



CHAMBER OF MINES  
of South Africa

T: 011 498 7100  
E: info@chamberofmines.org.za

5 Hollard Street, Johannesburg 2001  
PO Box 61809, Marshalltown 2107

RESPONSE  
TO  
NERSA  
IN RESPECT OF ESKOM TARIFF APPLICATION

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Compiled by  
Chamber of Mines Economics Department  
Henk Langenhoven  
Bongani Motsa  
Christian Teffo  
Tafadzwa Chibanguza



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## Synopsis

Eskom does not appreciate the structural adjustment needed in the energy sector (and therefore of the organization itself) and this tariff increase (if allowed) has the potential to drag the country into a spiral of no growth and credit downgrades. Eskom's response is reclaiming its 'allowable revenue'.

## Background

Historical MYPD decisions have proven to be unrealistic, due to the

- Continued declining electricity intensity of the SA economy,
- Lower than expected economic growth,
- The delayed impact of IPP's on costs (electricity prices),
- The massive overruns in construction costs of the Medupi and Kusile power stations, and
- Large increases in operational costs at Eskom.

This has led to a large shortfall in Eskom's budget, and the possibility of the utility not being able to service its debt in the short term. The situation is dire; this tariff application is additional to the outstanding regulatory clearing account claims of R 48 billion for 2014 to 2017 (and projected to increase by another R 20 billion by 2018), which is not considered at this time.

Eskom is seeking a once off (one year) tariff increase of 19,9% to avert this situation. Its contribution will be 'higher efficiencies' which it defines as lowering its headcount (virtually only natural attrition), keeping primary energy cost down (i.e. low coal prices increases) and sacrificing its desired rate of return on capital. The utility attempts to rationalize a 19,9% increase (levied on its customers) to be preferable over an 8% increase to customers necessitating government support. Both options will have dire consequences;

- The former will result in economic growth declining by 0,1 (on 0,6%) percentage points or 17%, and the cumulative opportunity cost in job losses of over 600 000. For mining the contribution to GDP will decline by between 5% and 9%. The impact on loss making mines will be disastrous putting tens of thousands of jobs in jeopardy.
- The latter will lead to the government debt to GDP ratio rising from just over 50% now to 75% by 2021 and over 104% by 2030 with all its consequences.

The net result of both is a vicious downward spiral of higher electricity prices, lower growth and less electricity consumption repeating itself. Neither is acceptable.

Short term solutions must be found to prevent Eskom from failing and the economy suffering irreparable damage. Any short term solution must be with the condition that a structural adjustment program be embarked upon forthwith.

## 1. Introduction

The Chamber of Mines and its members remain committed to the sustainable growth of the South African economy. As such, it is supportive of government's intent to resolve the long term energy crisis we face as well as the transformation imperatives going with it. The Chamber welcomes the opportunity to continue to provide perspective and context to achieve this. This position paper provides a response to the call for comments from NERSA on the Eskom request for its latest Tariff increase application. The Chamber supports the submissions made by BUSA and EIUG on this matter, but wishes to highlight the specific areas of concern and impact for the mining sector.

## 2. Background to the submission

Despite significant electricity tariff and revenue increases over time, Eskom is experiencing serious financial difficulties. This is due to many factors, probably best summarized by the statement that

**Graph 1: Eskom Net Profits and Revenue**



MYPD decisions have been based on unrealistic projections of electricity demand, ignoring the impact of unbearable electricity cost escalation on business closures, the substantial corruption wastage, all resulting in continued declining electricity intensity of the SA economy. Economic growth was substantially lower than expected, the delayed impact of IPP's on costs (electricity prices), the massive overruns in construction costs of the Medupi and Kusile power stations, and unrealistic and out of control operational cost increases at Eskom.

**Source: Eton Group, Sept 2017 & EIUG, 2017**

## 3. Introducing the Chamber of Mines

Founded in 1889 the Chamber is a private-sector employer organization. It is an association of mining finance companies and mines producing various commodities with a membership of 70 companies, producing approximately 90% by value of South Africa's minerals production and employing approximately 90%.

