

Why Increase Electricity Prices?

In early March Eskom submitted a revised request for a real tariff increase of 53 per cent to be effective from 1 April 2008. NERSA is currently considering the price application, with a final decision expected in early June 2008.

Eskom's justification for its revised request is based on the need to recoup the cost of primary energy inputs such as coal and oil, which have increased substantially over the past three years and to fund accelerated spending on demand-side management (DSM) initiatives.

Given the current shortfall of electricity in the economy and the sharp increase in its real cost, a substantial rise in electricity prices can be justified more properly on the grounds that it is the most efficient way to reduce demand for electricity, to elicit short and medium term increases in supply from alternate sources, especially cogeneration; and it is necessary for Eskom and other suppliers to be able to fund the cost of major increases in generating capacity.

Key Issue

For some time now South African electricity prices have been among the lowest in the world.

This is not because electricity is inherently less costly to produce and distribute here than elsewhere. It is, rather, the result of previous management decisions.

The first was huge over-investment in electricity generating capacity several decades ago. As the capital costs of these investments were written off, they became sunk costs. With these costs written off, and with massive surplus capacity, there was, for some time, no need to contemplate or provide for new generating capacity, and the real cost of electricity depended only on the variable costs of fuel and distribution. With vast reserves of low cost coal operating costs were also low.

The second was to allow the era of artificially cheap electricity to go too long. Despite (remarkably accurate) predictions over a decade ago that supply shortages would emerge by 2007 or 2008, no serious actions or financial provisions were made to invest in significant amounts of new capacity. The result was the emergence of shortages that were manifested in major power supply interruptions in 2007 and early 2008. Furthermore, since there are significant time lags in the installation of new generating capacity, demand will have to be restrained for at least the next five years.

Whatever the reasons and wherever the responsibility lies for these mistakes, South Africa now faces a serious issue of demand management and an urgent need for capacity expansion. For both of these reasons, the real cost of electricity is no longer what we have grown accustomed to. This is exacerbated further by:

- the global boom in commodity prices that has raised the world price of coal, the principal fuel used for electricity generation in South Africa, and of steel, cement and other construction materials required for capacity expansion, and
- the growing recognition of the external costs of environmental impacts of coal-fired electricity production.

The economic costs of subsidising or otherwise trying to offset the effects of price increases for industrial, commercial or household users would be extremely high and, with few exceptions such as assisting very poor consumers, would be difficult to justify. Alternatives to price increases, such as a continuation of random or even predictable rolling blackouts and brownouts, or other more sophisticated administrative allocation mechanisms are far more costly and less effective than price increases in restraining electricity demand. They undermine business and consumer confidence and would impose additional economic costs to the already significant ones of adjusting to the reality of higher cost electricity. While there has been understandable attention paid to a wide variety of "demand management" schemes, few of these will be as effective as a combination of real price increases and efforts to inform electricity users of alternatives. These arguments have been put forward at greater length elsewhere. The purpose of this note is to discuss a few particular issues that

have arisen in recent discussions of policy alternatives.

Punish Eskom?

It is widely believed that the electricity crisis is in large part a result of mismanagement by some combination of regulators, government departments and especially of Eskom. This mismanagement is seen by labour and others as a *prima facie* reason to deny the 53 per cent real price increase requested by Eskom.

The price of electricity is a critical signal governing economy-wide decisions about demand and supply of electricity and all of the goods and services for which it is used. Should we worry about cash surpluses that might accrue to Eskom as a result of price increases? No. First, these surpluses would become part of the funding base for capacity expansion. Second, Eskom's resources belong to the state, not to the management of the company. And third, if there continues to be concern about any such cash surpluses, the necessary price increases could be achieved through a tax, although this would not help to elicit increases in supply from alternative sources (unless there is some differentiation according, for instance, to whether revenues come from old or new sources).

It is perhaps politically unfortunate that the current push for a price increase comes from Eskom rather than a key economics ministry or from cabinet or even NERSA.

While Eskom's request for a price increase reflects in part the current demand and supply situation in the electricity industry, the arguments that have been put forward for the magnitude of the increase are inadequate. Their rationale is simply based on rising primary energy costs. *The real economic argument for a price increase is based on providing correct demand and supply signals based on the true marginal cost of electricity in South Africa.*

What Price?

It is important to distinguish between the average price of electricity and the structure of electricity prices. NERSA determines the average price that may be charged over a period of time, typically a year. In the long run, this price should reflect the true long run cost of electricity generation, including all relevant capital costs, variable generating costs (including financial and external costs of fuel), and distribution costs. At present the price approved by NERSA simply reflects the average cost of supplying electricity, most of which is diluted by the fact that Eskom has generation assets that have long been paid off.

