

UBS Investment Research

South African Strategy

The impact of South Africa's power crisis

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■ Power shortages are due to under-investment and high downtime

Power shortages reflect low reserve margins and poor plant availability due to high levels of unplanned maintenance. Planned energy capacity expansion and demand savings will boost reserve margins but this represents, in our view, a best-case scenario. Slower capacity expansion and lower demand savings are more likely.

■ Erratic power supply is a constraint on growth

Even assuming the best-case scenario, maintenance rates similar to those in January result in peak demand exceeding available supply in the medium term. Consequently, we expect repeats of the blackouts experienced in January and view power as a constraining factor for economic activity in the next two to four years.

■ Slower growth, increased macro vulnerability, but rates on hold

Power shortages will result in slower growth and we have cut our 2008 GDP forecast to 3.2% from 4.0%. We expect deterioration in inflation and external balances and see the potential for further currency weakness. However, we expect interest rates to remain on hold this year.

■ Stock level winners and losers

Table 1 summarises our view of potential winners and losers. Gold stocks are most badly affected while platinum stocks benefit from higher metal prices.

Table 1: The impact of power shortages – relative winners and losers

Sector	Comments	Relative winners	Relative losers
Gold mining	15% production loss; increased cost pressure; no 'power' impact on gold price		AngloGold (Neutral, PT R310); Harmony (Neutral, PT R85)
Platinum mining	Production losses of 5-10%, cost pressures; but more than offset by impact on platinum prices	Impala Platinum (Buy, PT R370)	
Manufacturing	Biggest impact after miners; potential for co-generation (Illovo, Tongaat, Sappi, Sasol, ArcelorMittalSA); demand for oil on global coal shortages (Sasol); strong demand steel (ArcelorMittalSA); threat to global aluminium supply	Sasol (Buy, PT R460); ArcelorMittalSA (Buy, PT R197); Illovo (Buy, PT R36)	
Construction	Faster power capacity expansion; key infrastructure stocks guaranteed power supply. Key negatives are likely restrictions on new residential developments	Aveng (Buy, PT R73.5); Murray & Roberts (Buy, PTR107.5)	Wilson Bayly (Neutral, PT R138.5)
Retailers	Limited direct impact; consumer slowdown underway; sector at risk in 'worst case' scenario		Woolworths (Sell, PT R12.5); JD Group (Sell, PT R38)
Banks	Limited direct impact; share prices discount more poor outcomes, but worst case scenario would be negative especially for consumer geared banks	Standard Bank (Buy, PT R138)	ABSA (Buy, PT R151)
Telcos	Limited impact, telcos have back up, MTN defensive in worst-case scenario	MTN (Buy, PT R147)	
Hospitals	No impact (excluded from load shedding) & have back-up generating capacity	Netcare (Buy, PT R14.4)	
Hotels	Can implement energy savings; benefit from weaker rand; World Cup soccer	City Lodge (Buy, PT R88.45)	

Source: Based on a survey of UBS analysts

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Contents	page
Summary & investment conclusions	3
— Understanding South Africa's power shortages	3
— The impact of power shortages on the economy.....	4
— Investment conclusions	6
Understanding South Africa's power shortages	7
— The South African power market.....	8
— What caused the January blackouts?	10
— What are the solutions?	17
— Conclusions and the outlook for power supply	23
The fallout – a bottom-up view	25
Macroeconomic implications	29
— Fallout on economic activity and growth.....	31
— The damage to the external balance	35
— ZAR – pressure to rise further in 2008.....	38
— Inflation pressure to rise further.....	39
— Monetary policy.....	42
— The implication for public finances	43

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Summary & investment conclusions

This report analyses the effect of the power shortages on the South African economy. We analyse the nature of the power problems and some potential solutions with a view to identifying what the base case is in terms of power supply in the short and medium term. We then consider the overall effect on the economy. In order to understand the magnitude of the problem, we have surveyed UBS analysts about the immediate impact of the January power shortages and their assessment of the longer-term consequences for their stocks and sectors. Finally, we draw investment conclusions based on our assessment of the power shortages, including a list of stocks that we regard as potential 'winners' and 'losers'.

Understanding South Africa's power shortages

The underlying cause of South Africa's power shortages is under-investment in generating and transmission capacity. The immediate causes of the blackouts in January were high rates of unplanned maintenance and coal supply problems. These problems are related. Lower margins between generating capacity and peak demand are contributing to plant being run harder than planned, which increases maintenance requirements and contributes to higher coal requirements. Coal shortages lead directly to increased downtime but also result in increased use of poor quality coal, further increasing unplanned downtime.

The government and Eskom's response to the power shortages is a combination of capacity expansion and demand savings to restore reserve margins to a target 15%. We believe the government's base-case scenario (full planned capacity expansion and achievement of a 10% energy demand savings) is a best-case scenario.

We are concerned about the potential for slippage in capacity expansion, particularly the potential for actual co-generation to undershoot planned co-generation. Co-generation accounts for c20% of the total capacity expansion to 2015. We believe that co-generation is unlikely to meet planned targets without significant increases in the prices that Eskom is prepared to pay to co-generators.

We are also concerned that rates of unplanned maintenance (ie, maintenance because of breakages) will remain high. This is in part because of skills shortages (which result in lower-than-targeted planned maintenance) and partly because low reserves require power stations to operate at higher-than-planned rates causing higher-than-expected unplanned maintenance.

We are concerned that coal supply and quality are likely to remain a problem. Coal supply problems should be relatively easy to fix but tight markets are likely to mean that Eskom either has to pay significantly higher prices and or will have to accept inferior quality coal. Inferior quality coal contributes to lower efficiency and higher unplanned maintenance. In addition, logistical problems, in particular problems with trucking coal into Eskom power stations, will remain challenging.

January blackouts were caused by to high plant unavailability and low energy reserve margins

Government targets capacity expansion and demand savings

Slippage in capacity expansion is likely

Maintenance rates likely to remain high

Coal supply can be improved but problems remain

Even assuming the full implementation of the planned energy capacity expansion and factoring in a 10% demand savings plus a 6% savings from energy buy-backs we remain concerned that the balance between energy supply and demand will remain low in the next two to four years. Even factoring in the best-case scenario of full expansion, demand savings and buy-backs, we find that levels of unplanned maintenance similar to those experienced in January would see shortfall between available supply and peak demand.

Factoring in the best case on capacity expansion and demand savings still leaves reserve margins too low to support January-like maintenance

Our conclusion based on this analysis is that power supply is likely to be a constraining factor on growth in the next five years. The government envisages (assuming its base case scenario) energy demand growth of 3.6%. This is below the 4% (on Eskom and government's estimates) needed to achieve government's growth target of 6%, but would (absent business cycles) allow growth in the order of 5-5.5%. Furthermore, and more importantly, we believe the risks of repeat blackouts during periods of peak demand (mid-winter) and peak maintenance (mid-summer) are reasonably high. We believe these could be damaging for business and consumer confidence and could lead to increases in risk premiums attached to South African equities.

The power supply will not support 6% growth and the risk of repeats of January blackouts remains reasonably high

Finally, we believe that one of the clearest implications of the current power shortages is that prices charged for electricity will need to rise, perhaps significantly. South Africa's electricity prices are currently among the lowest in the world. At current rates, electricity prices do not play a meaningful role in managing the balance between demand and short-term supply scarcity; nor are they likely to attract investment in new capacity in order to match long-term supply with desired demand. However, even if South African prices were to double, South Africa would still have materially lower than world average energy prices.

Electricity prices need to rise considerably, but will still remain competitive

The impact of power shortages on the economy

The power shortages will affect the South African economy in many different ways, and the overall impact is likely to be profound. After all, the problem has built up over a decade so it is likely to take quite some time to solve.

The energy shortages have a negative effect on activity in a wide range of sectors of the economy, above all mining and manufacturing. Private sector investment might also suffer. It is true that this negative effect might be partly compensated for by increased (public) investment into the energy infrastructure. Nevertheless, the overall effect on growth and employment is certainly negative. This is likely to accelerate the slowdown the South African economy would likely have faced even without the power shortages. We have lowered our forecast for real GDP growth to 3.2% (4.0%) this year and 3.7% (4.4%) next year.

We expect growth to decline

South Africa's already large external deficit is likely to be stretched even further, as production losses will hurt exports and as imports (not least of capital goods for the energy sector) are likely to rise. With South Africa being largely dependent on volatile debt and equity portfolio capital to fund its external deficit, its vulnerability in an environment of weaker global risk appetite is likely to rise further. Above all, this will further increase the risks for the rand, which has already weakened substantially in recent weeks. We have revised our 2008 year

Current account deficit to rise further, increasing external vulnerability

end forecast for the ZAR/USD to 8.00 (from 7.60). However, we anticipate some recovery in 2009 with a year end rate of 7.80 (unchanged).

Modernising the energy infrastructure will require very extensive investment – and someone will have to pick up the bill. Part of the funds will come from higher electricity prices, which will lead to higher inflation. Funding will also come from Eskom debt issuance and from increased government transfers, with negative implications for the budget and government bond issuance. The budget is also likely to suffer from the loss in tax revenue caused by slower GDP growth. In addition to electricity price increases, we see potential pressure on inflation from higher petrol prices and from rand weakness feed through. We have revised up our forecast for average CPIX to 7.8% (from 7.6%) in 2008 and 6.1% (from 5.6%) in 2009.

How will the SARB react to all this? At least over the next couple of months and quarters, the inflation risk is likely to rise further as a result of production losses, the increase in regulated energy prices, and the effect of the weaker rand. Over the medium term, however, the power shortages are likely to accelerate the slowdown of the economy, and might thus even prove disinflationary. As a result, the SARB will probably not be keen to hike rates, unless the rand collapses or inflation expectations rise sharply. We expect the policy interest rate to remain unchanged at 11.0% this year with cuts only likely in 2009.

Even *before* these adjustments, most of our macro forecasts were more cautious than the ‘consensus’; following our latest adjustments we remain more bearish than consensus on growth, inflation, interest rates, bond yields and the 2008 outlook for the Rand (although more positive on the 2009 outlook for the rand). There can be no doubt that from an economic point of view, South Africa is facing a challenging period ahead. Chart 3 below shows our new forecasts versus our previous forecasts and the latest consensus according to Reuters.

Table 2: UBS forecasts for South Africa, old and new and consensus

	2008			2009		
	UBS new	UBS old	Cons. (Jan-08)	UBS new	UBS old	Cons. (Jan-08)
Real GDP growth, %	3.2	4.0	3.7	3.7	4.4	4.4
CPIX inflation, yr end, %	6.9	6.0	NA	5.4	5.4	NA
CPIX inflation, average, %	8.1	7.6	7.2	6.1	5.6	5.4
SARB policy rate, year-end, %	11.0	11.0	10.5	10.0	10.0	9.2
Current account balance, % GDP	-8.4	-8.2	NA	-8.4	-9.0	NA
10 year bond yield, % year-end	8.9	8.6	8.4	8.5	8.4	8.0
USD/ZAR, year-end	8.00	7.60	7.51	7.80	7.80	7.97
USD/ZAR, average	7.90	7.20	NA	7.84	7.70	NA
Government budget balance, % GDP	-0.1	0.4	NA	-0.8	-0.3	NA

Source: Consensus based on Reuters Jan-08 survey, GDP & currency are Feb-08, UBS estimates

Inflation to rise, Eskom and government to issue more debt

Despite higher risks in the short term, SARB unlikely to hike rates further

Investment conclusions

The likely impact of South Africa's power shortages remains difficult to gauge. This is because outcomes related to future power supply are very uncertain. In order to assess the overall impact of the power shortages we have surveyed UBS analysts about the short- and long-term impact on companies as a result of the power shortages. In many cases both companies and analysts are uncertain about longer term consequences. This in itself suggests that markets will remain cautious about potential outcomes for some time to come. In Table 3 we summarise the implications at sector level and provide our stock likes and dislikes based on our analysis of the power supply shortages in South Africa. More generally speaking we highlight the following broad investment conclusions:

- We see the rand as vulnerable to further weakness this year and expect the ZAR/USD to peak above R8;
- We see South African bonds as being relatively fully priced and expect yields to remain range bound through to the end of the year with only moderate yield reduction in 2009;
- We expect policy rates to remain unchanged at 11% in 2008 with some upside risk (high inflation and potential for a disorderly depreciation of the currency);
- Consequently, we remain cautious about pure consumer exposure in South African equities.

Table 3: The impact of power shortages – relative winners and losers

Sector	Comments	Relative winners	Relative losers
Gold mining	15% production loss; increased cost pressure; no 'power' impact on gold price		AngloGold (Neutral, PT R310); Harmony (Neutral, PT R85)
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Source: Based on survey of UBS analysts

Understanding South Africa's power shortages

In this section of the report we consider the recent power shortages in South Africa. We consider the immediate causes, the underlying causes and then consider the interventions proposed by Eskom and government to address power shortages in South African in the medium to long term. Our conclusions are:

- (1) The underlying cause of South Africa's power shortages is under-investment in generating and transmission capacity. The immediate causes of the blackouts in January were high rates of unplanned maintenance and coal supply problems. The problems are related. Lower margins between generating capacity and peak demand are contributing to plant being run harder than planned which increases maintenance requirements and contributes to higher coal requirements. Coal shortages lead directly to increased downtime but also result in increased use of poor quality coal, further increasing unplanned downtime.
January power shortages due to high unplanned maintenance; under-investment the underlying cause
- (2) The balance between supply and demand of power is likely to remain critically tight over the next five years because of Eskom's inability to increase supply sufficiently in the short term and the likely persistence of high rates of unplanned maintenance during this period.
Tight balance between supply and demand persists for five years
- (3) While we do not envisage a scenario of prolonged power blackouts, we believe there are risks that the blackouts experienced in January are repeated going forward. Furthermore, in the next five years, electricity is likely to be a factor constraining new investment in energy-intensive mining and manufacturing projects.
Energy supply will constrain growth and we see blackouts as quite likely
- (4) The government and Eskom's responses to the current power shortages (expansion of peak and base load supply and demand management) are broadly speaking appropriate. However, we believe there are key risks to the government's response:
 - Under-delivery of capacity expansion (constraints on achieving the planned capacity expansions include historical underachievement, a skills deficit within Eskom, tight global supply chains, and inappropriate price incentives to attract sufficient private power generation);
Capacity expansion under-delivery
 - Continued high levels of unplanned maintenance (ie, the breakdown of plant) – high load factors on power plants, continued reliance on poor quality coal and a serious skills deficit in Eskom will in our view continue to see high rates of unplanned maintenance.
Continued high levels of plant downtime
 - Inability to achieve sustainable long-term energy demand savings in the absence of appropriate incentives. These, in our view, must include a more rapid and significant increase in electricity prices. Without this, producers do not have a clear incentive to produce and consumers do not have an incentive to save.
Sustainable energy demand savings difficult without price increases

(5) The clearest conclusion from our analysis below of the South African power shortages is that prices must rise substantially. This is so that prices can play their appropriate role of limiting demand in the short term and eliciting supply in the long run. However, even with prices perhaps rising by 75-100% in the medium term, it seems likely that South Africa will retain a comparative advantage in electricity prices.

Electricity prices need to rise considerably

The South African power market

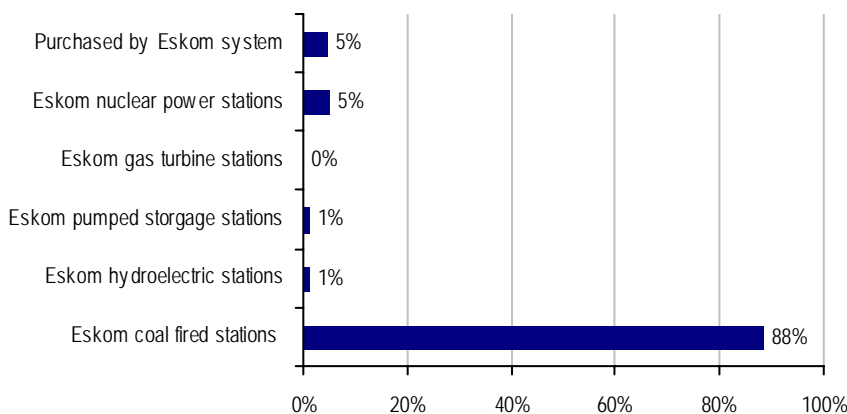
Before we turn to considering the power shortages we briefly describe the South African power market. The power market consists of three parts – generation, transmission and distribution. Generation is the generation of power; the transmission system (or national grid) is the high voltage lines that transfer power from power stations to the substations where the distribution to end users commences.

Generation dominated by Eskom, no effective wholesale market

The generation of power is dominated by Eskom which is a 100% state owned and vertically integrated power utility. Eskom produces about 95% of total power in South Africa (including imports) the remaining 5% being purchased (mainly imports). Of the total power and bought by Eskom 88% is produced by coal-fired power plants. Currently there is only one independent power producer (IPP) scheduled to begin production in 2010. In addition there are limited co-generation plants that sell power into the national grid (effectively to Eskom). Typically, however, prices paid by Eskom have acted as a disincentive to existing and potential co-generators. Finally there are a few municipal power stations (about four although this number may now be lower) that provide energy into the transmission system. However, Eskom has in the past encouraged these municipal power stations to not produce.

Eskom generates 95% of SA's power

Chart 1: Total power produced in South Africa (includes imports) (%)



Source: Eskom 2007 Annual Report, UBS estimates

Effectively therefore Eskom is the only producer of power in South Africa and there is no wholesale power market. This may change with Eskom now having issued three requests for non-Eskom power production. These include:

No wholesale power market

- About 100-200MW of installed capacity from a wind farm (efficiency will be well below the installed capacity perhaps as low as 20%);
- Requests for 500MW of cogeneration. Co-generation refers to power produced as either a co-product or by-product of another industrial process. (For example, a sugar mill needs to dispose of bagasse, needs steam and needs electricity. Millers can combine these three by burning the bagasse in a boiler, using the high-pressure steam to drive a turbine, and then using the low pressure steam for process heat.)
- A recently issued request for proposals for up to 3000MW of power with the main restriction that it must be available by 2012. Eskom proposes paying an energy tariff and consequently will not take on the risk of fuel costs. This probably limits projects likely to be put forward to gas-fired plants.