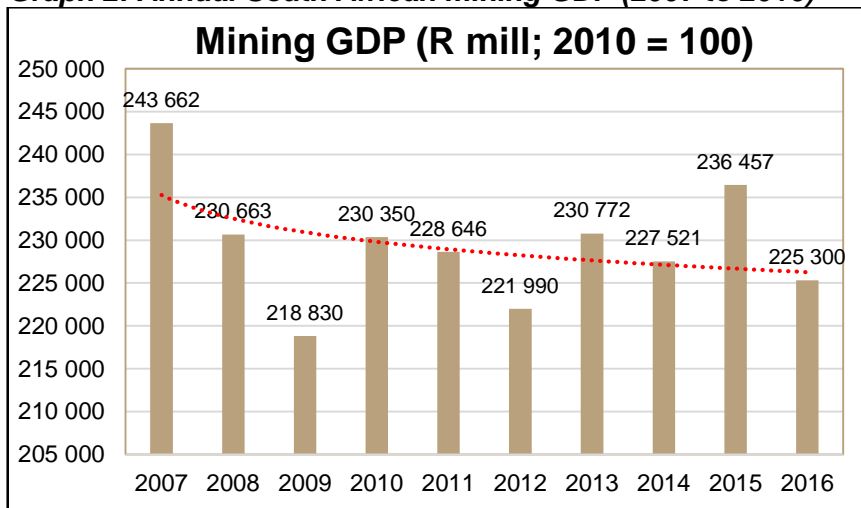
From inception the Chamber's mission was to be the principal advocate of major policy positions endorsed by mining industry employers. Since its inception the problems of cost escalation occupied the Chamber's work, against the backdrop of the sector being price takers, i.e. having no control over the selling prices of the commodities it mined. The consequence always was to reduce the global competitiveness of SA miners.

### 3.1 Mining sector economic contribution overview

South Africa's economy was built on the back of the development of mining. The expanded economic base generated by the mining sector underpinned the development and expansion of the financial sector and the Johannesburg Stock Exchange and led to the country's industrialization. The sector was instrumental in the formation of the Rand Water Board in 1901 as an institution to address the erratic supply of water on the Rand.

Back in 1922 when the Electricity Supply Commission (Eskom) was established the sector was the anchor customer. It remains (with industrial customers) nearly 50% of Eskom's (non-household) market. It is distressing that Eskom's current perilous financial situation has arisen out of mismanagement, appalling implementation of projects (cost overruns) and unprecedented alleged levels of corruption.

**Graph 2: Annual South African mining GDP (2007 to 2016)**

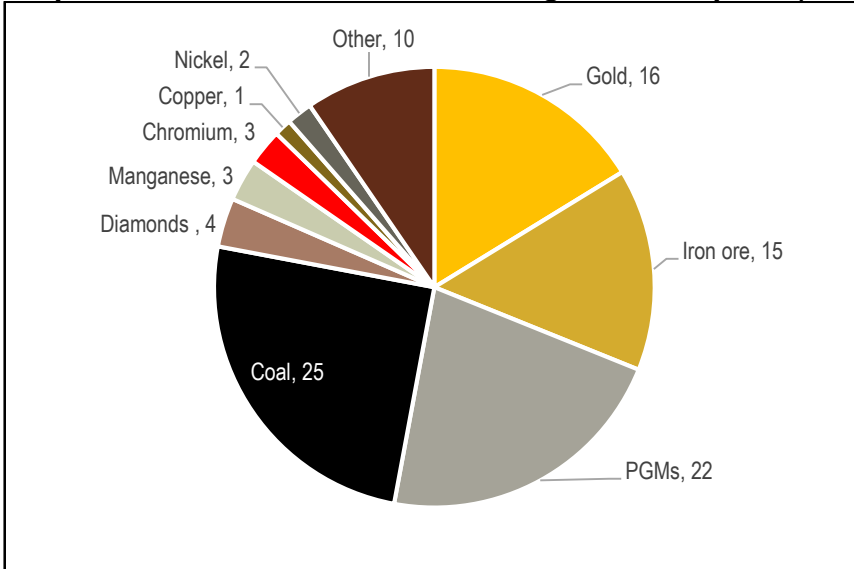


Source: Stats SA (2017)

While South Africa's economy is now well-diversified, the mining industry continues to play a significant role in the country's economy. This goes beyond just direct expenditure on goods and service including employment, the mining industry is, among other things, a significant foreign exchange earner, which makes it possible for the country's to service its international debt obligations and to import foreign technology, so pertinent in today's economic growth discourse. In 2016 the country exported R1.1 trillion worth of goods, while total mineral exports recorded R 294,8 billion, representing 28 per cent of merchandise exports.

South African Mining GDP in 2016 declined to R225 billion from R234 billion in 2015 (in real terms) In 2016 terms, mining GDP was R304,4 billion. As Graph 3 shows the largest contributors to total mining GDP are coal, PGMs and gold sectors, which contributed 25%, 22% and 16%, respectively.