Over the next 5 years electricity supply will be seriously constrained. All other things equal (most importantly electricity prices), demand will continue to grow in response to general economic growth. Prices will have to perform a key demand management role, and might even be required to exceed long run generating costs. The alternative is administrative supply allocations that will inevitably result in large inefficiencies arising from incomplete information on the part of regulators about the relative value of electricity in different uses, and aggravated by deliberative manipulation of information by rent-seeking electricity users.

The appropriate price for electricity at this point should not be based on whether Eskom will make a profit or continue to be inefficient, but rather on its ability to sensitise users to the higher real cost of electricity so that they are induced to adjust accordingly, and to avoid the need to ration supply through load shedding and other administrative allocations. The price also must attract investments by private power producers and co-generators that are financially unattractive at current low prices.

Growth

What will be the impact of a major electricity price increase on economic growth? To answer this we need to understand the difference between administered market prices and true economic costs. The true economic cost of electricity in South Africa is now significantly higher than it has been. This increase in the cost of electricity has serious economic implications, including the possibility of some overall reduction in real incomes in South Africa, and some redistributions of income among sectors and economic groups.

The impact of this cost increase on real incomes and on growth, however, depends critically on how it is managed.

Failure to adjust the market price of electricity to reflect its true economic cost will have much more grave implications, and will be much more damaging to the level and rate of growth of incomes in South Africa. Failure to adjust prices will discourage electricity users from adjusting to the higher real cost of electricity in economically desirable ways. As long as electricity prices are held below their true economic cost, marginal activities, especially energy-intensive ones that now have negative economic value might remain financially viable. Potential new electricity suppliers will be discouraged from investing. There will continue to be shortages, and electricity will be allocated to inappropriate uses, with a negative impact on GDP and its growth.

Finally, failure to adjust prices will make it necessary to continue with load-shedding and/or other kinds of administrative electricity allocations that will inevitably impose much higher costs on the economy than would increases in the price of electricity. In other words – yes, the increase in the real cost of electricity is imposing a real burden on the economy; but this cost will be minimized by adjusting prices to the new economic costs as a way to encourage changes in electricity usage and to elicit marginal increases in supply while we wait for larger electricity generating investments to be implemented. Repressing electricity prices and keeping them below the true economic cost will make the cost of the adjustment much higher, by failing to induce new investments and new supplies from alternate sources, and by continuing to subsidize economically unviable, energy-intensive production and less productive, energy-intensive production techniques.

Inflation

Electricity accounts for 3.55 per cent in the CPIX basket and 4.17 per cent of the PPI basket. These are not very large shares; but nevertheless, sufficiently large increases in electricity prices would still have some impact on the overall indices. A 60 per cent nominal tariff increase would add 2.1 percentage points to the CPIX.

The reason for increasing the price of electricity is to raise its *relative* price – to make it more expensive relative to other goods and services in the economy and hence to encourage responses in the supply of and demand for electricity in light of its higher real economic cost.

The ultimate impact on economy-wide inflation, however, depends not only on the size of this nominal price increase, but also on the extent to which monetary policy accommodates or resists its impacts on the general price level. Full accommodation by expanding liquidity sufficiently to accommodate the increase with no decrease in other prices would ensure a full pass through of the price increase into the general price level – i.e. a fully accommodated 60 per cent tariff increase would add 2.1 percentage points to the CPIX (not including second round impacts).

Whether to fully or only partially accommodate an electricity price increase through overall liquidity adjustments is a macroeconomic policy decision that is more or less independent of whether and how much to adjust the real price of electricity. Although it might be seen as a deviation from the general inflation targeting regime, a certain amount of accommodation might be a sensible one and for all exception as a way of minimising the overall macroeconomic adjustment costs of the change, especially in light of the general downward stickiness of wages and of many prices.

The danger of accommodation, as was seen in the stagflation of the 1970s, is that a build-up of inflationary expectations can have costly long-term macroeconomic consequences. This danger, together with that of second-round price effects, is greater the longer is the period over which price increases are allowed to take place. A once-and-for all increase can be seen much more easily for what it is – a one-time increase in an important relative price. If the same increase is spread over many years, it will be much more difficult to prevent these increases from being built in to general inflationary expectations, with unfortunate longer-term macroeconomic implications.

Global experience has shown how costly and difficult it is to root out deeply entrenched inflationary expectations. Relative price changes must be managed so as to avoid signals that create such expectations. In the South African context especially, a once-and-for-all relative price increase – even

a very large one – will be easier to manage than a policy that deliberately increases prices of basic goods such as electricity on an ongoing basis, not least because a price increase will induce an offsetting real economic reaction in the form of higher investment and employment, and in productivity gains in the longer run.

The Poor

Households account for only about 20 per cent of all electricity use in South Africa. The lowest decile in the income distribution accounts for only 2.7 per cent of this, or only 0.54 per cent of all electricity use in South Africa and the lowest two deciles account for 1.2 per cent of all electricity consumption in the country. To keep the price of electricity below its economic level to assist the users of less than two percent of all electricity is unimaginably wasteful; over 98 per cent of the benefits of any such action will accrue to users outside of the target group. This is not just unfair, but it also defeats the whole purpose of adjusting electricity prices.

