areva, is technically bankrupt and its latest UK nuclear contract — at €92.50/MWh (R2/kWh) — would be unaffordable for us.

Russia will not be able to finance all of its nuclear ambitions. China is a possibility, but financing will need to be backed by a long-term contract with an agreed electricity tariff, and the government will have to provide a sovereign guarantee and insurance cover, which will add contingent liabilities to the Treasury that will hasten a credit rating downgrade.

Eskom's management recently expressed interest in further investments in large coal and nuclear projects. Its big coal, big nuclear, and big networks strategy is Neanderthal. Why would SA want to go down this route ? It's irrational. SA's economic situation is precarious. The government now needs to act in concert and remove uncertainty about this nuclear folly. We don't need it, it is too expensive, and we cannot afford it.

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