**Graph 3: Sector contributions to mining mineral exports (2017)**

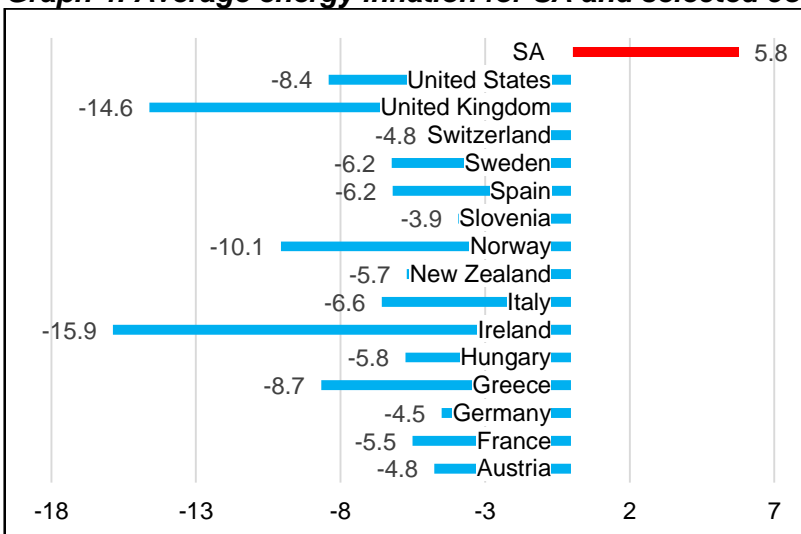


Source: Department of Mineral Resources

Mining requires massive amounts of electricity. From base metals (aluminium, lead, nickel, copper, zinc, tin, and iron ore to precious metals like gold, PGMs, and silver). Coal also requires substantial amounts of electricity. The nature and quantity of the machinery used in mining, often at times significant depths can result in energy expenditure of up to 30 percent of balance sheet costs.

The South African economy encountered high energy cost inflation in relation to the country's trading partners. Graph 4 shows that between 2013 and 2016 a majority of countries experienced negative energy inflation while domestic industries had to deal with average rise in energy costs of 5.8% (i.e. including all energy source – liquid fuels and electricity).

**Graph 4: Average energy inflation for SA and selected countries (% , 2013-2016)**



Source: OECD.Stat and StatsSA (2017)

#### 4. Eskom revenue application for 2018/19

The Multi-Year Price Determination (MYPD) methodology was developed for the regulation of Eskom's required revenues. It forms the basis on which the National Energy Regulator (NERSA) evaluates the price adjustment applications received from Eskom. NERSA has approved that Eskom could submit a one year revenue application for the 2018/19 year. This decision was made after Eskom had requested a one year price increase, deviation from the Minimum Information Requirements for Tariff Application (MIRTA) and MYPD Methodology.

NERSA announced that no condonation would be granted of Eskom's request to deviate from meeting certain requirements of the MYPD Methodology and the MIRTA, with the exception of the Valuation of the Regulatory Asset Base (RAB) and Information on Deferred Debits and Credits.

In this revenue application Eskom has applied the NERSA MYPD methodology of 2016, with the addition of the 'return on assets' methodology being phased in, resulting in a total allowable revenue of R219 514m which is a 19.9% increase.

##### 4.1 Structural Changes in the Economic Landscape

Eskom is in this dire financial situation due to structural changes in the demand (continuous decline) for electricity in the economy as well as in the electricity supply landscape in the country. Eskom does not appreciate the structural adjustment needed in the energy sector (and therefore of the organization itself) and this tariff application (if allowed) has the potential to drag the country into a spiral of no growth and credit downgrades. Its response is reclaiming its 'allowable revenue' in terms of the MYPD methodology.

##### 4.2 An overview and analysis of economic trends in relation to electricity

The **GDP elasticity of electricity demand** in SA has shifted downwards dramatically;

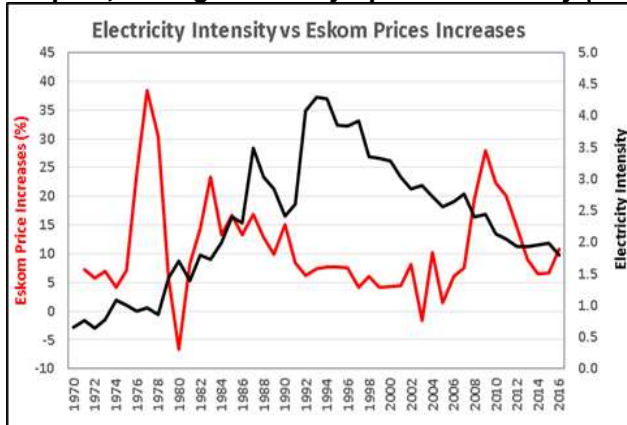
- Period 1990 – 2005 the elasticity was 1
- More recently (1997 – 2016) it is estimated to have been 0,93
- Between 2012 -2016 the elasticity was negative (-2,1)
- Over the first 3 years of MYPD 2013/14 to 2017/18 even with (1,5%) economic growth, the sales dropped by 0,3%

The above means that for every unit of production in the economy, the use of electricity has declined and is projected to decline further. Mining, being one of the most electricity intensive sectors of the economy, contributed substantially to this structural change. The main contributors were;