Transmission and distribution

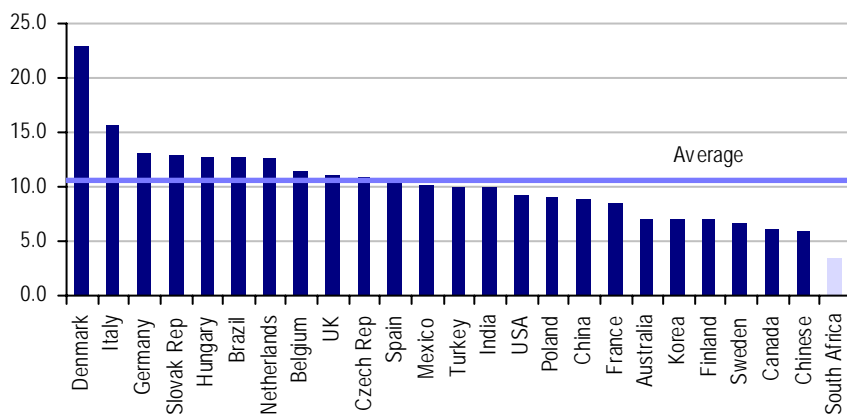
Transmission in South Africa is 100% owned and operated by Eskom. Eskom owns about half the distribution network and municipalities the rest.

Pricing of power

Due to low coal costs and lax environmental standards, South African power prices are among the cheapest in the world. Under the current regulatory environment end-user tariffs are set by the national regulator. These are based on estimation of what the required rate of return is for Eskom given its WACC. Based on this a revenue increase is allowed for and this is translated into electricity tariffs for end-users. Currently average costs for energy production are around Rc15/kWh (according to estimates published by the Treasury). These compare to long run marginal costs of around Rc38/kWh. However, while long run marginal costs of production are around Rc35-40/kWh; short run marginal costs are considerably higher. Given a scarcity of power in the short- to medium term this implies significant increases in electricity costs are desirable from a macro perspective. Unless Eskom is prepared to increase the ‘avoidance cost’ it pays independent or co-generators of power, then a significant amount of co-generated and or independent power provision is unlikely.

Prices are low by international standards

Chart 2: International power prices (US¢/kWh)



Source: NUS Consulting, UBS estimates

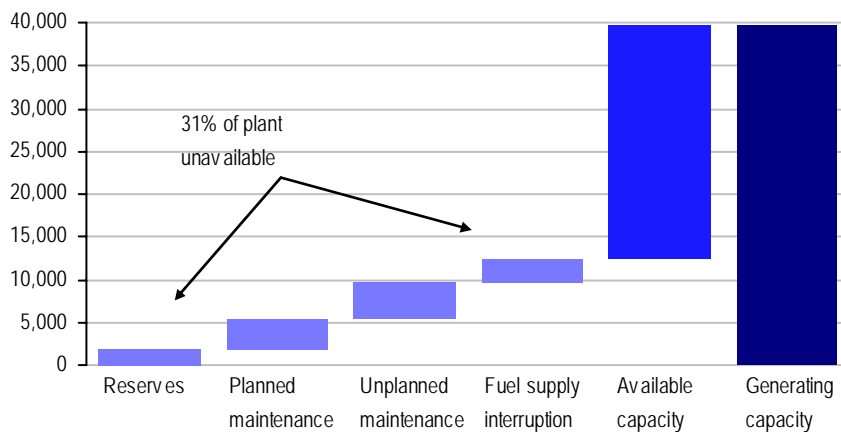
What caused the January blackouts?

The massive load shedding experienced in the second half of January 2008 was due to critically low levels of plant availability. On average during the period 14-Jan-08 to 4-Feb-08, about 23% of total plant was unavailable because of planned and unplanned maintenance. Unplanned maintenance accounted for 60% of the maintenance. Unplanned maintenance refers to unplanned downtime for repairs due to plant breakdown. In addition to maintenance, severe shortages of coal also accounted for the critical loss of plant during January.

January load-shedding due to very high plant breakdowns and coal shortages

Chart 3 is an example of one day of plant availability in January. According to estimates provided by an energy consultant commissioned by UBS, c31% of plant was unavailable (at times) during January. Of this, 9% was unavailable due to planned maintenance, 11% due to unplanned maintenance and 7% due to fuel problems (shortage of coal). With available capacity so low, Eskom had no alternative but to implement massive load shedding to avert a collapse of the nation's electricity system.

Chart 3: Example of plant availability during one day in January 2008 (MW)



Source: Estimates provided by consultant commissioned by UBS, UBS estimates

If low levels of plant availability were the reason for the January blackouts, what were the underlying causes and what is the outlook for power supply in the short and long-term? We consider these questions in turn below. Clearly, the problem is complex and a range of issues have contributed to the January power shortages. These range from strong demand, failure to invest in new capacity, and more immediate problems associated with plant availability. Table 4 summarises some of the main factors contributing to South Africa's power shortages. We indicate whether, in our view, the problem is a contributing or immediate cause of South Africa's power problems. We discuss then discuss the main issues below.

Table 4: The cause of the January 2008 blackouts

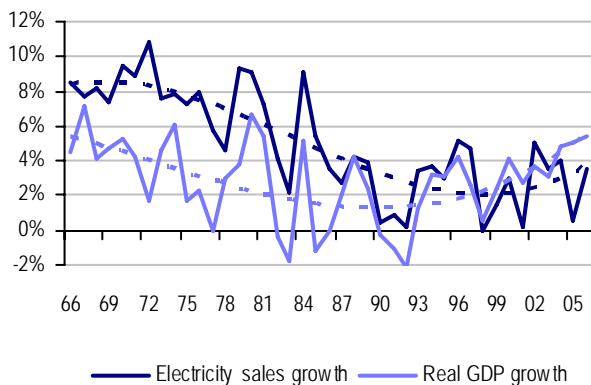
Factor	A cause of the blackouts?	Comment
Demand surprise	No	Not the issue - demand was accurately forecast from 1990 onwards.
Inadequate planning	Part of the problem - not the immediate cause	Inadequate planning coordination and implementation has hampered delivery of reform (early in this decade) and capacity expansion (latter half last decade).
Government moratorium on capacity expansion	Part of the problem - not the immediate cause	Resulted in low current reserve margin levels but not the key cause of blackouts.
Delays in IPP entering the power market	Part of the problem - not the immediate cause	Only one IPP procurement process has been initiated (1000MW DME peaker project) but is about two years behind schedule. Market rules and pricing structure inhibit IPP entry into the market. Long term market reform is required to encourage IPP entrants – this is likely to require tariff reform and will imply higher tariffs going forward.
Delays in Eskom's new build programme	Part of the problem - not the immediate cause	Eskom is significantly behind in its re-commissioning and new build programme which has contributed to the low reserve margin but again was not the cause of January blackouts.
Transmission and distribution failures	Key immediate cause	The media, government and Eskom have all focussed on generating capacity shortfall; however, many of the blackouts have been due to local and/or regional network failures. This is largely due to underinvestment in transmission and distribution infrastructure. Transmission is 100% owned / operated by Eskom but distribution is about 50-50% owned by government and 'munics'. Independent studies commissioned by government have found that investment in maintaining and expanding distribution infrastructure has been significantly below required levels – this is especially the case in distribution owned by munics where investment has in some cases been as low as 1-2% annually rather than a desired 10% of asset base. Expect further unplanned load outages due to transmission and distribution failures.
Poor availability of Eskom plant	Key immediate cause	Poor plant availability due to a combination of poor management of coal procurement, poor maintenance and high load factors on Eskom plant have resulted in deterioration in plant availability. Plant availability can be improved by better coal procurement and better maintenance.

Source: UBS; this is based on our own research and on consultancy commissioned by UBS: Note: IPP refers to Independent Power Producers (independent of Eskom); 'munics' are municipality-owned distribution companies that redistribute power from Eskom to both households and commercial and industrial users

Did electricity demand surprise on the upside?

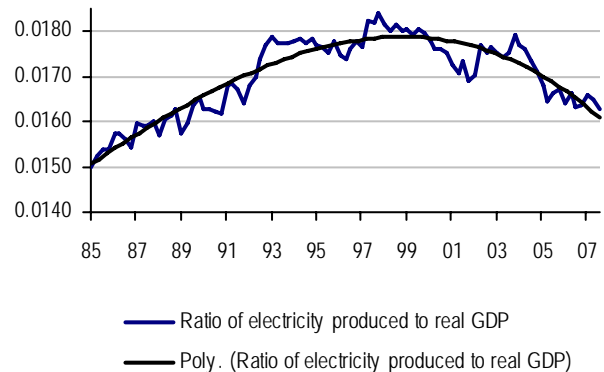
Government and Eskom have been quick to point to surprisingly strong growth in real GDP growth as the cause of power shortages. Real growth has been strong. Indeed, real GDP growth has accelerated faster than sales of electricity in recent years. That said, growth has never exceeded the long-standing 6% target and the electricity intensity of the economy has also peaked. Furthermore, the Government 1998 Energy White Paper and Eskom's planning documents have accurately forecast current energy demand since the 1990s.

Chart 4: Electricity sales volume and real GDP growth (% y/y)



Source: Eskom, StatsSA, SARB, UBS estimates

Chart 5: Electricity per unit of real GDP



Source: StatsSA, SARB, UBS estimates

Failure to invest is the underlying cause of power shortages

If Eskom’s planning exercises do not bear out the claim that demand surprised, nor do government’s own policy documents. Government policy (on the back of Eskom’s demand forecasts) has long recognised the need to expand power capacity. The government’s policy document (1998 Energy White Paper) recognised the need to take an investment decision by 2003 (given lead times in completing feasibility assessments and procuring equipment) to install new peak demand capacity by 2007 and new coal base-load by 2010. Peaking capacity is typically a more expensive technology (eg, gas turbines) and supplies energy only at peak demand to supplement the base-load capacity.)

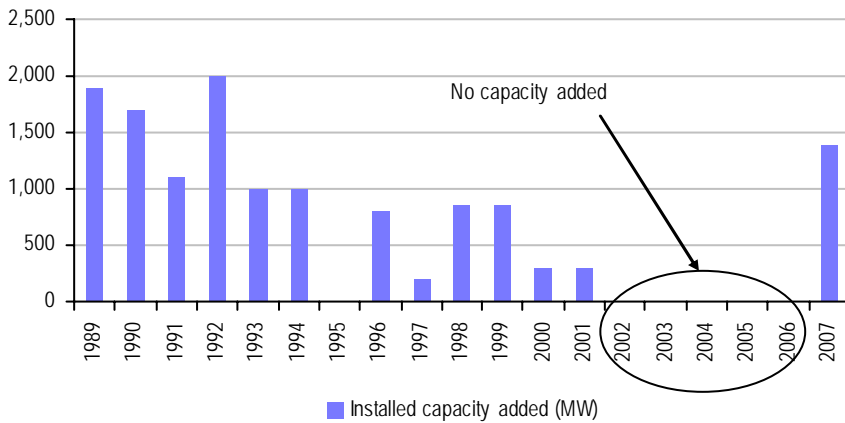
No investment in new generating capacity between 2002 and 2006

A detailed discussion of the reasons for the moratorium is beyond the scope of this report. However, one of the reasons stems from the fact that between 1998 and 2003 government was considering a number of wide-ranging reforms to the way in which energy is produced and distributed in South Africa. At one stage these involved the potential unbundling of distribution and transmission as well as fostering greater diversity in the generating – both away from Eskom and from coal-based energy.

In 2004, cabinet announced that Eskom would not be unbundled or privatised and work on reforming the electricity market was scrapped. Eskom was once again authorised to invest in new generating capacity while independent power producers (IPPs) would be allowed to produce up to 30% of new generation capacity. To date, however, only one IPP procurement process has been initiated and this is nearly two years behind schedule.

No independent power producers in operation

Chart 6: Installed capacity and operational capacity added (MW)



Source: Eskom, UBS estimates

In addition to the lack of investment in generating capacity, the South African electricity distribution network is (according to industry experts) also in a state of critical under-investment. Eskom is responsible for 95% of generation and 100% of transmission. Distribution, however, is owned about 50-50 between Eskom itself and the ‘munics’ (municipality-owned distribution companies). As a rule of thumb, distribution companies should be investing at a rate of about 10% of asset value per year. However, for a number of reasons beyond the scope of this report, investment rates in many (especially non-Eskom) distribution

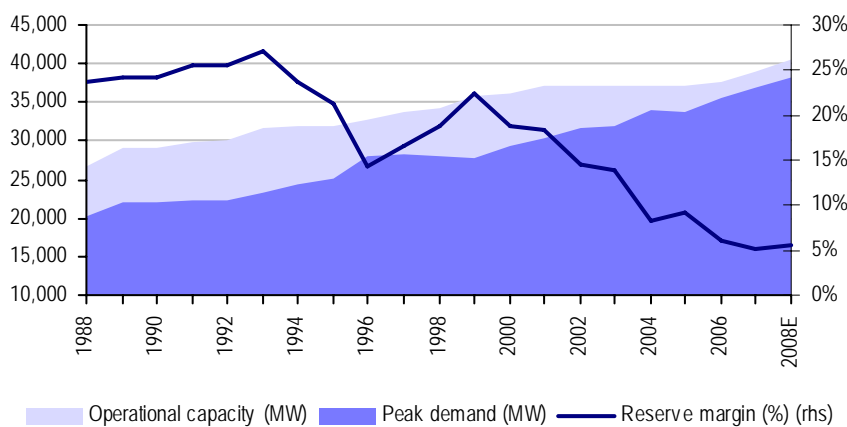
Under-investment in transmission and distribution is also a concern

companies are as low as 1-2% per year. Thus, while much of the focus has been on generating capacity, a major threat to efficient energy supply is distribution.

The consequence of rising demand and the failure to invest has seen reserve margins – the gap between available capacity and peak demand – closing to critically low levels. While historical reserve margin levels were arguably too high (well in excess of 20% for most of the 1980s and still over 20% at the end of the past decade); they have fallen to levels where they are no longer sufficient to cover the levels of maintenance seen in January 2008. At the end of 2007 reserve margins had fallen to c5% – well below the level that would have been required to support an average of 23% in planned and unplanned maintenance during January 2008.

Energy reserve margins insufficient to support current rates of maintenance

Chart 7: Operational capacity (MW), peak demand (MW) and reserve margin (%)



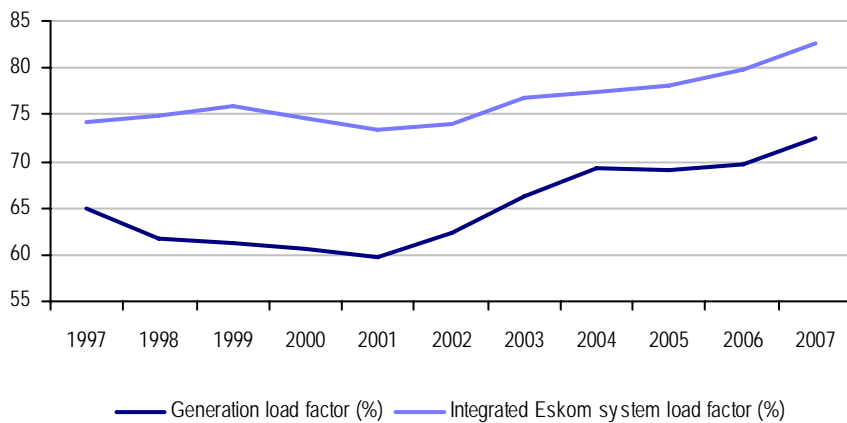
Source: Eskom, UBS estimates. Note: Reserve margin estimated by UBS as operational capacity less peak demand expressed as percentage of operational capacity

Maintenance has become a critical issue

Clearly, a failure to invest in new generation capacity is the key underlying reason for low reserve margins. One of the consequences of the low reserve margin is that plant is run harder than was originally intended. This is reflected in the higher load factors, which have been rising steadily since the beginning of the decade. Higher load factors in turn increase stress on plant, resulting in higher maintenance requirements. However, the need to run plant harder also limits the opportunity for maintenance (with lower reserves, it is harder to take plant offline). So, in effect, there is a vicious cycle: lower reserves, higher load factors, higher maintenance requirements but less opportunity for maintenance. The Eskom 2007 annual report highlights that one reason for its failure to meet the targeted maintenance rate in 2006/7 was ‘network constraints’, ie, the low reserve margin.

A vicious cycle: low reserve margins = higher load factors = higher maintenance requirements but fewer planned maintenance opportunities

Chart 8: Generation load factor and integrated Eskom system load factor (%)



Source: Eskom 2007 annual report

Lower reserve margins have, therefore, contributed to the need for higher maintenance (planned or unplanned). However, there are two additional factors that appear to be contributing to current high unplanned maintenance levels. The first is skills and the second is the quality and availability of coal.

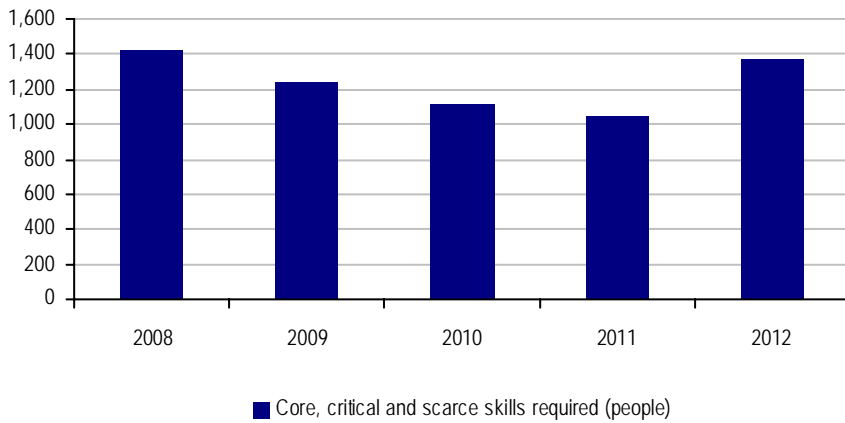
Eskom’s annual reports have highlighted both problems. In its 2007 annual report, Eskom highlights that ‘in some cases maintenance had to be postponed due to limited availability of specialised high voltage maintenance skills’ (Eskom 2007 annual report, p 39). According to Eskom, the company is short of 1,400 people with ‘core, critical and scarce skills’. Through to 2012, this deficit rises to over 6,000 people. Eskom is one of the top 10 electricity utilities in the world by generation and is 11th by sales, and with profits of R6.5bn in the 2006/7 financial year, it should have no problem attracting skills.

