



Jacob Maroga

Interview with Eskom CEO Jacob Maroga on the generation capacity crisis in South Africa

by Chris Yelland, managing editor, EE Publishers

On 6 February 2008, EE Publishers conducted an exclusive interview with Eskom CEO Jacob Maroga to discuss some of the issues and possible solutions to the generation capacity crisis in South Africa.

Issue 1: The future generation capacity and reserve margin outlook

Year	Forecast demand (MW)	New plant (MW/yr)	YearEnd capacity (MW)	Reserve margin (%)	Ideal capacity (15% margin) (MW)	Shortfall (MW)
2008	38287	2024	40548	5.90%	44030	3482
2009	40158	1915	42463	5.70%	46182	3718
2010	41671	1892	44355	6.40%	47922	3566
2011	43238	181	44536	3.00%	49724	5188
2012	44665	1003	45539	2.00%	51365	5826
2013	46430	2422	47961	3.30%	53395	5433
2014	48624	2363	50324	3.50%	55918	5594

In the light of the table above, it appears that by 2014, after seven years of investment and building 30% new capacity, the reserve margin is planned to be significantly less than it is in 2008. Please comment on the table and this conclusion?

If one projects a fixed demand increase of 4% per annum going forward, plus the current planned generation capacity build to 2014, one gets the figures in the table. As can be seen, the reserve margin problem is going to take some time to resolve, hence demand management and other strategies must be introduced. Independent power production, industrial co-generation and demand management will contribute toward a healthier situation, and these and some other options to relieve the situation are not factored into this table. The Department of Minerals and Energy's independent power producer initiative does appear to be factored into the table, but not factored in is industrial co-generation. There could also be some relatively quick open and combined cycle gas turbine (OCGT and CCGT) opportunities that are not factored into the table.

Issue 2: The role of hydro power

Please comment on the role of new hydro power projects in meeting the need for increased generation capacity for South Africa?

The capacity of the Cahora Bassa HVDC link is 2000 MW, but for technical reasons we have only been able (at times) to receive 1500 MW via this source. It is clearly an important part of the supply mix. In the future it may be possible to increase the supply from Cahora Bassa, but this is a longer term option. Downstream on the Zambezi there is potential for further hydro power that has been talked about for a long time. However, it is still difficult to indicate time-scales at this stage, and this is not factored into the Eskom ISEP planning yet. The Westcor transmission project from the envisaged Inga 3 hydro power plant on the Congo River is only at the feasibility stage. The project may proceed, but again we do not consider this on our current 10 year horizon, and the business case still needs to be considered. We have not focussed on smaller hydro power plant, and have no concrete or substantial plans in this regard.

Issue 3: The role of wind energy

What has to be done for wind energy to become a relevant part of the generation mix as it is becoming in several other countries?

Other countries have substantial installed wind generation capacity generally because they have a clear tariff regime with feed-in tariffs, and this is where we need to go. There need to be clear market signals in the form of a subsidy framework and feed-in tariffs. But this not only up to Eskom - government policies and the regulatory framework must support this.

Issue 4: The role of IPP participation

What is holding back the participation of independent power producers in contributing to alleviate the generation capacity crisis in South Africa?

If I look at the number of power stations required for new capacity, the size of funding and capital expenditure, and the skills required, then I must acknowledge and say that Eskom does not know it all and cannot do it all. IPPs can bring to the table skills, capital and new areas of supply. The equipment supply market is tight, and IPPs may have relationships with suppliers which they can use to advantage. The question is how do we, and how should we, get others to participate? There is a case for diversity and the policy makers want independent power producers. The stumbling blocks are in the details of power purchase agreements (PPAs). In order to obtain the large capex finance required, an IPP has to have a long term tariff/pricing regime, or there must be a mature energy market. The Botswana and other IPP negotiations are advancing, and if we can sort out the PPA issues, then IPPs can make a significant contribution. Investors do need the continuity and security of a PPA, but we must be careful not to solve short-term problems with long term PPAs. Although the incumbent (Eskom) may be seen as anti-competitive, or having conflicts of interests, the reality is that a PPA with a large state-owned power purchaser like Eskom is, in fact, attractive to an IPP. The correct balance of a fair tariff with the advantages of a strong, long-term electrical energy purchaser is the key.