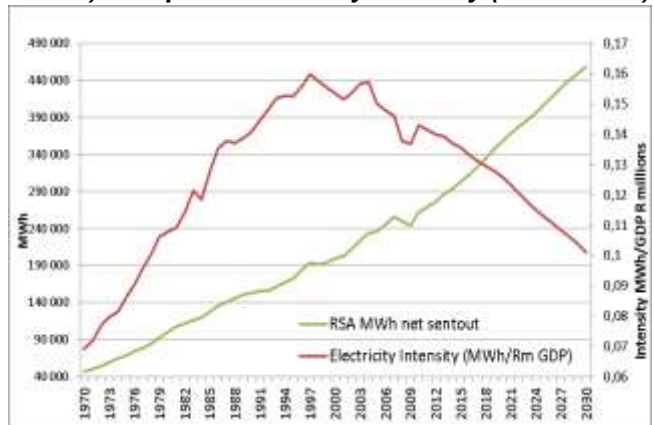
- the rationing of electricity to mines (and alternative reserve capacity installed),
- coupled with unaffordable price increases (forcing higher efficiencies) and
- Mines closing down and production (Eskom client base) being lost.

As graphs 5 and 6 show (below), the adjustment commenced in the early nineties. The causes are well known.

**Graph 5; Mining Electricity Spend & Intensity (Value terms) Graph 6: Electricity Intensity (MWh terms)**



Source: SARB & Statistics SA



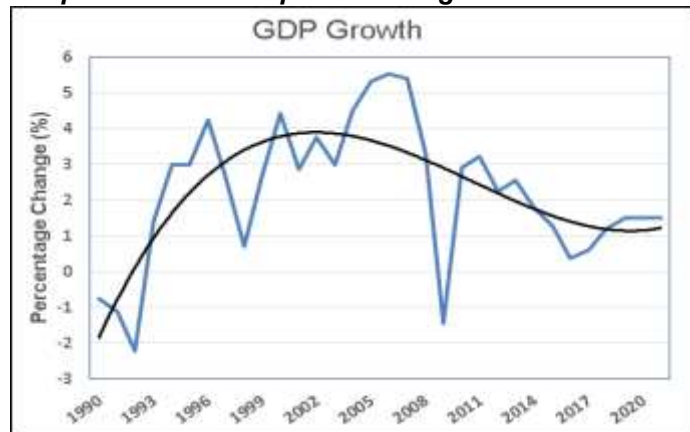
Source EIUG

- Lower demand in reaction to steep price increases
- Higher efficiencies in electricity consumption
- Unreliable supply
- Increased decentralized electricity generation.
- Environmental commitments/demands

South Africa's **economic growth** also declined having a further dampening impact on electricity demand. Historically growth in the economy (GDP) was the most reliable indicator of electricity demand growth. Economic growth has underperformed and the reasons are;

- External economic shocks
- Uncertainty about the legal and regulatory environment.
- Ill designed and executed domestic economic policies
- The debilitating effects of corruption.
- Declining confidence
- The state of government finances and credit downgrades.
- The energy intensive sectors at the bottom of a long term cycle

**Graph 7: Actual & Expected GDP growth**



Source: SARB, IMF, Oct 2017

Forecasts of growth for the next 3 to 5 years are on average only 1,5% (World Bank, IMF & SARB), which is below the Eskom assumptions for all years. GDP will have to grow by at least 2,1% (2020 & 2021) to achieve an average of 1,5%. Due to this weak growth outlook, there is very little evidence that volume growth in electricity will come to the rescue over the next 5 years.

The **cost of electricity** and the steep increases in tariffs over many years had a depressing impact on demand. Since 2008 tariffs have increased by an estimated 134% and nearly 200% in nominal terms by 2016 (as acknowledged by Deloitte).



There is no doubt (as Eskom acknowledges) that these cost increases have led to increased public resistance and the widespread introduction of cost saving and electricity efficiency measures by all users.

The table (1) shows Eskom's production increases (in value terms) relative to the weighted average price increases over the same periods. It shows how tariff increases (price) had to 'make up' for production (quantity) not expanding.

Eskom alleges that tariffs are not cost reflective and have therefore led to implicit subsidies of tariffs; it uses government support in terms of equity and the R350 billion guarantee as evidence of the latter.

**Table 1: Generation vs Tariff growth**

	Weighted average production increase	Weighted average price increase
1970-1980	8,94	13,99
1980-1990	6,01	14,86
1990-2000	3,33	6,49
2000-2010	1,96	9,09
1970-2016	4,24	10,26
1980-2016	2,96	9,33
1990-2016	2,09	8,78
2000-2016	0,94	12,06
2005-2016	-0,21	15,04
2010-2016	0,66	10,35

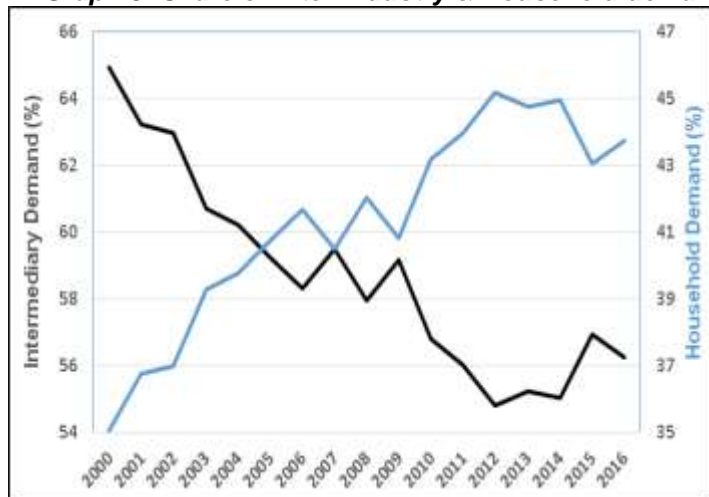
Source: SARB, Statistics SA & Quantec

Eskom then argues that subsidies lead to misallocation of resources.