There are far more effective ways to deal with any adverse impacts of electricity prices on the poor, starting with the existing program of providing free basic electricity to the smallest and poorest users. There is no doubt that the existing program leaves room for improvement, especially in achieving more accurate targeting so that middle and upper income consumers do not benefit from an allowance aimed at the poor. But overall, we can be proud of our existing electricity programs for the poor and need not let considerations on this account interfere with rational economic pricing of electricity for the vast majority of users that are not poor.

There almost certainly is a more general argument to be made about the relative prices paid for electricity by households and by industrial and commercial users. There is considerable evidence that at least some industrial and commercial uses are far more heavily subsidized than households at present. Upward price adjustments should be borne relatively more heavily by industrial and commercial users, and this will have some small knock-on benefits (at least relatively speaking) for the poor.

Slow or Fast?

The increase in the price that is required to reach the true economic cost of electricity in South Africa is quite substantial. It has been argued that the cost of adjusting to a substantial price increase might be quite high and that these costs could be reduced by spreading the price adjustment over a longer period of time – say three to four years.

We have already observed that the macroeconomic costs of gradual adjustment would be large, since it is more likely to lock in higher inflationary expectations that would be very costly to squeeze out of the system. A large, but once and for all increase in electricity prices will be much less costly than several years of smaller but ongoing deviations.

At the structural or microeconomic level it is critical to recall the reason for the price adjustment – to move the current market price facing users and suppliers (especially potential new ones) of electricity to the true economic cost of electricity. This is necessary to realign incentives of users and suppliers to the true economic cost, to eliminate the waste arising from the current under-pricing of electricity, and to avoid the need to use far more costly load shedding and other administrative allocation mechanisms to ration electricity use.

The longer necessary price increases are delayed, the longer will the economy endure the costs and growth-reducing impacts of inappropriate electricity pricing.

DSM

Eskom has undertaken responsibility, with some support from NERSA, for the design, financing and implementation of a number of “demand-side management” (DSM) measures. While many potential measures have been discussed, the main project that has been committed to at this stage is the introduction of energy-efficient light bulbs.

The most important DSM measure of all, of course, will be a substantial increase in the price of

electricity. Once this has been accomplished, electricity users will face an accurate signal about the true economic cost of electricity and almost certainly can be relied upon to adjust demand patterns according to their assessments of the costs and benefits of different actions, with no need for state agencies, regulators or ministries to second guess the importance and value of different uses of electricity.

After setting appropriate electricity prices, the only remaining justification for additional DSM measures will be a) lack of information about different technologies on the part of electricity users and b) remaining externalities associated with electricity use that are not already captured in its price. The recent budget announced a small electricity tax that was partly but incompletely motivated by environmental considerations. The current crisis provides an opportunity to clarify the issues surrounding a carbon tax, to be applied to all significant CO₂ generating activities, including electricity generation.

Beyond this, it might be appropriate to explore the rationale for other “green” measures such as support of non-traditional energy sources. But these should be based on sound economic analysis of costs and benefits.

Another challenge is that as long as Eskom (or any other state agency or government ministry) is seen to be the primary provider of DSM measures and there is vague talk about future introduction of particular incentives (e.g. for solar panels), this could act as a strong disincentive for private actors to enter the market or to respond through self-interested conservation measures.

Some Conclusions

In summary:

- The current electricity price is not sustainable over the long term. It encourages the inefficient use of electricity and will not alter behaviour patterns.
- While the proposed price increases are perceived to be high, the expected increases are not sufficient to cover the cost of carbon to the environment.
- Not passing through costs to consumers will perpetuate the current economic distortion of prices lower than levels required to attract investment, resulting in capacity shortages, no co-generation and reluctance of independent power producers to invest in the South African market. The price of electricity should signal the fact that there is a shortage of supply and signal a necessary decrease in energy intensity to both households and firms.
- An electricity price hike will have an adverse impact on inflation and output over the short term. However, if correctly managed (i.e. prevent an inflation spiral), the long-term output losses will be small. Failure to adjust prices quickly will have a far greater impact on incomes, growth and inflation.
- Load shedding on the other hand will have a significant negative impact on both the short and long term. Should electricity demand continue to rise, outages will become more regular and the possibility of blackouts will rise. The short and long term cost of this will significantly outweigh the short-term costs associated with price increases.
- A gradual rise in electricity prices, (i.e. a small rise in real electricity prices over a prolonged period) is unlikely to significantly alter electricity consumption patterns in the short term. This will increase the frequency and duration of load shedding, outages and the potential for blackouts. This scenario will lead to significant output losses over the longer term.
- The impact of not passing through the cost of supply to consumers will be that government, as a shareholder in Eskom will have to make a significant capital injection to fund the current build programme and to maintain Eskom’s current credit rating.