Issue 5: The role of coal in the current crisis

What is the role of coal to the current crisis? Is an obsession with maintaining artificially low costs compromising security of supply?

Low coal stockpiles, inadequate coal supplies, poor coal quality and wet coal have all impacted on the current situation to cause significant and unplanned reductions of generation capacity. Low stocks of coal have caused some power stations to operate at reduced output in order to preserve or stretch stockpiles. Poor coal quality (with low calorific value and high ash content) has also forced reduced power station outputs. Wet coal is a seasonal problem and has affected output too. The combination of low coal stockpiles and the recent rains have also negatively impacted the capacity problem because the coal at the bottom of low stockpiles comprises significant "fines" content, which is difficult to handle when wet. If we had had more coal in the stockpiles, the wet weather would not have been such a problem.

Coal supply is also clearly being "managed" by the suppliers in the light of high export prices. In some cases the suppliers have been in breach of their contracts with Eskom, but the applicable penalties they face versus the high export prices they can obtain is such that the coal suppliers may choose to get higher resulting net prices by exporting.

But while there have been problems caused by low coal stockpiles, inadequate coal supplies, poor coal quality and wet coal, a bigger problem has been caused by running plant harder in the current environment of tight reserve margins. For example, while coal supply contracts may be based on power station load factors of 70%, now load factors are pushed to 80% and higher. This places an additional load on the coal suppliers which can affect their ability to deliver an adequate supply. Additional stocks over and above the contract amount must be purchased at the short-term price for coal.

However I do believe the basic approach of Eskom using the low quality coal, and the mines exporting the higher quality coal is sound, and that this does not fundamentally impact on the risks to security of supply. I do not believe that we are risking security of supply through an excessive emphasis on achieving low costs, or an unwillingness to pay a fair price for better quality coal.

We do have an obligation to the regulator to optimise our fuel costs, but we also have to prove that our approach does not introduce unacceptable security of supply risks. One can also ask if the regulator is applying the correct balance in its assessments. However, it does seem that at NERSA there is a new awareness of the externalities outside of our control that may justify price increases. I believe that at least part of our fuel cost increases should be considered as a "pass through cost" to the final electricity price, and there seems to be some new acceptance of this at NERSA.

Issue 6: The role of industrial co-generation

What is the potential of industrial co-generation in relieving Eskom's current generation capacity crisis, and what is holding back this option?

Industrial co-generation can make a very significant contribution to alleviating the current generation capacity shortfall. Initially we aspired to obtain 900 MW from this source. Bids of some 5000 MW have since been received, and we can see now a potential for some 3500 MW. There are lots of steps that still have to be taken, but by mid 2008 we should be able to start concluding agreements. It is all a question of the price. We have to weigh up the cost of co-generation with the cost of not having adequate supply. We are not obsessed with minimising cost, but as a regulated monopoly a balance is required, and we do have to consider our costs properly. Maybe as the crisis deepens, the appetite for increased prices will improve.

Issue 7: The role of nuclear energy

Are there any possibilities for nuclear power plant coming on stream by 2014? What about the PBMR project?

We have significant plans for new nuclear power plant in the future generation mix. Negotiations are in progress with suppliers, but these are longer term projects, and the first of these would only come on stream beyond 2014.

Regarding the pebble bed modular reactor (PBMR), one needs to understand where we are in the project cycle. This is still a technology under development, and pilot plant demonstrations and regulatory approvals are still required before full commercial deployment. The demonstration phase is a big step in itself.

Regarding the time-frames for full-scale commercial deployment, I do not want to hazard a guess, as this project and its development are not in Eskom's hands. While some may think the PBMR may provide a short-term solution, we must

be open-minded - this is new technology and there is inevitably some uncertainty.

Issue 8: The role of demand management

Why are we only now getting serious about geyser and other domestic load control options? What has been holding things back until there is a full-on national emergency?

We need to understand the context of energy and demand management, and where we are coming from - previously we had some 30% excess generation capacity, and in those days we did not even think of demand management. In fact, quite the opposite - we encouraged and marketed the use of electricity. Pricing that reflects the economic cost of electricity will provide the biggest incentive for energy efficiency and demand side management. At the current low prices, there is still not a big enough incentive to save electricity, and price is not giving an effective signal to users.

