

The threat of rapidly rising electricity prices for energy-intensive users

Is South Africa at a tipping point when it comes to electricity prices and the supply of electricity in the mining industry? This was the question posed by Mike Rossouw, Executive Director of Xstrata Alloys, who was the guest speaker at an industry discussion presented by the Pretoria branch of the Southern African Institute of Mining and Metallurgy (SAIMM) that took place at the University of Pretoria in April 2012. The topic under discussion was the threat of rising electricity prices and low security of supply on the South African mining and metallurgical community.

A tipping point refers to the moment of critical mass; the threshold; the boiling point. Within the mining and metallurgical community, the threat of rising electricity prices is creating a situation where there is “all load and no traction”, which could translate into no jobs if not managed correctly. Electricity prices and supply are currently seriously threatening growth. The South African government’s position on developed economies’ climate change policy, carbon tax and the issue of nationalisation might translate into new labour laws that come with even more transformation and increased taxes.

Ultimately, South Africa is entering a terrain where electricity prices will either ‘make’ or ‘break’ projects. If electricity prices rise to an unmanageable rate, the mining industry, together with other energy-intensive users, will not continue to implement subsidies and pay other taxes. Unfortunately, imports from other countries that are in direct opposition with South Africa’s own markets, such as the ferrochrome imports in China, further inhibit growth, even though South Africa potentially has more of the resources available than other countries. While the National Energy Regulator of South Africa (NERSA) approves costs and returns recovered from tariffs, the average cost per voltage has risen too fast (and continues to rise) and is too high to be considered an affordable price path. If the price rises inconsistently and is too high, industry demand will shrink and then collapse.

However, if the price of electricity is too low, new generating capacity cannot be funded. The price needs to be established at a cost-effective level that will also support the build level. In contrast, if the price is too high, marginal energy-intensive sectors will shut down, sectors that have been targeted for job growth will shrink or stagnate, competition in certain energy-intensive sectors will not be viable, and the balance of payments and GDP will shrink.

It is important to take cognisance of the fact that there are a number of levers that can be used to balance funding and affordability, but these need more robust modelling and analysis to inform concrete decision-making. These levers include asset depreciation, capital expenditure (CAPEX) and rate of return, independent power producer (IPP) purchases, and levies and taxes. At all times during the process of finding a solution, the shortfall in the operating margin must be considered, lest the overuse of assets be to the detriment of the consumer.

Another fundamental challenge for the energy-intensive users’ group is that there is currently not enough energy to sustain the South African economy. There are increases in the risk of forced outages due to maintenance that is long overdue, and there are shortfalls in the daily operating margin that are too high and too frequent. It is imperative to increase emergency reserves from 1 220 MW to 4 220 MW to merely sustain the current economy. Additional reserves need to be identified, and more projects need to be created.

From the supply side, the following projects have already been identified:

- Municipal generation
- Additional capacity from the medium-term power purchase programme
- Short-term local and cross-border independent power producers
- Regional gas options
- Solar photovoltaic cells
- Coal quality improvement
- Non-Eskom peaking generation
- Standby customer generation (for example, shopping centres)
- Additional demand market participation (large customers)

From the demand side, the following programmes have been acknowledged:

- Demand response
- Power buy-back

- Voluntary energy conservation schemes (additional)
- Emergency demand market participation
- Mandatory demand management participation (DMP) through regulations

Furthermore, nuclear power stations, gas turbines, and hydro power are all controversial, but worthwhile options that need to be analysed further if the economy is to grow in the future.

Rossouw concluded that now, more than ever, every stakeholder that is affected in some way by this energy crisis needs to communicate and work together as one team.

One of the tenets of the SAIMM's mission is to bring the mining and metallurgical fraternities, research and education personnel, and students together in one organisation; and to judiciously anticipate the needs of members. By hosting industry-specific discussions around pertinent issues, the collective generation of creative solutions is increased. It is the hope of the entire industry, of which SAIMM – and by extension the Department of Mining and the Department of Materials Science and Metallurgical Engineering at the University of Pretoria – is part, that a vibrant solution to the energy crisis will be reached shortly. 🌱

Mike Rossouw is an alumnus of the University of Pretoria. He has over 30 years' experience in engineering, and has occupied general and executive management positions in the gold, manganese, titanium, platinum and chrome mining, and mineral beneficiation sectors. He is currently the executive director of Xstrata Alloys, and was previously a non-executive director of Zimplats. He also served a term of five years as the government-appointed, independent director of NERSA.