What are the likely reasons for the skills deficits? One possibility is global scarcity of engineering and related skills due to the commodity and infrastructure boom. However, it is also likely that Eskom’s internal policies have contributed to the problem. Eskom has down-sized significantly from a staff of c66,000 in the late 1980s to the current staff of c33,000. It is likely that at 66,000 Eskom was over-staffed. However, the combination of downsizing and an aggressive affirmative action programme has likely contributed to a significant exodus of skilled staff. Certainly the combination of Eskom’s internal policies, heightened concerns amongst South Africans about crime, politics and the economic outlook, and the high global demand for engineers is likely encouraging emigration of scarce skills. Anecdotal evidence suggests that emigration rates from South Africa are once again on the rise.

Skills shortages contribute to below target planned maintenance

Affirmative action has contributed to skills shortages

Chart 9: Eskom's skills deficit – core, critical and scarce skills required

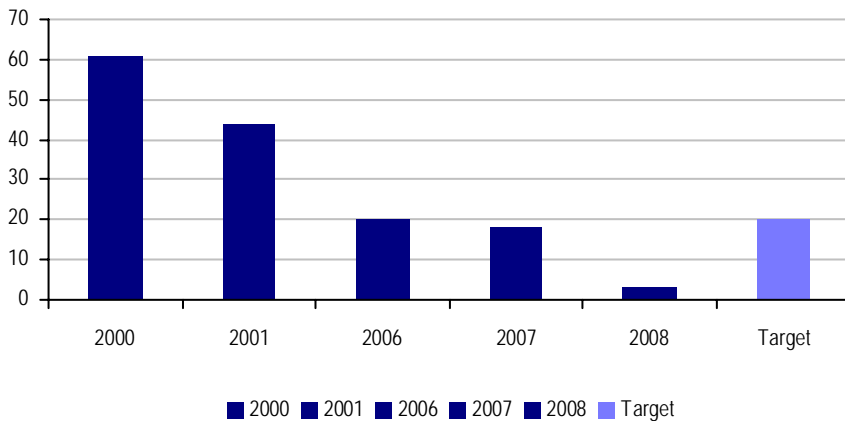


Source: Eskom 2007 annual report, UBS estimates

Coal shortages and deteriorating quality of coal were major factors contributing to the recent power shortages. Historically, Eskom has built power stations next to coal mines which had long-term cost-plus supply contracts. This was the major factor contributing to its extremely low cost structure. Recently, however, coal supply problems have emerged. Stockpiles of coal have been run down from about 60 days in 2000 to less than 20 days in 2007 and to as low as 2-3 days at the beginning of 2008.

Coal supply has become a key constraint in power generation

Chart 10: Eskom coal stockpile in days of supply



Source: Mail&Guardian, February 8-14, Business Day 15 February, UBS estimates

According to industry experts and suppliers, Eskom has increasingly relied on poor quality coal. Poorer coal quality contributes to lower thermal efficiency (plant runs harder for the same output, effectively reducing plant availability). Poor quality coal also increases unplanned maintenance. Higher rock/ash content results in more boiler tube abrasion, more frequent ruptures and therefore higher rates of plant outages. Higher fines (dust) content in coal results during wet weather (as in January) in increased clogging in coal transport and pulverisation machinery, leading to lower coal feed rates and boiler derating.

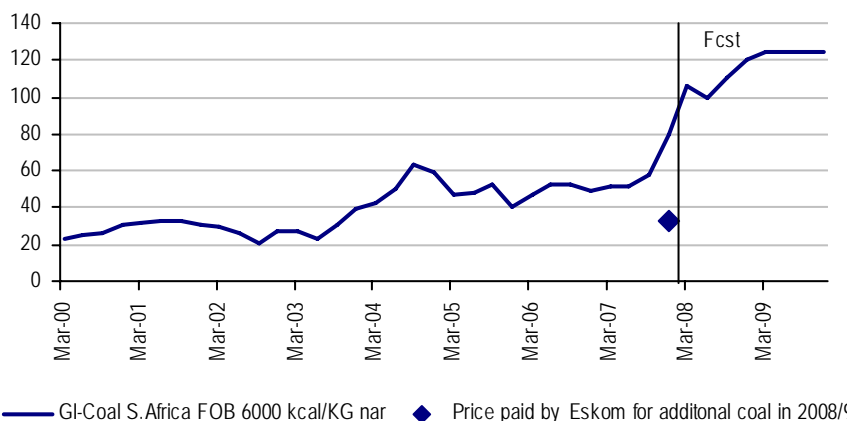
Deteriorating coal quality contributing to lower efficiency and higher unplanned outages

It is unclear exactly why Eskom’s coal supply chain has deteriorated so much. Eskom itself has commissioned a study to review its coal supply chain. However, one factor appears to be the drive by Eskom to shift coal supply to smaller black owned contractors. A major policy of the South African government has been to promote black economic empowerment. Typically this takes the form of requiring firms to meet targets for black ownership, staff complements, supply contracts etc. This policy is collectively known as Black Economic Empowerment (BEE). Coal represents c30% of Eskom’s costs, so (along with affirmative action in employment) sourcing an increasing proportion of its coal supply from black owned companies has been a relatively easy way for Eskom to improve its BEE ratings. Increased reliance on BEE contractors, which are typically smaller and further from power plants, has resulted in a deterioration in the quality of coal provided (often reject/non-export coal bought from majors) and has also increased reliance on road transport resulting in sub-optimal reliability.

Eskom recently announced that it has all but secured an additional 45mt in coal for 2008/09 in order to re-build stock piles to satisfactory levels. According to media sources, this coal has cost Eskom an estimated R11bn representing a cost per ton of R250. This is significantly above the average price Eskom pays, which is closer to R100 per ton. But it is still well below the price before transport and surcharges that exporters’ command. Assuming recent spot prices of around US\$100/t (Richards Bay fob) and assuming transport costs and surcharges of US\$25/t this equates (at ZAR/USD=7.5) to cR560/t for export equivalent coal. This suggests that either Eskom is likely to have to pay much higher prices or it is willing to accept inferior quality coal. If the former, these prices will need to be passed on to the consumer (or will limit Eskom’s ability to finance expansion) and if the latter, then Eskom will likely continue to experience significant problems with the quality of coal used and therefore the attendant problems regarding efficiency and maintenance.

Eskom has secured more coal for 2008 but questions about price and quality remain

Chart 11: Export coal prices versus price paid by Eskom for additional 45mt (US\$/t)

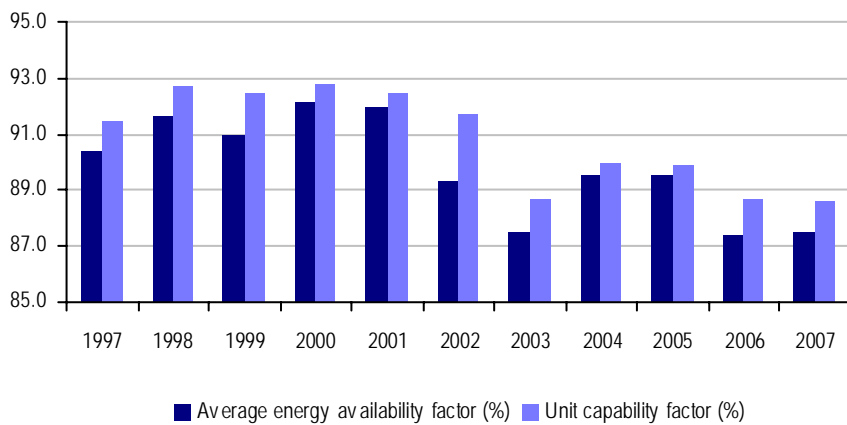


Source: INET, Business Day, UBS Note: The price paid by Eskom is for the additional 45mt secured at an estimated R11bn according to local media reports

To summarise the analysis thus far:

- (1) The January 2008 power blackouts were due to very high levels of plant unavailability due to low reserve margins and high unplanned maintenance.
- (2) The underlying problem is historical under-investment in new capacity.
- (3) High unplanned maintenance results from the higher load factors on Eskom plant. However, a shortage in skills within Eskom and problems with coal supply has also contributed to higher maintenance rates.
- (4) Consequently plant availability has deteriorated since 2000.

Chart 12: Deteriorating average energy availability and unit capability factors (%)



Source: Eskom 2007 annual report, UBS estimates

What are the solutions?

Having considered the immediate and underlying causes of the South African power shortage we now consider potential solutions. Our aim is to establish what the base case is for power supply going forward and what the potential risks to that base case are. In Table 5 we identify a range of potential solutions none of which are mutually exclusive. Our approach is to consider the proposed solutions in relation to reserve margin evolution given current demand projections and then to ‘stress-test’ these reserve margins against the downtime due to planned and unplanned maintenance experienced during January 2008.

Table 5: Potential solutions available to address power shortages

Solution	Time-Frame	Comments, risks and implications from implementation
Additions to base load capacity	5+ years	The key long-term solution as envisaged by Eskom's planned capacity expansion. Key risks are lead times, slippage and costs. Implementation will see significantly higher marginal costs of power suggesting that substantial electricity tariff increases are necessary.
Short-term capacity expansion	2-4 years	Government plans significant co-generation and envisages some IPP. However, lead times will be substantial (at least two years) and the pricing environment is currently not conducive. To the extent that peaking capacity is co-generated this means that Eskom must pay co-generators appropriate prices to attract their participation. The marginal cost of peaking capacity is significantly above average costs used to determine electricity tariffs. Increased peaking capacity will therefore imply higher electricity tariffs.
Improved plant availability - maintenance	1-2 years	Skills deficits and systems problems in Eskom can presumably be improved to reduce unplanned maintenance - read breakdowns. However, a global shortage of skills and BEE pressures will constrain Eskom's ability to hire the right people. However, one of the reasons for breakdowns is that plant load has increased - sweating plant. This remains a long term problem. Eskom wage costs are likely to rise putting further pressure on electricity tariffs.
Improved plant availability - coal supply	1-2 years	Additional coal can presumably be procured as Eskom has recently indicated. Logistical problems will be a serious challenge and costs are likely to escalate (coal is about 30% of total running costs for Eskom).
Demand savings - aluminium smelters	Immediate and long term	Aluminium smelters (existing and proposed) use roughly 5-7% of total energy capacity. A combination of price reform (higher prices), energy buybacks, interruptible contracts and outright acquisition and closure of aluminium plants would represent a quick and meaningful saving. Ultimately this will make South Africa a less attractive destination for energy-intensive investment with some potential to negatively impact on FDI flows (e.g. the circa R21bn potential investment in an aluminium smelter in Coega may be postponed or cancelled).
Demand management - energy efficiency	Immediate and long term	Eskom has the ability to manage short term demand reductions. However, longer term energy efficiency requires investment in alternative technologies (smart metering etc) and appropriate price incentives to consumers. This will require both investment in new technologies and more importantly a rise in electricity tariffs to reflect long run marginal costs rather than average costs.
Tariff increases	Immediate to long term	An underlying problem in the South African power market is the absence of an effective wholesale market and prices that are well below the long run marginal cost of producing power. The long term solution includes increasing tariffs and increasing the sophistication of tariffs (ability to target time of use etc). Independent estimates suggest increasing electricity prices by 75-100% over the next three years.

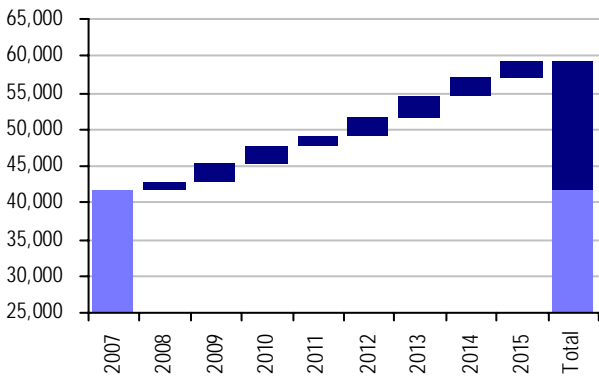
Source: UBS estimates

Capacity expansion the long term solution, insufficient in short term

Clearly, in the long term, South Africa needs to expand capacity as fast as possible. That said, expanding capacity is timely and expensive. 'Short-term' measures to increase peaking capacity (outside of already planned additions) are realistically two to four years away. Longer-term measures to increase base load capacity are even further away with lead times of five years or more. Eskom's planned capacity expansion over the next eight years is shown in Chart 13. Chart 14 shows the composition of the planned additions to capacity. Some 73% of planned additions are from Eskom, with 60% from coal and 6% from gas turbines. A fairly large 19% is from co-generation, with additions of 3500MW of co-generation between 2009 and 2012.

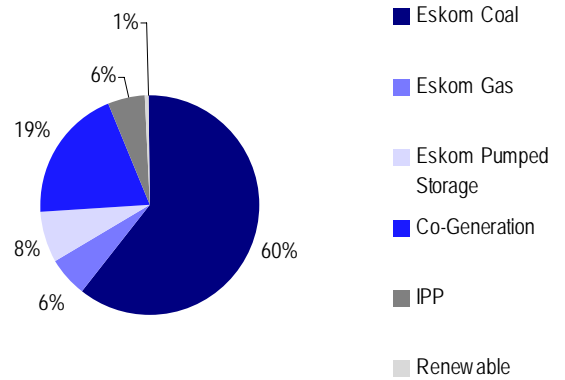
Significant capacity expansion but relies significantly on co-generation

Chart 13: Planned capacity expansion (MW)



Source: Eskom, National Government, UBS estimates

Chart 14: Contributions to planned power expansion

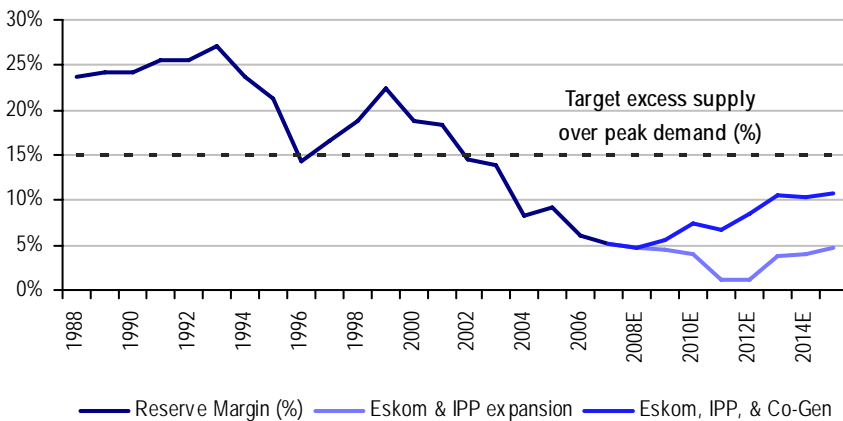


Source: Eskom, National Government, UBS estimates

Chart 15 shows the effect of Eskom’s planned capacity additions on the reserve margin given current peak demand forecasts. We show two scenarios: firstly, the reserve margin assuming the full implementation of Eskom’s own additions to capacity (we include in this scenario the 1000MW of IPP scheduled for addition in 2010). The second scenario shows the effect on reserve margins of the Eskom and IPP additions and the planned 3500MW of co-generation. These projections show that with the Eskom additions, the reserve margin continues to decline until 2012 before recovering slightly in 2013-15. However, while the full achievement of planned co-generation sees the reserve margins move up from current levels towards 10% by 2013, it remains well below the 15% targeted by Eskom. Our conclusion from this is that even full implementation of the planned capacity expansion leaves the reserve margin critically low.

Reserve margins remain low even with full capacity expansion

Chart 15: Power capacity reserve margins assuming planned capacity expansion



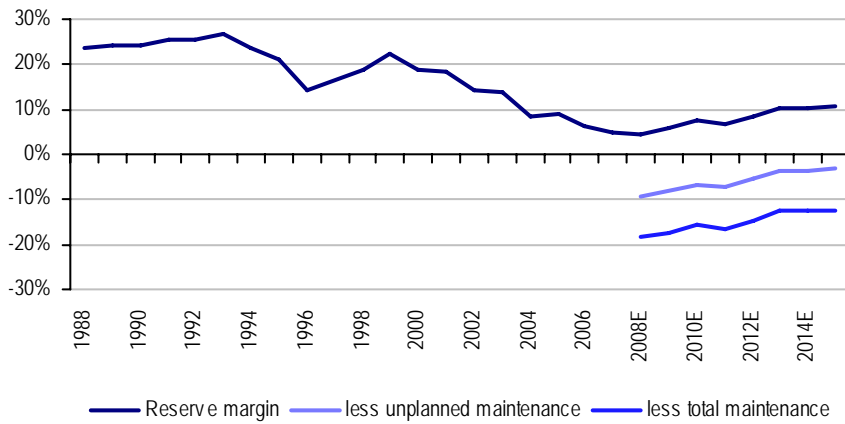
Source: Eskom, Government of South Africa, UBS estimates

Chart 16 shows the impact of January-like rates of unplanned and total maintenance on the reserve margin (assuming full capacity expansion). The key conclusion is that even with full capacity expansion, reserve margins will not be sufficient to withstand maintenance levels experienced in January. This will mean the electricity supply system remains vulnerable to available supply falling significantly below peak demand necessitating emergency blackouts of the kind

January like maintenance would leave system vulnerable to blackouts

experienced in January. Of course, January-like levels of maintenance may be extreme. That said, many of the problems contributing to higher maintenance (low margins, high load rates, skills deficits, coal supply problems) are not likely to be solved in the very short term and so it seems likely that high levels of maintenance will persist.

Chart 16: Reserve margins, assuming full capacity expansion and Jan-08 maintenance

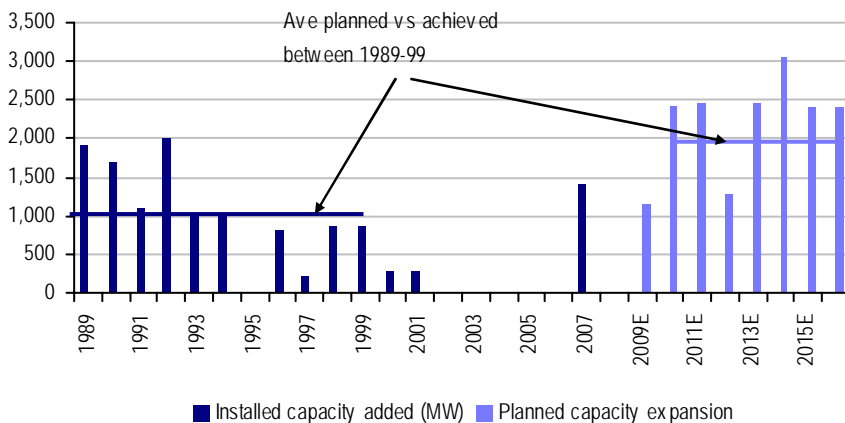


Source: Eskom, Government of South Africa, UBS estimates. Note: We assume full capacity expansion as planned including co-generation and we show the impact on this of the Jan-08 levels of unplanned and total maintenance.