The counter argument is that the market could not bear the increased tariffs applied for in the first place and hence NERSA's reluctance to grant the increases asked for.

The evidence is overwhelming that the tariff hikes themselves led to the energy intensive sectors adjusting their consumption by either reallocating production facilities, embarking on energy efficiency programs or closing down. The graph (8) shows how industry adjusted and is becoming a smaller share of Eskom's demand (only household and industry demand taken into account).

**Graph 8: Share of Inter-industry & Household demand**



Sources: Statistic SA, SARB, Quantec

The electricity users have adjusted to higher tariffs, but neither Eskom, nor Government did.

Whether SA has the cheapest (or amongst the cheapest) electricity in the world is a moot point, given the relocation of some of the most electricity intensive industries out of SA. The chaotic (exorbitant and incoherent) price setting and unreliability of local authorities in the provision of electricity have had further significant cost increase implications for immobile small enterprises and households.

The requirements for *an efficient electricity pricing regime* goes much further than Eskom's submission would care to entertain. This criterion must be applied to the holistic electricity provision regime in SA and not only the Eskom share of it.

The result of the above is large shortfalls in Eskom's budget, and the possibility of not being able to service its debt in the short term; Eskom's debt costs are estimated at about R40 billion per annum. The situation is supposedly dire; this tariff application is additional to the outstanding regulatory clearing account claims of R 48 billion for 2014 to 2017 (and projected to increase by another R 20 billion by 2018), which is not considered at this time.

Eskom's proposed solution is to increase tariffs and to restore its allowable revenue, with its contribution 'higher efficiencies' which it defines as lowering its headcount (virtually only natural attrition), keeping primary energy cost down (i.e. low coal prices increases) and sacrificing its desired rate of return on capital (from about 7% to 2,97%).

### 4.3 Eskom's Solution to its Conundrum

Eskom commissioned Deloitte to simulate the macro-economic impact of alternative scenarios to meet its 5 year revenue requirements. It is known that Eskom wants to restore its AAA credit rating within 5 years which will mean bringing their government guarantees down to less than half it is currently. This is deemed unrealistic and if pursued will mean the destruction of their customers base and therefore self-defeating.

Deloitte was briefed to model three scenarios; **average annual tariff increases of 8%, 13% and 19%**. The Deloitte report states the following;

- It simulated five year average annual increases, and not a one year 19% increase.
- It attempts to model the fiscal and wider macro-economic impact in the event of Eskom (only achieving an 8% increase and) needing additional financial support from government.
- Probably the most astounding statement by Deloitte is that 'by November 2016 ... official estimates of Eskom's required revenue and sales forecast over the next five years were not available'.
- Deloitte thus assumed that the level of income achieved by an average annual 19% increase over 5 years is what Eskom needs, irrespective of which tariff increase is allowed. However, as late as May 2017 Eskom indicated that it may not need such a steep increase over 5 years, and it confirmed this in consultations with the Chamber of Mines recently (October 2017).
- The study assumes no additional purchases of IPP's electricity and assumed that to double Eskom average cost of generation at current prices.
- The risk of slower growth in the demand for electricity is mentioned but not modelled. This shows an extraordinary continuation of the unrealistic basis for planning.
- The impact of a new build program after Medupi and Kusile are completed, is not factored in.

The scenarios fluctuate between two extreme options and therefore outcomes;

- An 8% increase resulting in an Eskom budget shortfall which will need government augmentation and will lead to a rising government debt to GDP ratio and credit down grades, or at the other extreme
- A 19% increase levied on Eskom's consumers which will not need government support.

The Deloitte study attempts to rationalize a 19,9% increase (levied on its customers) to be preferable over an 8% increase to customers augmented by government support. Both options will have dire consequences;

- The former will result in economic growth declining by 0,1 (on 0,6%) percentage points or 17%, and the cumulative opportunity cost in job losses of over 600 000. For mining the contribution to GDP will decline by between 5% and 9%. It is important to take into account the conclusions of the National Treasury simulations of a 19,9% increase on customers which show the same results. An earlier NERSA study concurred with both the above.