The new situation requires a different mind-set. Demand management is being accelerated as it has become an important solution to the current challenge. We do see a lot of scope for demand management and we should be doing a lot more, although this is not just an Eskom responsibility. By 2012 we want to save 3000 MW, and in fact we want to bring this target forward.

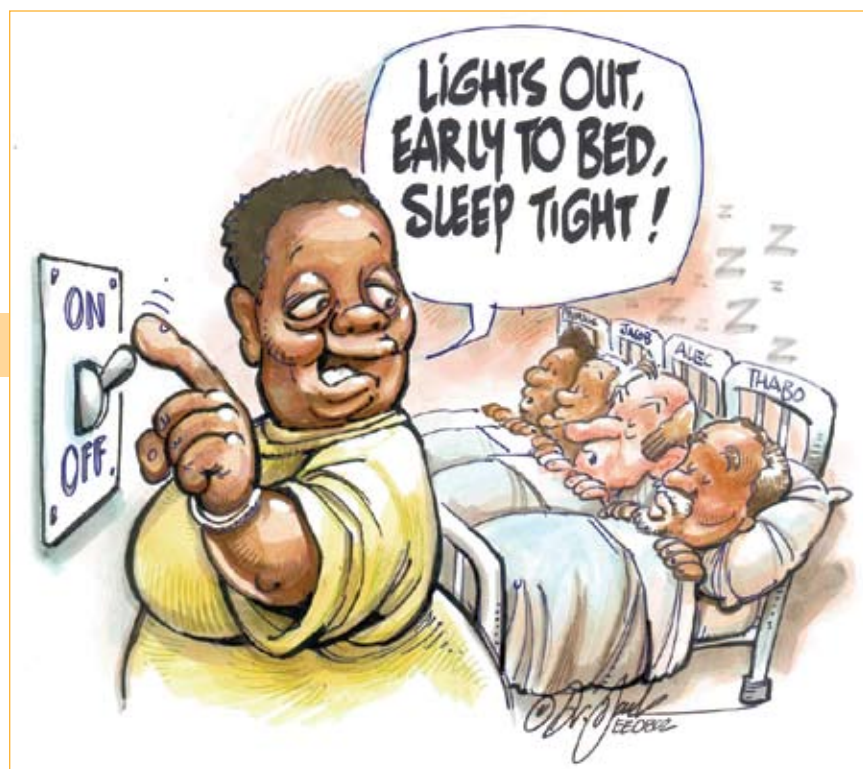
Issue 9: The role of the private sector through tariffs and other economic signals

Why not provide broad economic and tariff signals to achieve the desired response? Where are the kVA demand, power factor and domestic time-of-use signals, and where are the IPP, co-generation and wind-power feed-in tariffs to encourage and reward a broad private sector participation and response?

You are right - there are inadequate signals in place. The intention is there, but we have moved too slowly, and we have to react with more speed now. However, the fundamental issue is that the price of electricity does not properly reflect the real costs, and therefore this signal is a disincentive to users.

Regarding time-of-use tariffs for domestic users, the barrier for users is the meters and associated costs. Also, for lower income domestic users, the

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opportunities and benefits of load shifting and energy saving are relatively low. Therefore perhaps the focus here should be on larger domestic consumers, and commercial and industrial customers.

There are a lot of good intentions, but we need to introduce the framework and the capacity to execute these intentions.

Issue 10: Independent technical review

Would Eskom support an independent technical review to consider its failure to meet demand, and the current management and engineering plans to address this situation?

It really depends on what you want to do with an independent technical review. Reviews that are intended to find scapegoats or victims will do just that, but are not in our interest. We have done our own internal reviews, and you may say they are not independent, but they are done by credible people. They look at things like plant availability against international norms that are in the public domain. The issues that we may want to look at are whether our planning is robust enough, whether the rate of unplanned outages is out of the norm, and what are the underlying factors? Is there a correlation between how hard we run the plant and the number of outages?

As chief executive, I do not necessarily accept that there is a linear relationship between how hard you run the plant and how often unplanned outages occur. My view is that even if some of the unplanned outages are due to running the plant harder, we have to become slicker in running the plant harder but still maintaining a world-class unplanned outage standard. We managed easily under excess capacity and we must also demonstrate that we can do better under a tight system.

I would welcome input from a technical review or combination of reviews that point out where the opportunities are for us to move in the right direction under the current circumstances.