In our view, there is a significant risk that Eskom will under-deliver on the planned capacity expansion. Clearly, the current planned expansion is ambitious relative to what has been achieved in the past 10 years. The average annual expansion in capacity over the next eight years is 2,200MW. This is more than three times the average expansion achieved between 1989 and 2007 and double that achieved between 1989 and 1999 (considering that expansion during the last decade was lower due to a freeze on expansion early in the decade). Eskom too is probably less geared toward significant expansion programmes than it was historically. Not only is the make up of Eskom’s management less engineering-oriented than in the past but the skills deficits that hamper operation are likely to hamper successful implementation of expansion.

The planned expansion is ambitious

Chart 17: Planned capacity expansion versus historical capacity expansion



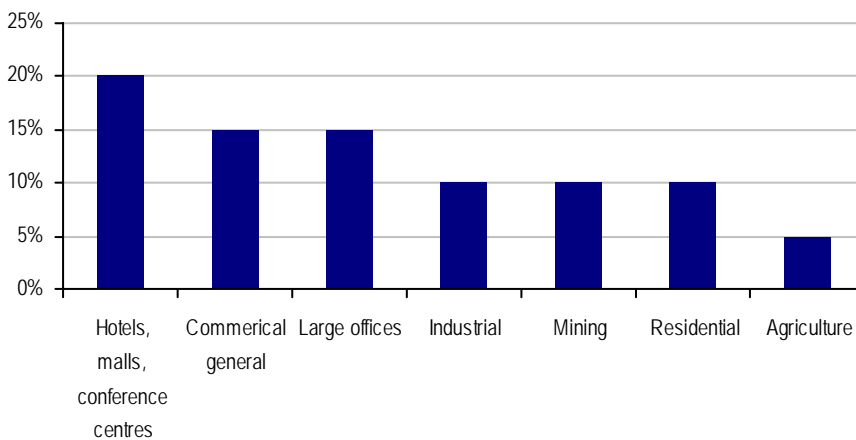
Source: Eskom, Government of South Africa, UBS estimates

Demand management will be vital because of supply constraints

The inability to resolve supply constraints in the short to medium term implies that reducing demand is critical. Outside of the emergency measures implemented in January, the government is considering the implementation of a power conservation programme aimed at permanent saving c10-15% of energy demand in the medium term. Based on an immediate target of a c8% saving in demand, the government has suggested savings targets for different sectors of the economy. These are outlined in Chart 18. The government is investigating a system of penalties and cut-offs for exceeding targets; incentives for exceeding targets and the establishment of mechanisms to allow large consumers to trade in the unused portion of their quotas.

Government targets 10% in demand savings

Chart 18: Demand management savings targets by sector (% of normal consumption)



Source: National Response to South Africa's Electricity Shortage, January 2008, Republic of South Africa, UBS

Longer-term measures being considered by government include:

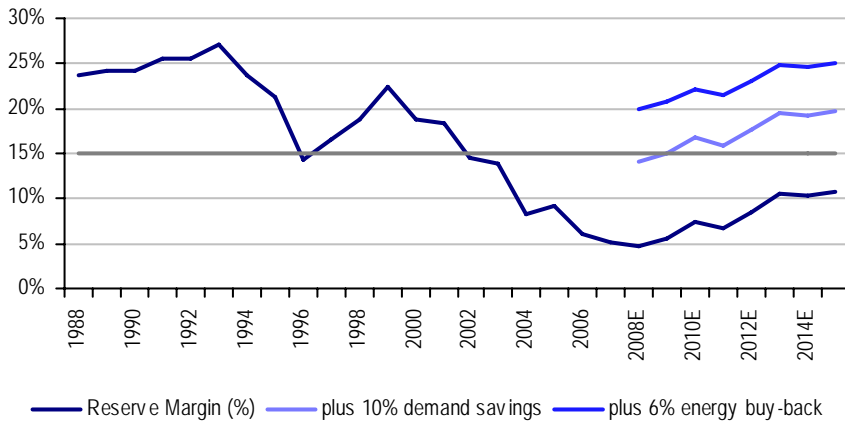
- Smart metering, allowing for disconnection above certain thresholds for residential customers which, according to Eskom estimates, can result in savings of about 9% of current peak demand;
- Substituting electricity with liquefied petroleum gas (LPG) as a source of domestic energy;
- Alternative technologies for use in traffic lights and public lighting;
- Adjusting tariffs to reflect the actual cost of providing electricity;
- Regulation of the maintenance regime of the electricity infrastructure especially at distributional level;
- Availability of primary energy (especially coal) for power generation including the holding of strategic reserves by the state.

Next we consider the effect on reserve margins of a 10% energy saving. Our base case assumes the full implementation of Eskom's capacity expansion programme including co-generation. We then add back a 10% saving in demand because of government's energy conservation programme. We also include a 6% energy buy-back from aluminium smelters. Based on the 10% demand

Demand savings plus capacity expansion boosts reserve margins

savings (and full capacity expansion), reserve margins are restored to 15% rising to c20% by 2015. The additional energy buy-back sees reserve margins rise to 20% in 2008 reaching 25% in 2015.

Chart 19: Reserve margins assuming 10% demand savings and energy buy-backs

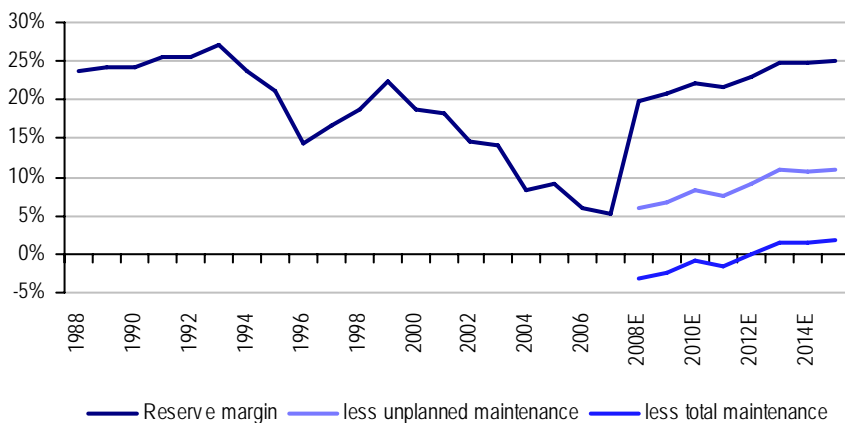


Source: Eskom, Government, UBS estimates. Note: We assume the full capacity expansion including Eskom, IPP, co-generation and renewable. We assume a 6% saving using energy buy-backs targeting aluminium smelters.

However, even assuming the full capacity expansion (ambitious in our view) and the full demand savings (10% demand savings plus a 6% energy buy-back from smelters) reserve margins remain uncomfortably stretched under January-like levels of maintenance. Assuming the total maintenance levels experienced in January, the reserve margin (assuming full capacity expansion and 16% energy savings) is more than wiped out until 2012.

But until 2012 capacity still below peak demand if we assume maintenance seen in January

Chart 20: Reserve margins with demand savings, buy-backs and Jan-08 maintenance



Source: Eskom, Government, UBS estimates Note: We assume full capacity expansion (Eskom, IPP & co-gen), 10% demand savings & 6% energy buy-back and then the impact of Jan-08 levels of planned and unplanned maintenance

In our view, achieving short-term demand reductions and long-term demand savings are very different things. While the former is forced on consumers via blackouts and or planned load shedding, the latter requires behavioural change. This will, in our view, best be facilitated by changes in prices, the legislative framework, and investment. None of these is likely to be forthcoming in the

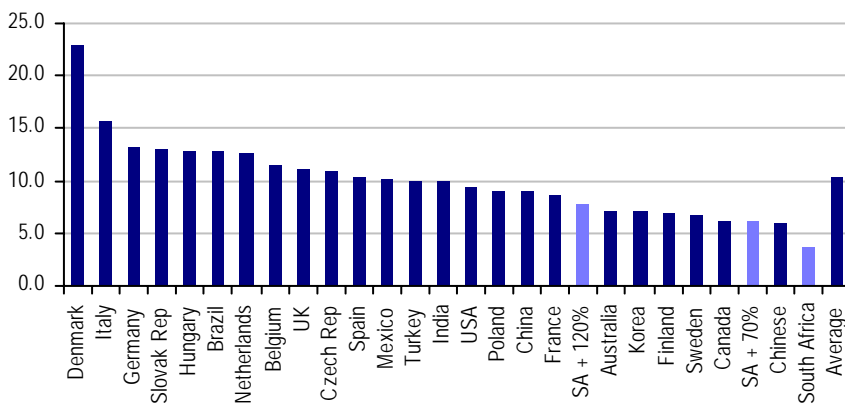
short term. Consequently, we are doubtful about the ability of Eskom to achieve the combination of full expansion and demand savings – this is at the very least a best-case scenario.

Price increases

Finally, it is clear that electricity tariffs in South Africa are too low. South Africa’s electricity tariffs are the lowest in the world by a considerable margin. While this low price reflects ready access to cheap coal, it also reflects the fact that prices have been held low by the government for policy purposes: to stimulate energy-intensive industrialisation. A range of independent estimates suggest that price increases of between 70% and 120% are necessary if prices are to play the role of reducing demand in the short term to meet scarce supply and encouraging investment in the long term. However, even factoring in increases of this magnitude, South Africa’s electricity prices remain competitive against international peers (See Chart 22).

Significant price increases would still leave South Africa with internationally competitive energy prices

Chart 21: Comparative electricity tariffs (US¢/kWh)



Source: NUS consulting, UBS estimates

Conclusions and the outlook for power supply

Based on the analysis above we suggest the following conclusions:

- (1) Achieving full implementation of Eskom’s capacity expansion programme including co-generation and achieving a 16% demand savings (10% national savings plus a 6% energy buy-back) should be considered a best-case, not a base-case scenario. Even in this scenario, maintenance rates similar to those experienced in January would mean the electricity supply system remains vulnerable to blackouts at least until 2012.
- (2) In our view, a more realistic base-case scenario would be for slower-than-planned capacity expansion (for example, less or later-than-planned-for co-generation) and lower-than-forecast demand savings. Under this scenario, the system would remain vulnerable to periodic blackouts of the nature experienced in January, although not necessarily on that scale. Periods of system vulnerability are most likely to coincide with peak demand in winter and peak planned maintenance in summer.

Government’s base case is a best case scenario

Capacity expansions likely to be lower than planned; wouldn’t cope with peak outages seen in January

- (3) Based on this assessment, we think it appropriate that government implement energy buy-backs that target low-value-add aluminium smelters. Ideally, existing smelters could be closed down (contributing a c6% energy savings) and planned ones should be scrapped (an additional 3% saving if the Coega smelter is abandoned). In our view, while government has said that it is committed to energy-intensive projects, this poses considerable risks to aluminium production in South Africa. At the very least we expect the Coega project to be postponed, and risks of energy buy-backs to existing smelters should not be underestimated.
- (4) Electricity prices need to increase significantly, perhaps between 75% and 100%, in order to effectively price short-term scarcity, to encourage demand savings and to encourage investment to meet long term demand. In the absence of the development of a viable wholesale market, significant increases in co-generation and independent power production would seem unlikely.

Energy buy-backs from aluminium smelters likely to be necessary

Electricity prices will need to rise sharply

The fallout – a bottom-up view

The likely impact of South Africa's power shortages remains difficult to gauge. This is because outcomes related to future power supply are very uncertain. In order to assess the overall impact of the power shortages we have surveyed UBS analysts about the short- and long-term impact on companies as a result of the power shortages. In many cases both companies and analysts are uncertain about longer term consequences. This in itself suggests that markets will remain cautious about potential outcomes for some time to come. Starting on page 29, we attempt to work through the macro impact of the power shortages. Here we summarise by sector the results of our survey of analysts. We highlight the main implications for the sectors, identifying our preferences at a stock level.

Table 6: The impact of power shortages – relative winners and losers

Sector	Comments	Relative winners	Relative losers
Gold mining	15% production loss; increased cost pressure; no 'power' impact on gold price		AngloGold (Neutral, PT R310); Harmony (Neutral, PT R85)
Platinum mining	Production losses of 5-10%, cost pressures; but more than offset by impact on platinum prices	Impala Platinum (Buy, PT R370)	
Manufacturing	Manufacturers could be hard hit although initial estimates of losses low; Potential for co-generation (Illovo, Tongaat, Sappi, Sasol, ArcelorMittalSA); strong demand for oil (on back of global coal shortages (Sasol)); strong demand steel for capacity expansions (ArcelorMittalSA); aluminium production likely affected by energy buybacks from aluminium smelters (3.5% of global production)	Sasol (Buy, PT R460); ArcelorMittalSA (Buy, PT R197); Illovo (Buy, PT R36)	
Construction	Faster power capacity expansion; key infrastructure stocks guaranteed power supply; World Cup stadiums will have two generators. Key negatives are likely restrictions on new residential developments	Aveng (Buy, PT R73.5); Murray & Roberts (Buy, PTR107.5)	Wilson Bayly (Neutral, PT R138.5)
Retailers	Limited direct impact; consumer slowdown underway; sector at risk in 'worst case scenario'		Woolworths (Sell, PT R12.5); JD Group (Sell, PT R38)
Banks	Limited direct impact; share prices discount materially worse outcome than we forecast but worst case scenario would be negative especially for consumer geared banks	Standard Bank (Buy, PT R138)	ABSA (Buy, PT R151)
Telcos & media	Limited direct impact from power, back-up facilities in place for telcos, MTN defensive in 'worst case' scenario	MTN (Buy, PT R147)	
Hospitals	No impact since excluded from load shedding and have back up generating capacity	Netcare (Buy, PT R14.4)	
Hotels	Have implemented energy savings; would benefit from weaker Rand; World Cup provides momentum	City Lodge (Buy, PT R88.45)	

Source: Based on survey of UBS analysts

Gold mines: The mining sector was hardest hit by the January blackouts. In particular gold miners were forced to suspend production for a full week. UBS analysts estimates (and company guidance) is for production losses of around 15% relative to the fourth quarter of 2007. Gold Fields has estimated its losses at around 25%. Production losses are most severe in gold mines due to the deep mining that characterises most South African gold mines, which necessitated suspension of mining operations for safety reasons when power supply was jeopardised. The sector is likely to see production reorganised, with mines attempting to prioritise more profitable operations and some closures of more marginal operations. Job losses are likely, with Gold Fields estimating that 6,900 jobs would be lost (about 13% of their total labour force). Higher energy prices

Significant production losses for gold miners

are likely to see gold mines costs rising. Power contributes about 15% to gold mines costs. Although we expect production losses from South African gold mines due to power losses, the overall impact on gold prices is unlikely to be significant given the decline in South Africa's share in world gold production to less than 11% in 2007. Apart from Rand weakness related to loss of confidence associated with the power shortages, we do not anticipate any other benefits for gold mines to offset lower production and higher costs. **We categorise the sector as a loser based on our bottom-up analysis. AngloGold and Harmony are our least preferred in the sector.**

Platinum mines: The impact on production by platinum mines was considerably lower than in the case of gold mines. The impact on Northam was limited and Anglo Platinum and Impala Platinum demonstrated flexibility by being able to reduce power to processing and maintain power to mining operations. (For Anglo Platinum the split in terms of power use between mining, concentrating and smelting is 41:31:28.) Overall production losses in the sector amounted to about 5%-10% in the quarter. Platinum mines are also relatively energy intensive with power accounting for about 20% of the cost base. Clearly rising energy prices will have a negative impact on costs and earnings going forward. South Africa accounts for 70% of total platinum production including recycling. Consequently, any production losses in South Africa have a significant impact on global balances. As a result, we estimate that platinum price increases will more than offset any production losses from the power shortages. **We categorise the sector as a winner from the power shortages based on our bottom-up analysis. Our preferred stock in the sector is Impala Platinum.**

Other basic materials: Production losses in other miners range from 0% (Exxaro and Kumba) to 10% for Arm. Short term production losses in Sasol, Sappi and Mondi were immaterial. Both Sasol and Sappi could be beneficiaries of co-generation. This does, however, require a suitable price being paid by Eskom – which until now has been the stumbling block to higher rates of co-generation. Steel producer ArcelorMittalSA is also another company that has indicated its willingness to enter into co-generation. However, the cost charged by Eskom for electricity does not yet make co-generation by ArcelorMittal SA viable. ArcelorMittalSA estimated production losses of about 6% due to power losses. **We regard Sasol as a potential winner** from the power shortages since given the importance of fuel supply we see Sasol as likely to benefit from preferential access to power. Sasol is likely to need to contribute to power savings but is unlikely to be significantly impacted by any future blackouts. Sasol also has the ability to rely on inventories to maintain production in the short term. In addition, global power shortages, particularly in China (due to coal shortages), could well support demand for oil and consequently oil prices. **We also ArcelorMittalSA is also a potential winner** given that expanding power capacity is likely to sustain domestic demand for steel.