The SA Reserve Bank has estimated that the near 20% increase in electricity tariffs will cause a 0,2 percentage point increase in inflation in 2018 (or +4%), and a 0,3 percentage point increase in 2019 (or +5,7%), counting both direct and indirect effects. This in itself may prompt an interest rate response equal to reversing the July MPC rate cut (SARB, Oct 2017).

The impact on loss making mines is discussed below (section 5).

- The latter will lead to the government debt to GDP ratio rising from just over 50% now to 75% by 2021 and over 104% by 2030 with all its consequences.

The net result of both is a vicious downward spiral of higher electricity prices, lower growth and less electricity consumption repeating itself. None is acceptable and cannot be contemplated.

## 5. The Impact on the Mining Sector specifically

Using the Chamber of Mines composite input cost index, which tracks 17 inputs costs into the mining sector, and assigns a weight to each input cost component, we derive the table below. From this table we are able to identify the fact that electricity constitutes a significant component of the total input cost basket of mining. This is particularly the case for gold mining. It therefore follows, that owing to the significant contribution of electricity to the mining input cost basket, an excessive increase in the electricity tariff, would in turn have a detrimental impact on the overall inflation profile into the mining industry.

**Table 2 – Mining Composite Cost Index**

Cost Basket	Total Mining	Coal	Gold and Uranium Ore	Other Mining
<b>Intermediate Cost Basket</b>				
Mining & quarrying	1,22%	0,78%	1,29%	1,26%
Wood & wood products	1,52%	0,44%	8,01%	0,43%
Coke & refined petroleum	1,32%	1,54%	0,83%	1,28%
Basic chemicals	1,85%	1,03%	4,62%	1,45%
Other chemicals & man-made fibers	2,98%	3,20%	4,60%	2,52%
Rubber products	1,41%	2,46%	1,22%	1,08%
Metal products excluding machinery	1,85%	2,12%	3,56%	1,36%
Machinery & equipment	5,11%	5,86%	7,71%	4,30%
Electrical machinery & apparatus	0,93%	1,51%	1,23%	0,63%
Transport equipment	1,39%	1,47%	1,81%	1,20%
<b>Electricity, gas &amp; water</b>	<b>5,79%</b>	<b>3,00%</b>	<b>22,00%</b>	<b>4,37%</b>
Wholesale & retail trade	4,93%	5,90%	7,02%	4,17%
Transport & storage	43,89%	43,04%	1,96%	52,49%
Finance, insurance, real estate & business services	4,69%	4,71%	9,78%	3,59%
Community, social & personal: Other producers	2,22%	2,22%	3,09%	1,97%
Residual	0,00%	0,00%	0,00%	0,00%
Imported Intermediate Inputs	18,92%	21%	21,30%	17,91%
<b>Total Intermediate Costs (Ex Labour)</b>	<b>100,00%</b>	<b>100,00%</b>	<b>100,00%</b>	<b>100,00%</b>
Intermediate Costs	65%	69%	47%	69,5%
Compensation of Employees	35%	31%	53%	30,5%
<b>Total Input Costs</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100,0%</b>

Source: Quantec, COM Estimates

Using this Input Cost index, we have run a simulation wherein we compare 2 scenarios;

- Scenario 1: (Status Quo) Electricity inflation averaging 10% (Year on Year %)
- Scenario 2: (Eskom Adjustment) which factors a 19.9% adjustment to electricity tariffs in April.
- Importantly, in comparing these 2 scenarios, we only adjust the electricity component of the composite input cost index, in order to establish the impact a change in electricity prices on the overall inflation profile.