Manufacturing companies: After mining, the manufacturing sector was most directly affected by the power shortages and, looking forward, would be the one most affected by the need to implement energy savings. That said, initial estimates from UBS analysts point to limited production losses. Amongst manufacturing companies covered, potential losses to production range from

For platinum miners, production losses and potential cost increases offset by higher metal prices

Limited short term production impact on most other basic material companies

Manufacturing will be hardest hit after mining but immediate impact still limited

immaterial in the case of Sasol, Sappi and Mondi, to 6% in the case of ArcelorMittalSA (mentioned above). Among other manufacturing companies covered by UBS, estimates of production losses range from nothing (Illovo, Tongaat, Nampak, PPC) to immaterial (SABMiller -1%) to moderate (AVI -2% and Tiger Brands -5%). In most cases, companies at this stage do not envisage any job losses specifically due to power shortages. Costs are likely to rise, however, due to both higher energy prices and in some cases investment related to securing back-up energy supply (generators). Both Tongaat and Illovo are currently co-generators of power that is supplied to Eskom. They would be beneficiaries of higher marginal prices for co-generation. **In aggregate, we expect the manufacturing sector to be a loser from the power shortages based on our bottom-up analysis.**

Construction: There was no material impact on construction sector operations during January. We also do not anticipate any direct material impact going forward. Indeed the government has stated that the sector, in so far as it is implementing key infrastructure investment, will be guaranteed power supply since most of the infrastructure investments will alleviate overall constraints within the sector. The sector is also likely to benefit from Eskom's expanded capacity expansion programme, with Murray and Roberts and Aveng the major beneficiaries. In regard to the 2010 Soccer World Cup and power, the World Cup organising committee has indicated that power supply will be secured, with current plans being that each stadium will have two generators. A key negative factor for the sector, however, is that it appears that some restrictions may be imposed on further residential developments due to the burden imposed on municipal power distribution. This would be negative for construction stocks with exposure to residential construction activity. In addition, potential second-round effects from slowing growth and investment could be a negative for the sector. **We categorise the sector as a winner from the power shortages based on our bottom-up analysis. Our preferred stocks in the sector are Aveng and Group Five, based on valuations and recent price performance.**

Retailers: The immediate impact on retailers has been limited (Foschini, for example, quantified the annualised impact of retail days lost in January at about R125m – 4-5% off earnings for the year). The impact was also largely felt by retailers based in malls – ie, Foschini, Truworths, Woolworths, rather than the furniture retailers, Shoprite and Massmart. Clearly, however, the cost to retailers of needing to install generating capacity (if January-type losses were to become a regular occurrence) could be significant, especially for food retailers for whom refrigeration capacity would be a major issue (assuming the need to run refrigeration off own power for a significant period). Longer-term consequences from the power shortages would mainly stem from any second-round effects via slower economic activity leading to slower consumer spending. While the short- and medium-term consequences of the power shortages are not dramatic on the sector, we have become more pessimistic about our expectations for consumer spending growth given the sharp slowing in retail sales seen in Q407. More broadly speaking, the consequence of a negative energy surprise (capacity expansion and energy savings undershooting targets) would be negative for the macro economy, potentially triggering a hard landing. Under this scenario, we see the discretionary retail sector being the hardest hit. **We remain cautious on**

Construction companies geared to infrastructure rollout will benefit; residential developments may face restrictions

Consumer spending is expected to slow, although this is not related to power shortages

the outlook for discretionary retail spending. Our least preferred stocks in the sector are Woolworths and JD Group.

Financials and banks: There has been no short term impact on financials and banks from the power shortages. Potential second round effects are the only likely impact on banks from power shortages. However, in our view banks' share prices already discount a materially worse economic outlook and the slowdown in GDP growth we envisage as a consequent of power shortages and the business cycle is factored into our assumptions for about 15% growth in banking sector earnings in 2008. Banks regard the 15% energy savings targeted by government as achievable. The one potential benefit from the power shortages is for increased energy related project financing activity. **Standard Bank is our preferred play in the sector.** While we have Buy ratings on all the South African banks we cover, **given its consumer gearing ABSA is our least preferred stock in the sector.**

Limited immediate impact on financials, telcos, media, hospitals and hotels

Telcos and media: There has been no material impact on the telecommunications and media sector outside of immaterial losses in operations based in malls that were affected by power losses. In our view, in a 'worst case' scenario (ie, electricity capacity expansion and energy demand savings undershooting targets), we would regard MTN as defensive given its offshore exposure and the fact that it has back-up facilities (as do other telcos). **MTN is our preferred telcos exposure.**

Hospitals: Hospitals (Netcare and MediClinic) are not affected directly by the power shortages or the need to achieve savings since hospitals along with other essential services are excluded from targeted energy savings. Hospitals also are required to have back-up power facilities and in most cases are looking to ensure a second back-up power facility. **Netcare is our preferred play in the sector, while UK property exposure and domestic regulatory risk are concerns.**

Hotels and casinos: The immediate impact is immaterial, although price increases and some investment in back-up generating capacity will have some impact on costs. However, hotels have been able to achieve significant power savings, with City Lodge achieving 22% savings in its eco-friendly lodge in Cape Town and plans for expansion of this model elsewhere. In general the outlook for hotels is favourable, with a weaker Rand a support to tourist arrivals and the Soccer World Cup due in 2010. **City Lodge is our preferred pick in the sector.**

Macroeconomic implications

Setting the scene

The power shortages will affect the South African economy in many different ways, and the overall impact is likely to be profound. After all, the problem has built up over a decade so it is likely to take quite some time to solve.

The energy shortages have a negative effect on activity in a wide range of sectors of the economy, above all mining and manufacturing. Private sector investment might also suffer. It is true that this negative effect might be partly compensated for by increased (public) investment into the energy infrastructure. Nevertheless, the overall effect on growth and employment is certainly negative. This is likely to accelerate the slowdown the South African economy would likely have faced even without the power shortages.

South Africa's already large external deficit is likely to be stretched even further, as production losses will hurt exports and as imports (not least of capital goods for the energy sector) are likely to rise. With South Africa being largely dependent on volatile debt and equity portfolio capital to fund its external deficit, its vulnerability in an environment of weaker global risk appetite is likely to rise further. Above all, this will further increase the risks for the rand, which has already weakened substantially in recent weeks.

Modernising the energy infrastructure will require very extensive investment – and someone will have to pick up the bill. Part of the funds will come from higher electricity prices, which should lead to higher inflation. Funding will also come from Eskom debt issuance and from increased government transfers, with negative implications for the budget and government bond issuance. The budget is also likely to suffer from the loss in tax revenue caused by slower GDP growth.

How will the SARB react to all this? At least over the next couple of months and quarters, the inflation risk is likely to rise further as a result of production losses, the increase in regulated energy prices, and the effect of the weaker rand. Over the medium term, however, the power shortages are likely to accelerate the slowdown of the economy, and might thus even prove disinflationary. As a result, the SARB will probably not be keen to hike rates, unless the ZAR collapses or inflation expectations rise sharply.

We will highlight these aspects in greater detail below.

Less positive macroeconomic outlook

The analysis, to follow below, will lead us to the following forecast changes:

GDP: We lower our GDP forecast for 2008 to 3.2% for 2008 from 4.0% (-0.8pp) and to 3.7% for 2009 from 4.4% (-0.7pp). For 2008, around 0.5pp of this downgrade is triggered by the power crisis, and another 0.3pp caused by a more cautious outlook for retail sales and household consumption.

Inflation: We have lifted our inflation forecast for both 2008 and 2009. We now see the CPIX inflation declining back into the SARB's 3-6% target corridor only in Q3 09, instead of end-2008, as we previously assumed. We believe, however,

The power crisis: a damage assessment

Growth to decline

Current account deficit to rise further, increasing external vulnerability

Inflation to rise, Eskom and government to issue more debt

Despite higher risks in the short term, SARB unlikely to hike rates further

that as a result of slower growth, core inflation should abate more visibly as of H2 09.

Monetary policy: Despite a further rise of risks in the short term, we continue to believe that policy rates have peaked at 11% and will remain unchanged this year. Despite the increased inflation risk, we believe the outlook of a more pronounced growth slowdown will make the SARB hesitant to hike rates further, unless the ZAR collapses or inflation expectations rise sharply.

External balance: Given the likely loss in exports and stronger imports, we are further increasing our current account deficit forecast for 2008 to 8.4% of GDP from 8.2% of GDP. Given slower growth and the weaker rand, we have lowered our forecast for 2009 to 8.4% of GDP from 9.0% of GDP.

ZAR: The rand has already weakened substantially in recent weeks, but given the challenging global and South Africa-specific outlook, we believe further weakness is likely. We have revised our end-2008 forecast to ZAR/USD8.0 from previously 7.6, although we warn that temporary weakness above these levels is likely in the near-term (6-months). We maintain our USD/ZAR forecast of 7.8 for end-2009. A stronger exchange rate in 2009 than in 2008 is a reflection of our expectation that 2008 might be a more challenging year than 2009.

Public finances: South African public finances are basically sound, so the starting position for the government to address the higher investment needs in the energy sector actually isn't that bad. Instead of budget surpluses, we now expect moderate budget deficits for 2008 and 2009. Tackling the power crisis will be a balancing act for South African policy makers because a significant worsening of the fiscal situation would likely increase investor concerns about the large external deficit.

Bond markets: Higher fiscal pressure, larger bond issuance, and more pronounced macroeconomic concerns imply, in our view, that bond yields will remain under upward pressure this year. We have increased our 10-year bond yield forecast by 30bp to 8.9% for end-2008, which implies the spread over US treasuries staying at around 500bps. We expect a decline in spreads next year (to perhaps 400bps) as some macro concerns abate; this should help yields to decline to 8.5%.

Even *before* these adjustments, most of our macro forecasts were more cautious than the 'consensus'; following our latest adjustments we remain more bearish than consensus on growth, inflation, interest rates, bond yields and the 2008 outlook for the Rand (although more positive on the 2009 outlook for the Rand). There can be no doubt that from an economic point of view, South Africa is facing a challenging period ahead.

Table 7: UBS forecasts for South Africa, old and new and consensus

	2008			2009		
	UBS new	UBS old	Cons. (Jan-08)	UBS new	UBS old	Cons. (Jan-08)
Real GDP growth, %	3.2	4.0	3.7	3.7	4.4	4.4
CPIX inflation, yr end, %	6.9	6.0	NA	5.4	5.4	NA
CPIX inflation, average, %	8.1	7.6	7.2	6.1	5.6	5.4
SARB policy rate, year-end, %	11.0	11.0	10.5	10.0	10.0	9.2
Current account balance, % GDP	-8.4	-8.2	NA	-8.4	-9.0	NA
10 year bond yield, % year-end	8.9	8.6	8.4	8.5	8.4	8.0
USD/ZAR, year-end	8.00	7.60	7.51	7.80	7.80	7.97
USD/ZAR, average	7.90	7.20	NA	7.84	7.70	NA
Government budget balance, % GDP	-0.1	0.4	NA	-0.8	-0.3	NA

Source: Consensus based on Reuters Jan-08 survey, GDP & currency are Feb-08, UBS estimates

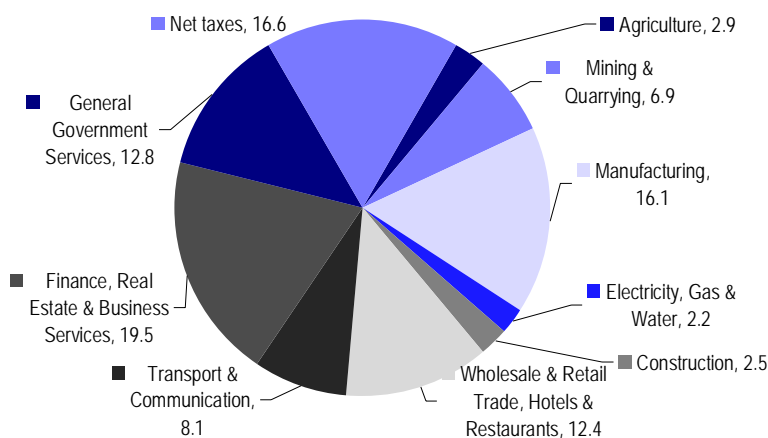
Fallout on economic activity and growth

The power crisis will affect economic activity in South Africa in many different ways. The power outages have led to immediate losses in a number of sectors, with potentially more to follow over the coming months, quarters, and perhaps years. Employment, income and fixed investment might suffer, thus leading to negative secondary effects, such as lower household consumption.

The sector that was hit most spectacularly by the power outages in January, and that appears to be exposed to the biggest risk going forward, is the highly energy intensive **mining sector**. Power makes up c15% of the cost base for the gold producers, and c20% for the platinum producers. The mining sector makes up c7% of GDP in South Africa; it is thus significantly smaller than ‘finance, real estate and business services’ (19.5% of GDP), ‘manufacturing’ (16.1% of GDP) or ‘trade, hotels & restaurants (12.4% of GDP).

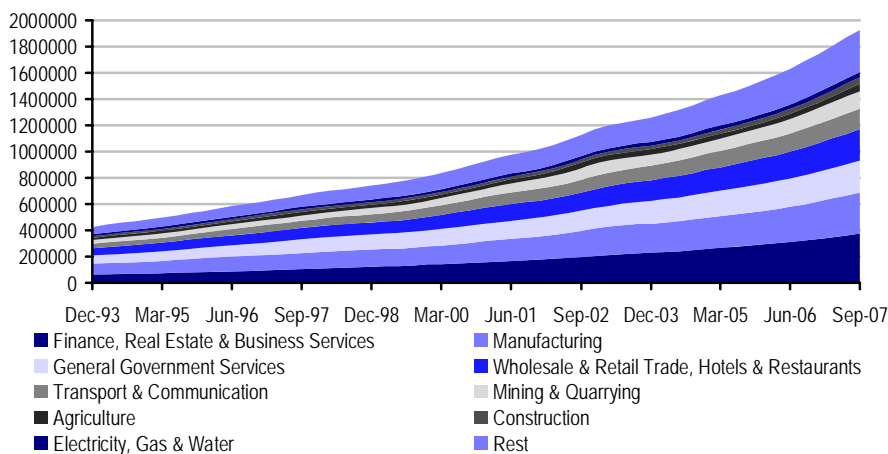
Mining sector likely to be most affected

Chart 22: Composition of South African GDP (%)



Source: Statistics South Africa, UBS

Chart 23: Components of nominal GDP over time (Rm)



Source: Statistics South Africa, UBS

Following c5-7 days of severe power restrictions in January, which forced some **mines** to shut down production entirely, most companies in the sector are currently operating at about 90% of their normal power usage, which is causing some, although apparently not serious, production losses. According to estimates by UBS analysts covering South African mining companies, energy shortages will cause production losses of *up to* 10-15% in 2008 and 2009, but significantly less in quite a few cases. The leading gold producers, in particular, might have room to save energy, which might help to alleviate bottlenecks. Importantly, at this stage UBS analysts do not expect fixed investment in the mining sector to suffer, although delays might occur in some cases. The employment implications seem to differ between platinum producers, where employment might be stable or increasing, and the gold producers, which are expected to shed employment. After all, most of the world’s platinum is being produced in South Africa, so production shortages would lead to higher platinum prices, which would benefit South African producers. In contrast, South African gold producers are price takers in the international market, so domestic cost increases would hit profitability. Overall, if power outages do not get worse, we believe the macroeconomic effect would be visible, but not severe. Assuming a 5% production loss for the entire mining sector, the loss in GDP would be c0.35%.

Mining sector now operating at 90% of usual electricity load

The **manufacturing sector**, which accounts for 16% of GDP, might also be negatively affected. However, at this stage, UBS analysts estimate only limited losses in production in 2008/09, mostly in the range of 1-2%, but in a few cases up to 5-6%. Significant negative employment effects are not anticipated currently. Overall, we estimate that the loss in the manufacturing sector might be less than 0.2% of GDP.

Manufacturing: moderate losses

In the **construction sector** (2.5% of GDP), UBS analysts also don’t expect an immediate fallout from the power crisis. Thanks not least to extensive public investment, the sector is facing tight capacity and major cutbacks in production or employment appear unlikely at this stage. The construction sector enjoys priority status in the supply of power and plants can operate under (reliably scheduled) load-shedding reasonably well. Also, many construction sites have stand-alone generating capacity. However, longer term, the impact on the

Construction: short term impact insignificant

construction sector appears more uncertain. If fixed investment and overall GDP growth were to suffer as a result of the power crisis, construction activity might well get hurt too.

‘Wholesale & retail trade, hotels and restaurants’ make up for 12.4% of GDP. According to UBS analysts, the immediate impact of the power outages on most retailers was insignificant. Although many shops lost business when shopping malls closed during the power outages in January, many retail facilities outside malls have back-up generators that help to keep the business running. Nevertheless, there are reasons to be concerned about the sector. The retail slowdown that was already well under way *before* appears quite sharp and it could well be aggravated if the power crisis were to lead to additional losses in GDP.

Retail sector: lower GDP growth is main risk

‘Finance, real estate and business services’ is the biggest sector of the economy, at around 19.5% of GDP. According to UBS analysts, the immediate impact of the power shortages on the sector has been, and is likely to be, insignificant. However – as in the case of the retail sector – over time, there could be a negative impact in the case of a slowdown in GDP growth.

Services: short-term impact immaterial

Taking all these initial estimates together, it appears that the loss of GDP growth that can be *directly attributable* to the power crisis is likely to be relatively limited, probably at around 0.3-0.5% of GDP in 2008 and 2009. The second round effects (‘multiplier effects’) through weaker GDP growth, however, will add to this burden. The reduction in GDP growth will have knock-on effects on household consumption, which has a share of around 66% in GDP. This would imply that a 0.3-0.5% ‘first round’ reduction in GDP would lead to another 0.2-0.3pp loss in GDP growth through weaker household consumption. The combined impact could thus be 0.5-0.8% of GDP.

Second-round effects through lower GDP growth

At this stage, we prefer an estimate at the *lower* end of this range as our base case scenario, and assume damage to GDP growth of c0.5% of GDP. This seems to be broadly in line with government estimates. When the 2008 budget was presented last week, a South African Treasury official indicated that the government currently estimates the GDP loss due to the power crisis at around 0.6% of GDP.

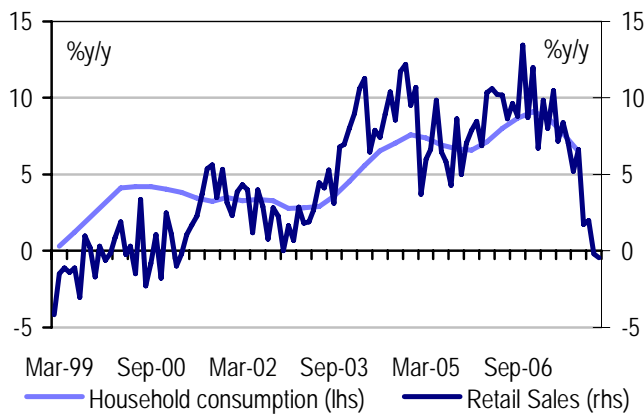
We estimate the power crisis to trigger a loss in GDP growth of 0.5%

Disconcerting slowdown in retail sales

Unfortunately, when re-assessing the growth outlook for South Africa, we need to acknowledge that the latest trends in retail sales have been quite disconcerting. The growth in retail sales declined from double-digit rates in Q4 06/Q1 07 into negative territory in Q4 07. Historically, retail sales and household consumption have been closely correlated (see Chart 24). Therefore, we suspect that household consumption might slow very visibly over the coming quarters, and more than we have anticipated so far.