**Graph 9: Scenario 1 vs Scenario 2 – Total Mining**

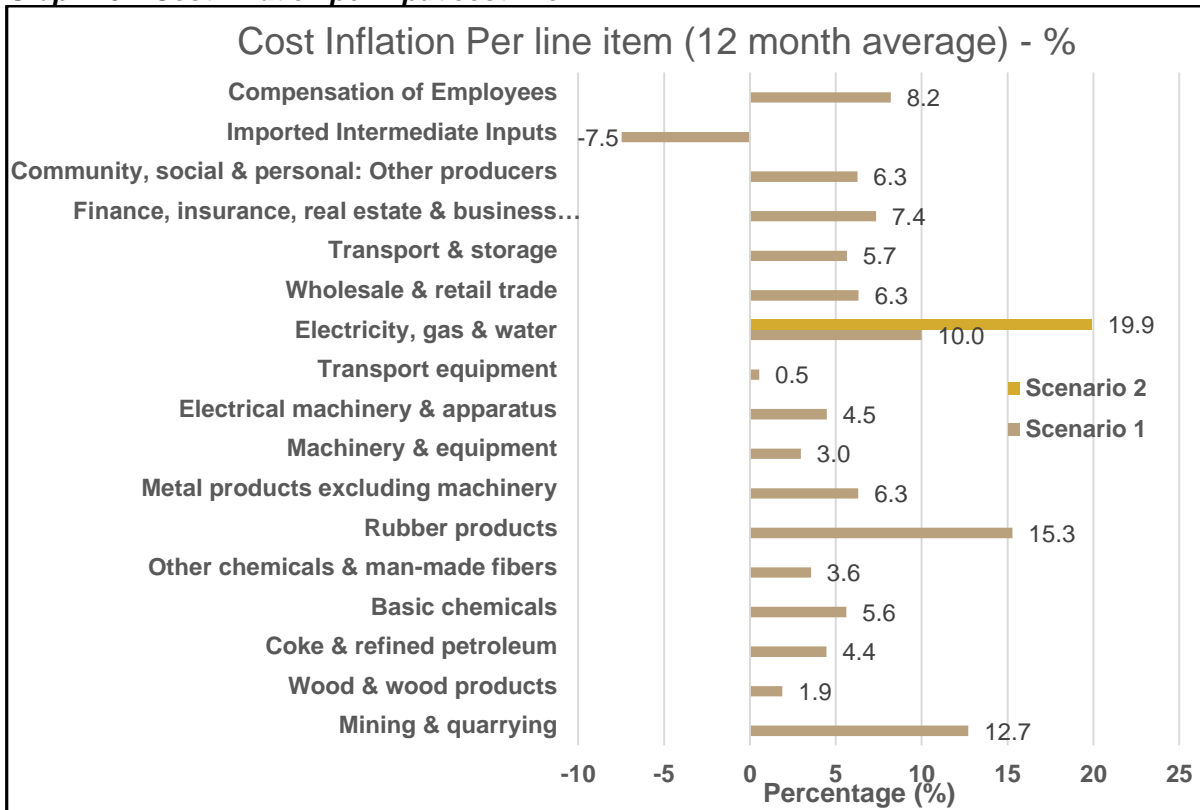


Source: Chamber of Mines

From the simulation above we derive the following estimates;

1. The decision to grant to the 19.9% increase in the electricity tariff, relative to the **status quo** electricity price inflation, would result in a 0.7 percentage point increase in the inflation profile of the total mining sector.
2. This constitutes a R 3,21 billion increase in input costs.

**Graph 10 – Cost inflation per input cost line**



Source: Statistics SA, COM

Graph 10 above shows the contribution of each input cost line toward the trend observed in the composite cost index, over a 12 month period. In the graph we make the distinction between the contribution of electricity inflation for scenarios 1 and 2. It is clear that a number of input cost items for the mining sector are already either running at double digit inflation or at above producer price inflation (intermediate inputs PPI = 5%; final products PPI = 4,3%). A 19.9% increase in the electricity tariff would place additional strain on a sector already under significant inflationary pressure.

The following table provides detail into the financial impact of a 19.9% increase in electricity tariffs on the different segments of mining. The table (3) shows how much the input cost bill would increase in the advent of a 19.9% increase in electricity.

**Table 3**

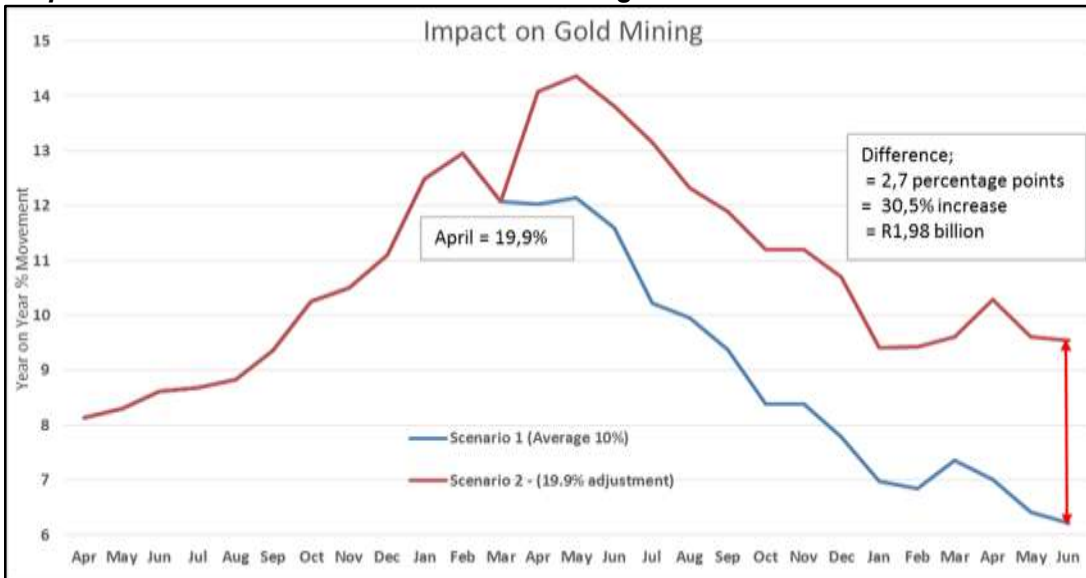
Component of Mining	Financial Impact
<b>Total Mining</b>	<b>R 3,21 billion</b>
Gold Mining	R1.98 billion
Other Mining (PGM, Diamond, Iron Ore)	R 1.32 billion
Coal Mining	R236 million