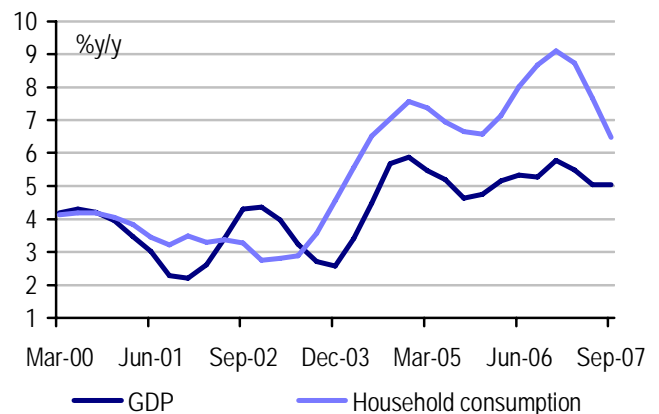
Retail sales are collapsing

Chart 24: Retail sales & private consumption closely correlated



Source: Statistics South Africa, UBS

Chart 25: Household consumption and GDP growth also correlated



Source: Statistics South Africa, UBS

So far, we expected household consumption growth to decelerate from 6.5-7.0% in 2007 to 3.9% in 2008. The new budget envisages a consumption growth rate of 3.7% (revised from 4.2% previously). By now, however, considering the collapse in retail sales, we believe these assumptions are too optimistic. We think that a household consumption rate of only 3% this year, followed by perhaps 3-3.5% in 2009, is more realistic. Since household consumption makes up for two thirds of GDP, this lower rate is going to affect our GDP growth forecast quite sensitively.

Retail slowdown warrants lower forecast for household consumption

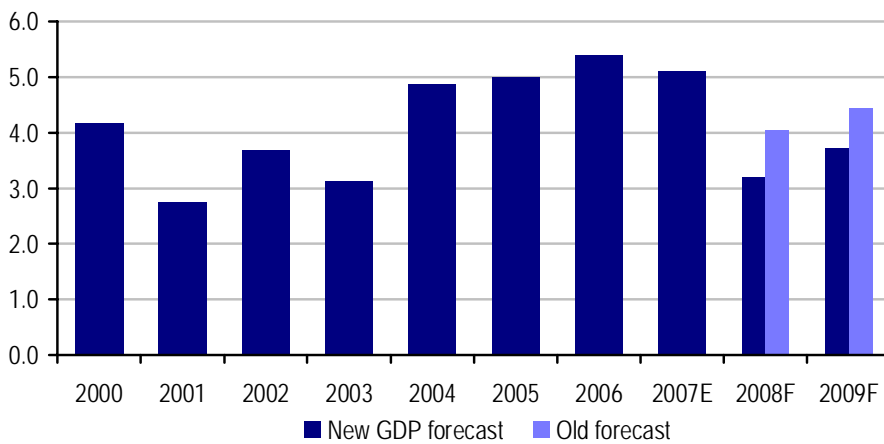
We have also modified the assumptions for other components of GDP. We have tweaked government consumption somewhat to the upside to account for stronger public investment into the energy sector. The same applies to our assumption for fixed investment. Reflecting production losses in the mining and manufacturing sectors, we have reduced our assumption for export growth. At the same time, considering increased imports not least for investment goods, we have increased the growth projection for imports for this year, followed by somewhat weaker import demand in 2009 as a result of slower growth.

Stronger government consumption and investment, weaker exports

Combining these changes with the forecast adjustments triggered by the power crisis, we revise our GDP growth forecast to 3.2% for 2008 from 4.0% (-0.8pp) and to 3.7% for 2009 from 4.4% (-0.7pp).

We cut our growth forecast to 3.2% (from 4.0%) for 2008 and to 3.7% (from 4.4%) for 2009

Chart 26: South African GDP growth, new and old UBS growth forecast



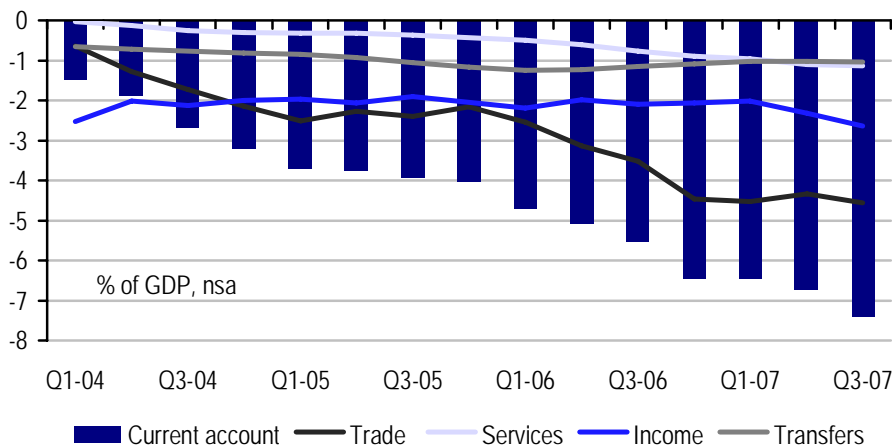
Source: Statistics South Africa, UBS

The damage to the external balance

South Africa’s external deficit has been disconcertingly large for quite some time, and the power crisis implies that the deficit will most likely rise even further in 2008/2009. In a more challenging global environment, this implies a further rise in vulnerability.

External vulnerability to rise further

Chart 27: Current account and sub-components (% of GDP)



Source: Statistics South Africa, UBS

The trade balance has been the major driver of the worsening current account balance in recent years, and is likely to be most affected by the power crisis. The other sub-components of the current account (services, income, transfers) should be largely unaffected, we think. At least over the short and medium term, exports are going to suffer, while imports are likely to increase. The loss in production in the commodity and mining sector, and in some parts of manufacturing, is likely to hurt exports. At the same time, the import of capital goods in the energy sector and of hydrocarbons (to fuel Eskom’s turbines and generators) is likely to lead to higher imports. This negative impact might be partly compensated by higher export revenue for platinum and perhaps gold. The depreciation of the ZAR might also have a positive impact on import-export dynamics. Last but not least, the expected slowdown in GDP growth over the

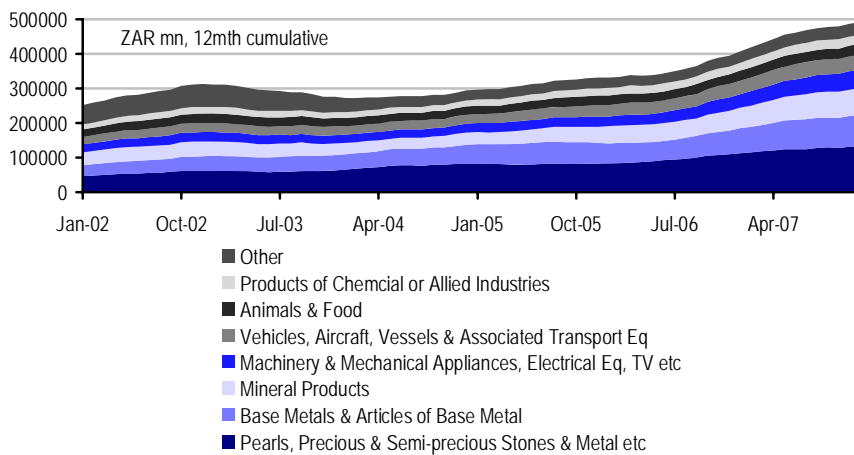
Trade deficit to widen further in 2008

coming quarters should also bring about a deceleration in import demand over time.

Metals and mining products (specifically the three categories ‘pearls, precious & semi-precious stones & metal’, ‘base metals’, and ‘mineral products’) make up 61% of total exports from South Africa (Chart 28). The export growth rates of these sectors in recent years were impressive, which has helped to compensate for the some of the increase in import growth. Last year alone, exports increased by 21%, 31%, and 38%, respectively, in rand terms in the three sectors. So far, we have been cautiously optimistic about future export growth in these sectors, given the expectation that prices and volumes would remain robust, thanks to strong demand from China and India. Now, however, capacity constraints caused by an energy shortage imply that future export growth will be lower. That said, there is clearly some offset provided by higher prices to lower volumes in the gold and platinum sectors. However, this may well be offset by lower coal net exports by South Africa if Eskom begins to demand a higher share of domestically produced coal.

Mining exports likely to be badly affected

Chart 28: Structure of South African exports over time (Rm)

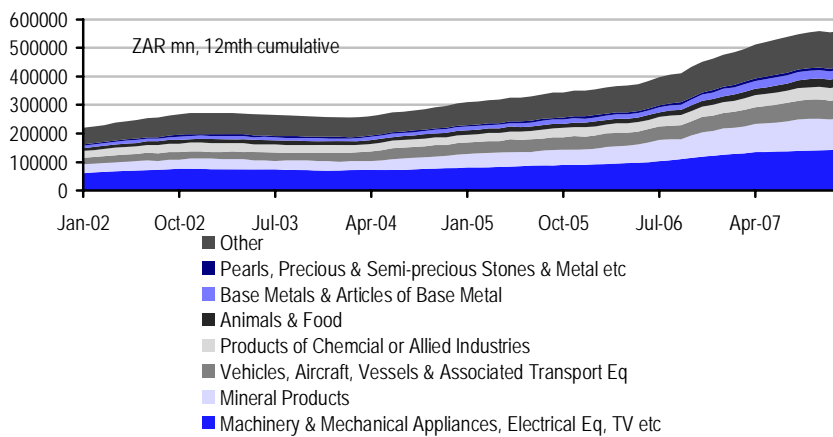


Source: Statistics South Africa, UBS

On the import side, the two biggest groups are ‘Machinery & mechanical appliances, electrical equipment, TV etc’ and ‘Mineral products’, with a combined share of 45% of imports (Chart 29). Unfortunately, these heavyweight components are the ones that are likely to get hit most severely by the power crisis. The import of energy-related investment goods is likely to increase significantly, while imports of crude oil are likely to remain high in both volume and price terms.

Imports of machinery and minerals are expected to rise

Chart 29: Structure of South African imports over time (Rm)



Source: Statistics South Africa, UBS

Having revised our forecasts for export growth downwards and import growth upwards, we now project a trade deficit of US\$14.5bn for 2008, around US\$1.9bn (0.6% of GDP) higher than previously. Based on this, we now forecast a 2008 current account deficit of 8.4% of GDP (US\$23.7bn), up from 8.2% of GDP previously. Our forecast is considerably more aggressive than the Treasury’s new current account deficit forecast of 7.3% of GDP. Previously we had expected an even higher current account deficit of 9.0% of GDP for 2009. Now, however, given the slowdown in growth and the weakening in the rand, we believe that the deficit will probably be somewhat lower, at around 8.4% of GDP. While private sector import demand should moderate next year, we believe that ‘last minute imports’ related to the preparations for the 2010 Soccer World Cup are likely to be quite strong.

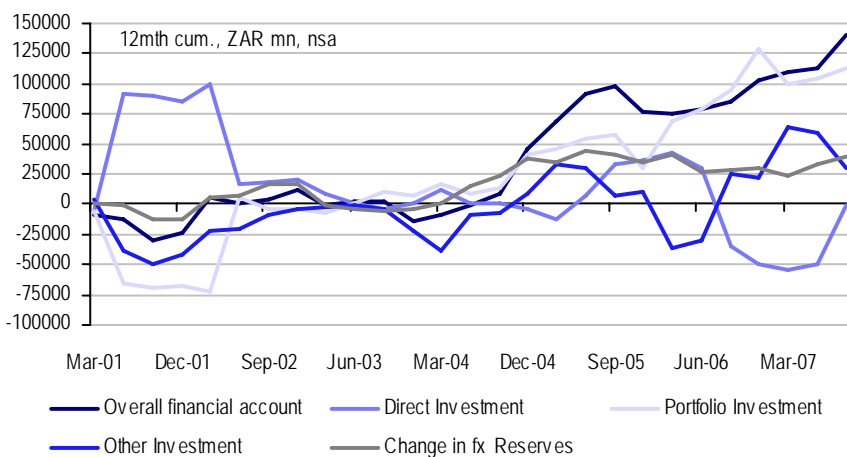
External financing to become more challenging?

As regards the financing side of the external deficit, we fear that South Africa’s reputation as a location for foreign direct investment could suffer because investors might suspect that South Africa will not be able to guarantee a secure supply of power. First indications are that the proposed R21bn investment in the aluminium smelter in Coega is likely to be postponed or even cancelled. South Africa has traditionally not been very successful in attracting foreign direct investment. If the inflow of FDI were to decline further, South Africa’s reliance on volatile portfolio flows (and so-called ‘other investments’, such as loans) would rise even further. In a more uncertain global environment, this would imply a further increase in vulnerability.

We revise our current account deficit forecast upwards for 2008, but moderately downwards for 2009

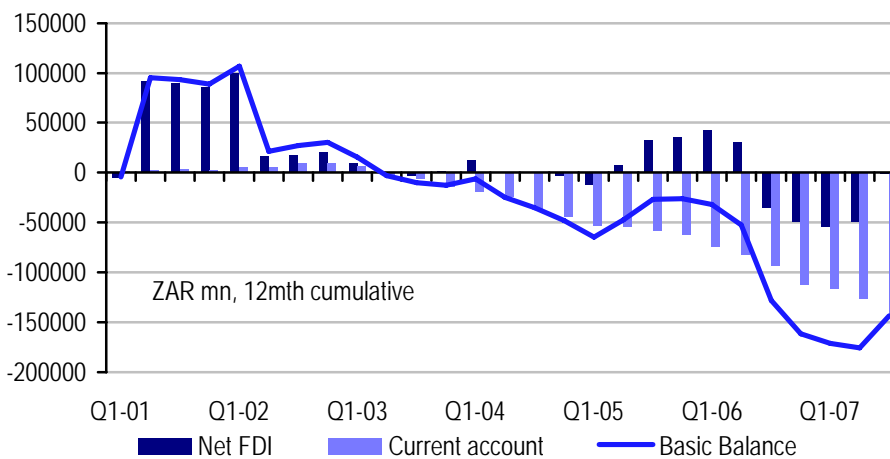
FDI inflows to South Africa might decline further

Chart 30: Structure of South Africa's financial accounts



Source: SARB, UBS

Chart 31: FDI doesn't play an important role in financing SA's external deficit



Source: SARB, UBS

ZAR – pressure to rise further in 2008

We have been cautious about the rand for quite some time – even before the outbreak of the power crisis – with point forecasts of a US\$/rand exchange rate of 7.60 and 7.80 for end-2008 and end-2009, respectively. Our major concern has always been the large external deficit, which remains mainly financed by volatile equity and debt portfolio flows, which makes South Africa vulnerable to a sharp decline in global risk appetite. More recently, we have also been concerned about the markets becoming more sceptical about ‘commodity currencies’ such as the ZAR in the light of increasing signs of a slowdown in the world economy (a view we would not necessarily share). Last but not least, our global economists argue that the US dollar is probably reaching a cyclical trough, and that a dollar recovery appears likely for H2-2008. UBS’s forecast for €/USD is 1.35 for end-2008 and 1.30 for end-2009. The expected recovery of the dollar could put additional pressure on the rand.

We were cautious on the ZAR even before the power crisis

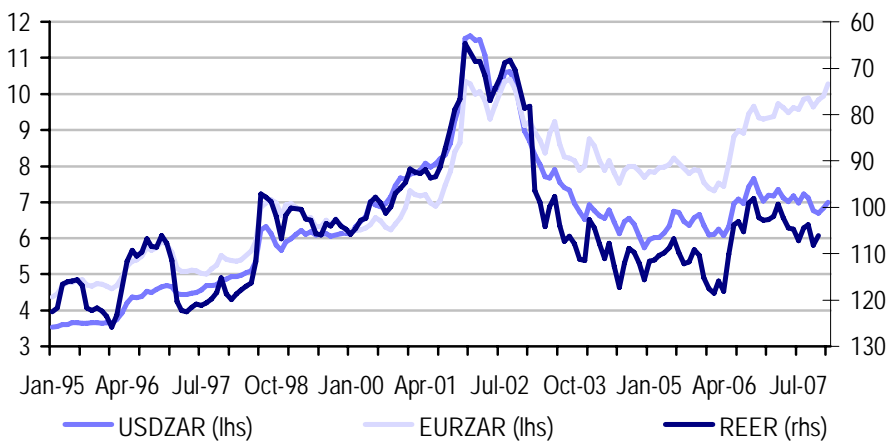
Given the power crisis, the risks for the rand have further increased, no doubt. The pressure on the external deficit and on inflation is likely to rise over the coming months, thus potentially undermining the confidence in the rand. Concerns about South African growth could also increase. This implies that the pressure on the rand might rise further over the coming months, despite the nearly 10% depreciation that has already taken place year to date.

The power crisis could further weaken the confidence in the ZAR

Accounting for these increased risks, we amend our exchange rate forecast to rand/US\$8.0 for end-2008 from previously 7.60. We warn, however, the currency could well overshoot above our year-end forecast in the near term (6-months). Thereafter we anticipate a recovery in the currency. Considering domestic (political and economic) and global factors, we expect 2008 to be a more difficult year than 2009 for South Africa. After all, inflation should be back on a stable downward trend in 2009 and the pressure on the external deficit might also start to abate as a result of weaker growth. Against this background, we maintain our end-2009 forecast of ZAR/USD7.80, ie, a stronger rate than our new end-2008 forecast.

We revise our end-2008 forecast to ZAR/USD8.0 from 7.6 but maintain our end-2008 forecast of 7.8

Chart 32: Rand vs dollar and euro; real effective exchange rate (REER, inverted)



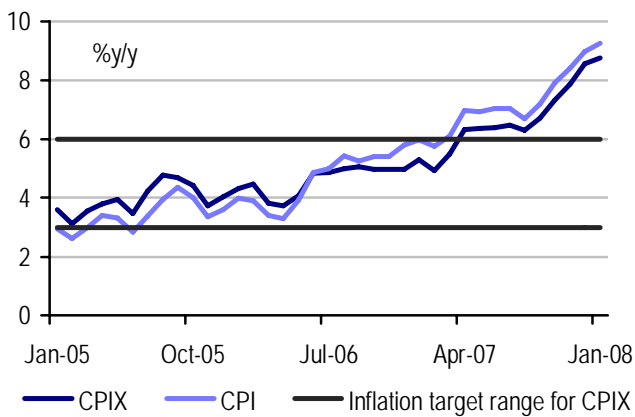
Source: South Africa Reserve Bank, UBS

Inflation pressure to rise further

The power crisis will have short, medium-term, and potentially even longer-term effects on inflation. In the short term, food prices might rise as result of supply shortages caused by production disruptions and waste. Food has the biggest weight in the CPIX, at 25.7%, and any food price pressures will therefore affect the CPIX sensitively. We believe that this effect will be quite fast, and could already show up in the upcoming CPIX data. Price pressure in the transport sector is also likely to rise and spill over into the whole supply chain of the economy. With a weight of 15.3%, transport is the second biggest component of the CPIX, after food.

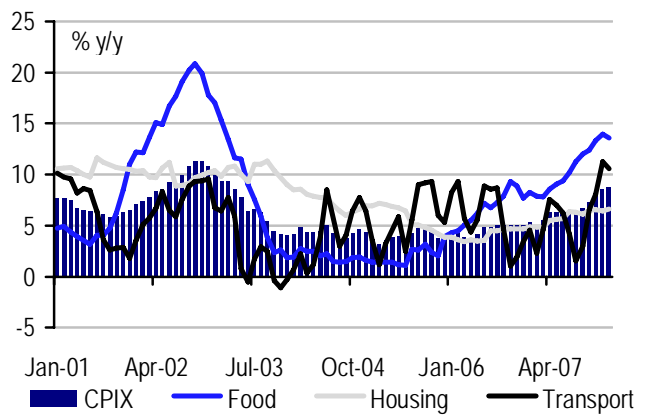
Higher food and transport prices could affect inflation in the short term

Chart 33: CPIX and CPI well above 3-6% target corridor



Source: Statistics South Africa

Chart 34: CPIX and sub-components



Source: Statistics south Africa, UBS

Beyond the short term, prices will be affected by rising electricity tariffs. Significant price increases have been in the pipeline for some time. The National Energy Regulator of South Africa (Nersa) has approved a price increase of 14.2% in 2008. However, even after this increase (which we expect to be reflected in the CPIX as of July 2008), additional tariff increases will be needed over the coming years (Eskom has already announced that it will request that the 14.2% increase for this year be revised up), and this has already been reflected in our previous inflation forecasts. So far, we have assumed tariff increases of 17% in 2009. With a weight of 3.55% in the CPIX, this sort of tariff increase would have pushed the CPIX up by around 0.6pp. Given the power crisis, however, it seems that prices will probably have to rise more strongly, perhaps by 20% per year, which would imply a CPIX effect of c0.7pp.

Higher regulated energy prices to push up inflation

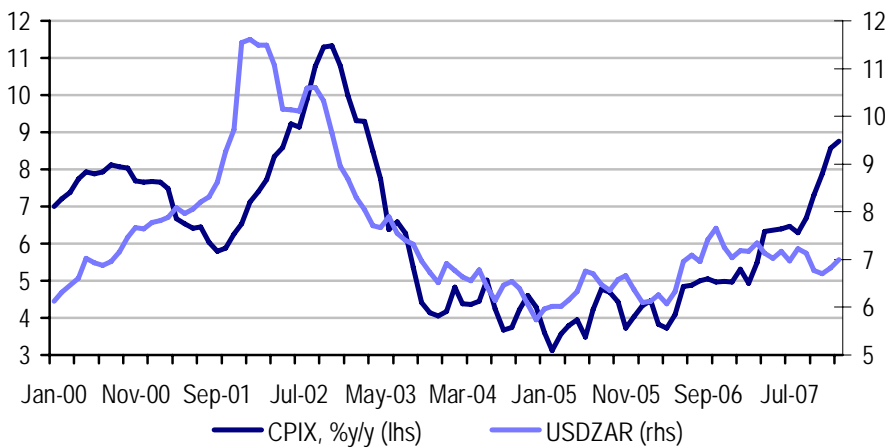
On top of this, we need to consider the inflation impact of the weaker ZAR. According to our calculations, the exchange rate pass-through of the rand on the CPIX is roughly 0.1. In other words, a 1% change in the rand will lead to a 0.1pp change in the CPIX (over a year or so). Since mid-January, the rand has already depreciated by around 15%, and a move towards our new end-2008 forecast of ZAR/USD8.00 would imply a depreciation of around 19%. Assuming an FX rate pass-through of 0.1, this would generate an inflation stimulus of almost 2pp over time.

Weaker ZAR to create additional price pressures

Fortunately, our previous rand forecast was already quite cautious, so our previous inflation forecast was therefore quite high as well. Nevertheless, we believe our exchange rate revision warrants another upward revision in the inflation forecast trajectory. Higher inflation in the short term might also imply a rise in inflation expectations, which could lead to some negative secondary effects showing up later in 2008 and in 2009.

We tweak our already-cautious inflation forecast further up

Chart 35: ZAR exchange rate and inflation relatively closely related



Source: Statistics South Africa, Bloomberg, UBS

As regards the longer-term impact on inflation, we need to distinguish between *structural* and *cyclical* factors. From a structural point of view, if the power crisis were to lead to a *sustained* weakening in investment and employment generation in South Africa, then the country's trend growth rate would suffer. This would imply that supply bottlenecks would be *ceteris paribus* tighter, and inflation rates over the coming years would be somewhat higher than otherwise.

Longer-term impact: opposing forces

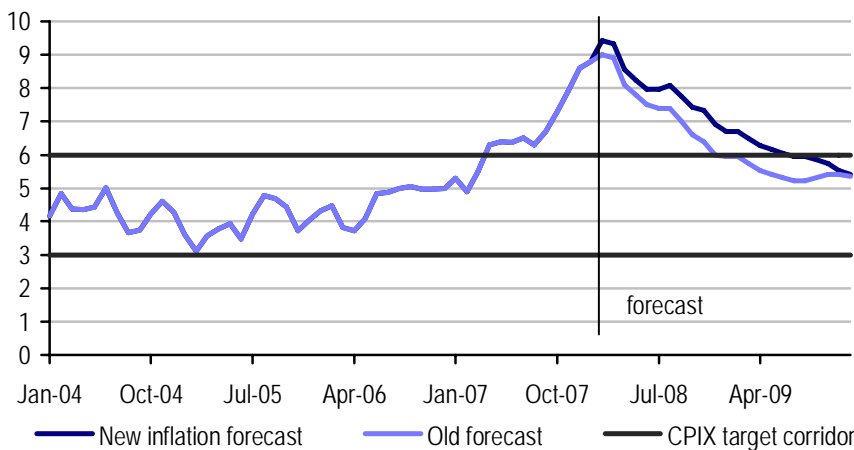
However, from a *business cycle* perspective, the power shortages could very well amplify the cyclical downturn of South African economy in H2-2008 and 2009, and this could eventually help to alleviate inflation pressure. We believe that this disinflationary effect is likely to dominate, particularly as of mid-2009.

Weaker growth could eventually reduce inflation pressure

Taking all these arguments together, we have increased our inflation forecast trajectory for 2008 and 2009. We no longer expect CPIX inflation to drop back into the SARB's 3-6% target corridor by the end of this year, but only by Q3 09. Given the slowdown in growth, however, we now forecast a more pronounced deceleration in (core) inflation pressure over H2 09 (and into 2010) than previously.

We now see inflation to return into 3-6% target corridor only in Q3-09

Chart 36: Old and new UBS inflation forecast (CPIX)



Source: Statistics South Africa, UBS

Monetary policy

How is the SARB going to react to all this? It has been our call for quite some time that the central bank will keep rates on hold at 11% throughout this year and cut rates by 100bp in 2009. We believe that in the light of 400bp of rate hikes since mid-2006 and clear signs of a consumer slowdown, the SARB has scope to ‘wait and see’ to assess the impact of its past rate hikes and the developments at the domestic and global economic level. Nevertheless, we have stressed that due to the negative inflation outlook, the risk to our ‘rates on hold’ call is clearly skewed to the upside. In light of the recent power crisis, we *still* assume as our base case scenario that rates have peaked at 11%, although we acknowledge that the upside risk to policy rates has probably increased further, at least for the short term.

We *still* assume that rates have peaked, at 11%

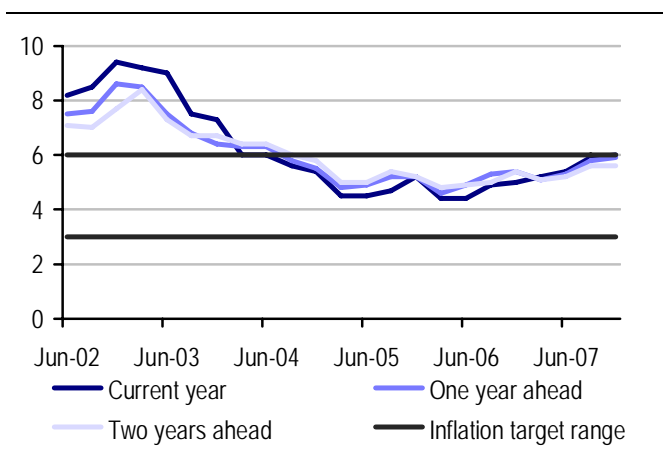
In our view, the SARB will be very hesitant to hike rates further. After all, the additional inflation pressure that will unfold over the coming months is the result of a *supply* shock, not a demand shock. Additional interest rate hikes would not help to contain the resulting inflation shock – and the central bank should not even try. At best, additional interest rate hikes in the short term would help to stabilise inflation expectations, and thus help to contain potential negative secondary effects to follow over time. However, any rate hikes would inevitably affect the economy only with 3-4 quarters of a delay – at a time when the cyclical downturn of the South African economy might already be well underway. The result could be an even worse downturn. Clearly, the SARB is aware of this risk.

We believe SARB will be hesitant to hike rates further, given additional risks to growth outlook

Nevertheless, we believe two factors might potentially tie the Bank’s hands and leave it no choice but to hike rates further: Firstly, a sharp decline in the rand, perhaps through 8.50 and higher, in a disorderly fashion. This would not only imply further inflation risk, but also increase the risk of a general collapse in market confidence. The last time this happened was in late 2001, early 2002. The second risk would be an unacceptable rise in inflation expectations that would signal erosion in the SARB’s credibility and leave it no choice but to hike rates further, even if this were to increase the business cycle risk even further.

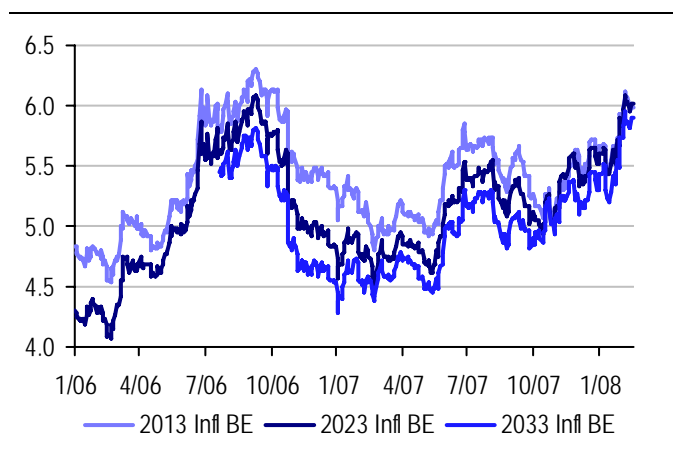
Main risks: collapse of the ZAR and sharp worsening of inflation expectations

Chart 37: Inflation expectations running high (Q4 2007)



Source: Statistics South Africa, ALEP, UBS

Chart 38: Inflation breakevens* as market inflation expectations

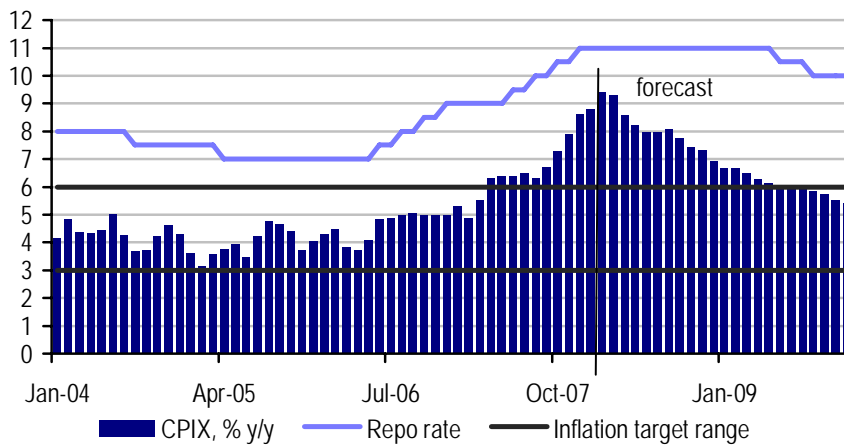


Source: Bloomberg, *Difference between yields of straight and inflation-linked bonds

For the time being we maintain our call of 100bp of rate cuts to 10% over the course of 2009, with the first cut possible as of mid-year, as inflation re-enters the 3-6% inflation target corridor. However, given the increased business cycle risk and the likely visible decline in core inflation pressure in H2 09, we would consider the forecast risk to be skewed towards more sizeable rate cuts.

We expect 100bp of rate cuts for 2009, but risk might be skewed towards more cuts

Chart 39: UBS forecast for CPIX inflation and policy rates



Source: Statistics South Africa, UBS

The implication for public finances

The energy crisis will require not only costly emergency measures in the short term, but also sizeable investment into energy infrastructure for years to come. Somebody will have to pick up the bill for this. Eskom’s new five-year plan implies fixed investment worth R343bn, equivalent to 17% of South Africa’s 2007 GDP. The necessary funds will have to come from (a) higher energy tariffs, to be levied onto the consumer; (b) higher bond issuance by Eskom, (c) government transfers or – probably most likely – a combination of the three.

How will higher investment in the electricity sector be financed?

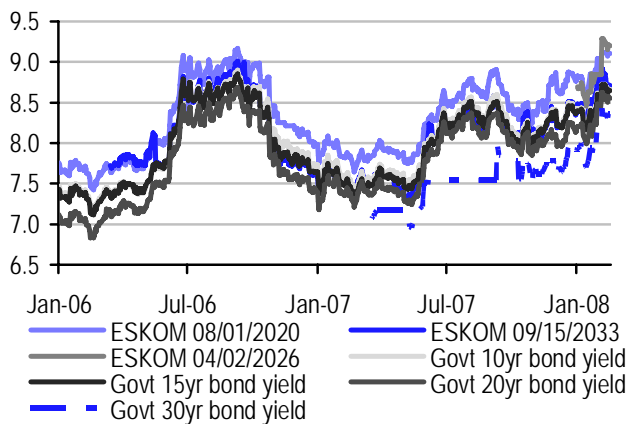
Eskom is fully owned by the South African government; as such, its debt is included into the South African *public sector* debt stock (albeit not into the more narrowly defined central or general government debt). As a state-owned enterprise, Eskom’s debt enjoys an (implicit) guarantee from the South African state. This is also reflected in the company’s relatively high local currency credit ratings (A2, stable; A-, negative; and A, negative, by Moody’s, S&P and Fitch), which are closely in line with South Africa’s local currency sovereign ratings (A2 positive, A+ stable, A positive).

Eskom enjoys government guarantees

Eskom has been an active issuer in the local currency bond market in the past, with outstanding maturities until 2033. Traditionally, the company has issued around 70% of its debt in the local market, and we assume that the bulk of future issuance will also be in the domestic market. In 2006, the company also issued a €500m Eurobond (4% coupon), maturing in 2013. In addition, Eskom enjoys credit facilities with the European Investment Bank, the Japan Import-Export Bank, and other agencies.

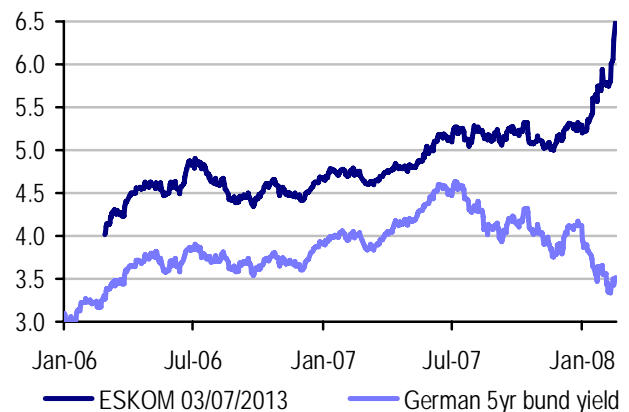
Eskom’s debt issuance is mostly on the domestic market

Chart 40: Eskom and sovereign bond yields (ZAR)



Source: Bloomberg, UBS

Chart 41: Eskom eurobond yields versus bunds (€)



Source: Bloomberg, UBS

Eskom’s R343bn capex plan

We expect, based on funding plans presented by Eskom *before* the power crisis struck, that the R343bn capex plan will be financed as follows: tariff increases of *at least* 20% per year would generate additional revenues of cR250bn over five years, R75bn of which (R15bn per year) would be channelled towards investment. In addition, Eskom would issue *at least* R150bn in debt (7.5% of 2007 GDP) spread over a period of five years, mostly on the domestic market. This would leave a gap of up to R118bn, or 5.8% of 2007 GDP that would have to be financed through other sources – above all from government transfers.

In the new 2008 budget, the government has already pledged R60bn in transfers to Eskom over five years – essentially half of the remaining gap. However, this would still leave a gap of R58bn, so either Eskom would have to issue even more bonds or the government would have to extend higher transfers. In the end, this might not matter much because Eskom is a state-owned company, so the public finances will be burdened either way.

Additional fiscal burden through tax losses caused by lower growth

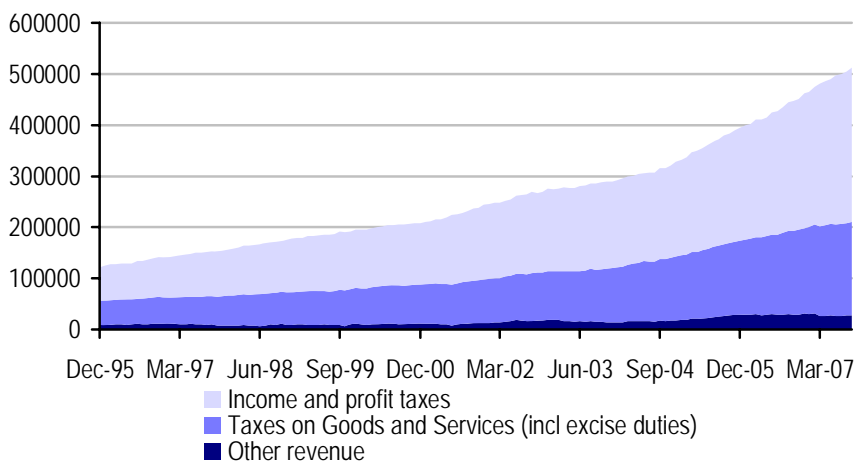
Unfortunately, higher investment spending on energy infrastructure will not be the only burden on the budget. Almost inevitably, there is going to be a ‘double whammy’ of higher investment spending *and* a loss in tax receipts triggered by the slowdown in GDP growth. South Africa’s government-revenue-to-GDP-ratio is roughly 28% of GDP. Around 59% of total revenues are generated by income and profit taxes and 26% by taxes on goods and service, particularly VAT; the remaining 5% are generated by property taxes or customs duties. As Chart 42 shows, income and profit taxes have performed particularly in 2005-2007. However, the Treasury has pointed out that this was to a good degree thanks to *cyclical* factors, as high commodity prices boosted mining profits, low interest rates helped profitability in retail, banking, and construction, and strong consumption spending contributed to higher VAT receipts. The creation of 1.3m new jobs since 2003 has also helped to boost personal income tax receipts. All this implies that as GDP decelerates, the growth rate in tax receipts is going to slow, thus putting additional pressure on the budget.

Eskom plans to invest R343bn over the next five years

Government to increase transfers to Eskom

Public finances also likely to suffer from tax losses

Chart 42: Government revenues in South Africa (in Rm)



Source: South African Treasury, UBS

Are public finances strong enough to shoulder the burden?

If we assume that the government could fill the whole gap, ie, 5.8% of GDP over five years or 1.2% of GDP per year, and bear the additional burden of tax losses, how seriously would this affect public finances in South Africa?

First of all, it is important to acknowledge that public finances in South Africa are actually in a fairly solid state. The starting position for the government to tackle the power crisis therefore isn't bad. The consolidated government budget (which excludes state owned enterprises) has generated a surplus of 1% in 2006 and 2007 and targets surpluses of 0.6-0.8% of GDP in 2008-2010. It is true that in the new 2008 budget the government has lowered its budget surplus targets somewhat, but even the new targets appear ambitious.

Non-financial public enterprises have generated a deficit of 0.4-0.7% of GDP in 2006/2007. According to the new 2008 budget, the deficit is expected to rise to 1.7% of GDP in 2008, 1.8% of GDP in 2009 and 1.9% of GDP in 2010. This trajectory is 0.3pp higher than previously assumed, given the additional investment need precipitated by the power crisis.

Overall, given the lower general government surplus and the higher deficit in the SOE-sector, the Treasury's 2008 budget now expects a higher public sector borrowing requirement than previously. The borrowing requirement is now seen to rise from basically zero in 2007 to 1.2% of GDP in 2008 (previously 0.8%), 1.4% of GDP in 2009 (previously 1.1%), and 1.4% of GDP in 2010 (previously 1.2%). Even these updated targets are moderate by international standards. As a result, the Treasury projects government debt to decline from currently 27% of GDP to 20.9% of GDP by 2010 (Chart 43 and Chart 44).

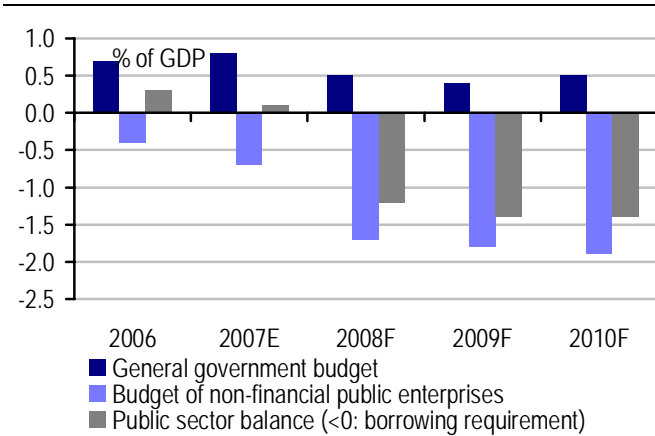
How will public finances cope with the additional burden?

Public finances in South Africa are solid

Deficit in SOE sector likely to rise

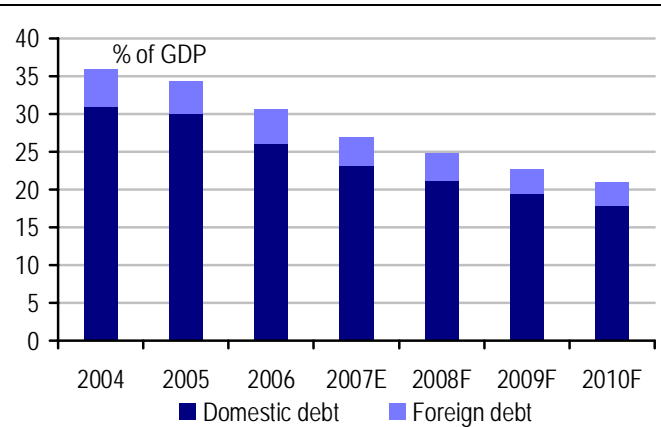
Public sector borrowing requirement rising, but still moderate by international standards

Chart 43: Public sector balances in South Africa (% of GDP)



Source: South African Treasury, UBS

Chart 44: Total government debt (% of GDP)



Source: South African Treasury, UBS

Overall, this relatively healthy starting position should bode well for the government to shoulder the additional burden posed by the power crisis. And yet, we see at least two problems. Firstly, the Treasury’s public finance projections for the coming years might be too optimistic, not least due to an overly optimistic growth forecast of 4%, 4.2%, 4.6% for 2008, 2009, 2010, respectively.¹ Secondly, conservative fiscal policy in South Africa has not been a luxury but a necessity in recent years, not least because of the country’s large current account deficit.

Treasury’s fiscal projections might be too optimistic

This implies that South African policy makers will have to perform a balancing act to solve the power crisis. On the one hand, the comfortable fiscal position at the outset of the power crisis should give the government some scope to widen the public deficit with a consequent increase in public debt. We expect the government to use this latitude, given its ambitious agenda for growth, employment generation and social development, and the preparations for the 2010 Soccer World Cup, all of which require large public spending. At the same time, the political leadership is about to change, and a new leader might not want to enter office and tighten belts right away. Against this background, we do not expect public expenditure to be cut aggressively in other parts of the budget in order to make room for additional energy investment. As a result, we expect the public sector deficit to rise over the coming years.

Addressing the power crisis will be a fiscal balancing act

However, there will be limits to this. After all, tight fiscal policy will be absolutely crucial to calm investor concerns about South Africa’s large current account deficit. The deficit remains largely financed by volatile portfolio flows (rather than FDI), so stabilising investor confidence could be even more important in the future, if the more testing global environment leads to a further decline in risk appetite. A sharp rise in deficit spending could spook investors and undermine confidence.

A sharp rise in deficit spending might further increase macroeconomic risks

¹ Reinhard Cluse & John Orford: ‘South Africa – 2008 budget’. EMEA Economic Comment, 20 February 2008

Considering both arguments, we believe South African policy makers will have to find a compromise that will inevitably imply a visible, but not a destabilising, rise in the government deficit. Overall, we conservatively assume a deterioration in the government's fiscal stance by 0.5-0.75% of GDP in 2008/2009 as a result of the power crisis. As a result, instead of assuming a moderate surplus in the consolidated government budget, we now forecast a broadly balanced budget this year (-0.1% of GDP) and a moderate deficit next year (-0.8% of GDP).

We now expect a balanced budget in 2008 and a moderate deficit in 2009; a weaker outlook than before

The resulting higher bond issuance, both by Eskom and the government, would be a burden on the South African bond markets. Higher public sector borrowing combined with a large current account deficit in a more uncertain global environment could also imply that South Africa's sovereign rating might come under pressure. Fortunately, the sovereign rating is several notches above the critical investment grade threshold. The risk of a downgrade seems much more concrete for Eskom, with two of its three local currency ratings already on negative outlook.

Increase bond issuance by Eskom and government likely to hurt the domestic bond market

Higher fiscal pressure, larger bond issuance, and more pronounced macroeconomic concerns imply in our view that bond yields will remain under upward pressure this year. We have increased our 10-year bond yield forecast by 30bp to 8.9% for end-2008, which implies the spread over US treasuries staying at c500bp. We expect a decline in spreads next year (to perhaps 400bp) as some macro concerns abate; this should help yields to decline to 8.5%. Should growth slow down more than we expect, we believe long-term bond yields could potentially rally a lot more than our current forecast implies.

Implies some upward pressure on government bond yields

The following table summarises our new economic forecasts.

South African macroeconomic data and forecasts

	2001	2002	2003	2004	2005	2006	2007E	2008F	2009F
Economic activities									
GDP (Rbn)	1,020	1,168	1,261	1,398	1,541	1,741	1,995	2,226	2,449
GDP (US\$bn)	119	111	167	218	247	252	283	282	312
GDP per capita (US\$)	2,656	2,446	3,606	4,683	5,266	5,319	5,920	5,832	6,400
Real GDP growth	2.7	3.7	3.1	4.9	5.0	5.4	5.1	3.2	3.7
Private consumption (%)	3.5	3.2	3.5	6.7	6.9	8.2	6.7	2.9	3.5
Government consumption (%)	3.1	4.6	6.2	6.3	4.7	5.2	4.8	5.5	5.7
Capital formation (%)	3.5	3.7	9.1	8.9	8.9	13.8	15.3	9.9	9.0
Exports (%)	1.8	0.9	0.9	2.9	8.0	5.6	9.6	6.5	7.5
Imports (%)	0.2	5.3	8.1	14.5	10.3	18.8	13.0	10.5	7.5
Unemployment, % of labour force year end	29.4	29.7	31.2	27.9	26.5	25.6	25.5	26.5	26.2
Prices, interest rates and money									
CPIX inflation (average, %)	6.6	9.1	7.0	4.2	3.8	4.6	6.5	8.1	6.1
CPIX inflation (% year-end)	6.5	10.8	4.0	4.3	4.0	5.0	8.6	6.9	5.4
Broad money, M3 (year-end, %)	14.7	17.2	12.3	12.8	19.9	22.5	23.7	19.0	14.5
Repo rate (end-year, %)	9.5	13.5	8.0	7.5	7.0	9.0	11.0	11.0	10.0
10 year bond (year-end, %)	11.5	10.6	9.2	8.2	7.4	7.9	8.4	8.9	8.5
Exchange rates									
USD/ZAR (average)	8.61	10.50	7.53	6.41	6.24	6.91	7.05	7.90	7.84
USD/ZAR (year-end)	12.00	8.55	6.68	5.64	6.31	6.97	6.86	8.00	7.80
EUR/ZAR (average)	7.70	9.90	8.50	7.97	7.76	8.68	9.87	11.14	10.35
EUR/ZAR (year-end)	10.62	8.98	8.40	7.64	7.48	9.21	10.02	10.80	10.14
REER (2000=100)	88.2	74.9	98.5	107.3	110.7	107.7	102.4	96.2	96.5
Balance of payments									
Exports (US\$bn)	27.5	27.6	34.6	44.0	52.4	57.8	68.9	92.5	100.0
Imports (US\$bn)	25.7	27.0	35.3	48.7	57.8	69.1	81.4	107.0	113.5
Trade balance (US\$bn)	1.8	0.6	-0.7	-4.7	-5.4	-11.3	-12.5	-14.5	-13.5
Current account balance (US\$bn)	0.3	0.9	-1.8	-7.0	-10.0	-16.2	-20.2	-23.7	-26.1
Current account, % of GDP	0.3	0.8	-1.1	-3.2	-4.0	-6.5	-7.1	-8.4	-8.4
Foreign direct investment (US\$bn)	10.0	2.0	0.2	-0.6	5.9	-7.1	-0.2	0.5	0.5
Foreign exchange reserves excl gold (US\$bn)	6.0	5.9	6.5	13.1	18.6	23.1	29.5	29.8	30.5
Import cover (reserves/months imports)	3.5	3.5	2.8	3.7	4.3	4.4	5.4	5.0	4.8
Fiscal accounts									
Consolidated government budget (end-FY, % GDP)	-1.4	-1.1	-2.3	-1.4	-0.3	0.6	1.0	-0.1	-0.8
Primary balance (% GDP)	3.1	2.8	1.3	2.0	2.9	3.5	3.2	2.1	1.4
Public sector debt (% GDP)	43.7	38.2	36.0	35.9	34.3	30.6	26.9	25.9	24.7
Domestic debt (% GDP)	33.4	29.4	30.3	30.9	30.0	26.0	23.1	22.0	21.0
External debt (% GDP)	7.8	6.2	5.0	5.0	4.3	4.6	3.8	3.9	3.7
Foreign debt and reserves									
Foreign debt, (US\$bn)	31.0	33.0	38.2	43.6	46.2	57.0	65.0	68.0	69.0
as % of GDP	26.2	29.7	22.8	20.0	18.7	22.6	23.0	24.1	22.1
Short-term foreign debt (US\$bn)	9.1	7.7	9.2	11.2	14.3	19.3	23.0	25.5	27.0
Total debt service (US\$bn)	5.9	5.2	6.4	6.0	5.1	6.6	7.3	7.9	8.1
as a % of exports	15.6	13.4	13.0	9.9	7.2	8.1	7.9	7.8	7.8
Interest payments (US\$bn)	2.0	1.8	2.2	2.2	2.6	3.5	4.2	4.8	4.9
Amortization, (US\$bn)	3.9	3.4	4.2	3.8	2.6	3.1	3.1	3.1	3.2
Credit ratings									
Moody's	Baa2	Baa2	Baa2	Baa1	Baa1	Baa1	Baa2	Baa1 pos)	n/a
S&P	BBB-	BBB	BBB	BBB	BBB+	BBB+	BBB+	BBB+ sta)	n/a
Fitch	BBB-	BBB	BBB	BBB	BBB+	BBB+	BBB+	BBB+ sta)	n/a

Source: IIF, SARB, Statistics South Africa, UBS

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■ **Statement of Risk**

In addition to industry- and country-specific risk, we point out to investors the potential risks inherent in investing in emerging markets like South Africa. Potential risks include, but are not limited to, the volatile nature of the currency, regulatory and socio-political risk and abrupt potential changes in the cost of capital and economic growth outlook. Valuations can also be affected by 'contagion' from developments in other emerging markets. Each of the above factors has the potential to significantly affect company / industry performance.

■ **Analyst Certification**

Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers; and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

Required Disclosures

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UBS Investment Research: Global Equity Rating Allocations

UBS 12-Month Rating	Rating Category	Coverage ¹	IB Services ²
Buy	Buy	55%	39%
Neutral	Hold/Neutral	36%	36%
Sell	Sell	8%	20%
UBS Short-Term Rating	Rating Category	Coverage ³	IB Services ⁴
Buy	Buy	less than 1%	25%
Sell	Sell	less than 1%	50%

1: Percentage of companies under coverage globally within the 12-month rating category.

2: Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3: Percentage of companies under coverage globally within the Short-Term rating category.

4: Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS. Rating allocations are as of 31 December 2007.

UBS Investment Research: Global Equity Rating Definitions

UBS 12-Month Rating	Definition
Buy	FSR is > 6% above the MRA.
Neutral	FSR is between -6% and 6% of the MRA.
Sell	FSR is > 6% below the MRA.
UBS Short-Term Rating	Definition
Buy	Buy: Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.
Sell	Sell: Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.

KEY DEFINITIONS

Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months.

Market Return Assumption (MRA) is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium).

Under Review (UR) Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation.

Short-Term Ratings reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case.

EXCEPTIONS AND SPECIAL CASES**UK and European Investment Fund ratings and definitions are :**

Buy: Positive on factors such as structure, management, performance record, discount; Neutral: Neutral on factors such as structure, management, performance record, discount; Sell: Negative on factors such as structure, management, performance record, discount.

Core Banding Exceptions (CBE) : Exceptions to the standard +/-6% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Company Disclosures table in the relevant research piece.

Company Disclosures

Company Name	Reuters	12-mo rating	Short-term rating	Price	Price date
ABSA Group Ltd. ^{4a, 22}	ASAJ.J	Buy	N/A	RCnt11,350	28 Feb 2008
AngloGold Ashanti ^{2a, 4a, 6, 14, 16}	ANGJ.J	Neutral	N/A	RCnt26,705	28 Feb 2008
ArcelorMittal South Africa Ltd	ACLJ.J	Buy	N/A	RCnt17,751	28 Feb 2008
Aveng	AEGJ.J	Buy	N/A	RCnt5,991	28 Feb 2008
City Lodge Hotels	CLHJ.J	Buy	N/A	RCnt7,600	28 Feb 2008
Group Five	GRFJ.J	Buy	N/A	RCnt5,435	28 Feb 2008
Harmony Gold Mining Co Ltd ¹⁶	HARJ.J	Neutral	N/A	RCnt9,568	28 Feb 2008
Illovo Sugar Ltd	ILVJ.J	Buy	N/A	RCnt3,026	28 Feb 2008
Impala Platinum Holdings Ltd ^{4b, 16}	IMPJ.J	Buy	N/A	RCnt31,000	28 Feb 2008
JD Group Ltd ¹⁶	JDGJ.J	Sell	N/A	RCnt4,390	28 Feb 2008
MTN Group Ltd ¹⁶	MTNJ.J	Buy	N/A	RCnt12,324	28 Feb 2008
Murray and Roberts Holdings Ltd	MURJ.J	Buy	N/A	RCnt9,600	28 Feb 2008
Network Healthcare Holdings Limited	NTCJ.J	Buy	N/A	RCnt950	28 Feb 2008
Sasol Ltd ¹⁶	SOLJ.J	Buy	N/A	RCnt40,100	28 Feb 2008
Standard Bank Group Ltd ^{2b, 4b}	SBKJ.J	Buy	N/A	RCnt9,599	28 Feb 2008
Wilson Bayly Holmes-Ovcon	WBOJ.J	Neutral	N/A	RCnt13,551	28 Feb 2008
Woolworths ^{4b}	WHLJ.J	Sell	N/A	RCnt1,260	28 Feb 2008

Source: UBS. All prices as of local market close.

Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

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