Source: COM estimates

As has been identified earlier, gold mining is highly electricity intensive, therefore making it very vulnerable to electricity tariff increases. A 19.9% tariff increase would adversely impact the input cost

trajectory in gold mining, and add strain to a sector already under severe pressure. The following graph shows the impact of a 19.9% increase in the price of electricity, in gold mining, relative to the status quo scenario of a 10% average inflation rate. The 19.9% increase would result in a 2,7 percentage points increase on the gold mining input cost curve, which would translates to a R1.98 billion increase in input costs.

**Graph 11: Scenario 1 vs Scenario 2 – Gold Mining**



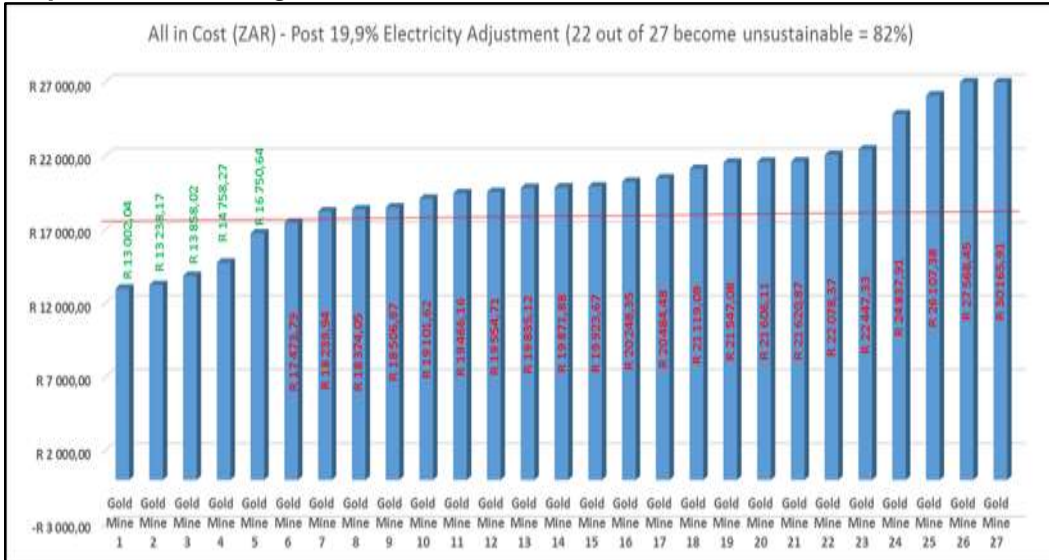
**Source: Statistics SA, Chamber of Mines**

The following graph (12) depicts cost curves for gold mining. The cost curves measure the All-In-Cost of gold mining (per mine), which is represented by the blue bars and compares this to the prevailing gold price (selling price for the mines) represented by the red line. The intention was to identify those mines producing from an unsustainable input cost base, relative to the selling price received for its gold produced.

On the current cost structures (i.e. scenario 1- using a 10% average inflation rate for electricity), 66% of gold mines are unsustainable, with the balance just being on the margin. This is depicted in graph 12 below<sup>1</sup>.

<sup>1</sup> Average gold price for the month of August 2017 (\$1282) multiplied by the average rand/dollar exchange rate for August 2017: \$1/R 13.25

**Graph 12: Gold Mining Cost Curves**



Source: Chamber of Mines

**Due to the electricity intensity of gold mining, if the 19.9% increase in electricity were to be implemented, the number of gold mines producing from an unsustainable cost base would move to 82% (up from the current 66%).**

The gold mining industry currently employs 114 956 people. If we assume a linear relationship between the number of mines producing at an unsustainable cost base and employment, should the number of unsustainable gold mines increase from 66% to 82%, the potential number of jobs under threat would be 18 393.

Higher costs exacerbates the problem of diminishing economically recoverable reserves of gold. Due to the low grade of gold bearing ore, higher costs demands higher volumes of rock to be mined to yield enough gold to cover the costs, which is contradictory. Therefor the recoverable reserves decline with higher costs and therefor lowers the life of the mine.

**Estimates show that 65% of PGM mining is currently unsustainable due to low commodity prices of \$ 985,7/oz against a peak of \$ 1 716/oz in 2011.**

Using a similar assessment framework, and applying similar assumptions as done for gold mining, the potential impact on jobs due to a 19.9% increase in electricity tariffs is 29 099, in the PGM sector.

Although a number of segments of the mining industry have seen a slight uptick in the selling prices of their commodities (relative to the 2012 - 2015 lows experienced), this allows these companies the opportunity to attempt to repair balance sheets. A sharp increase in the electricity prices, erodes the potential this accommodative environment presents.



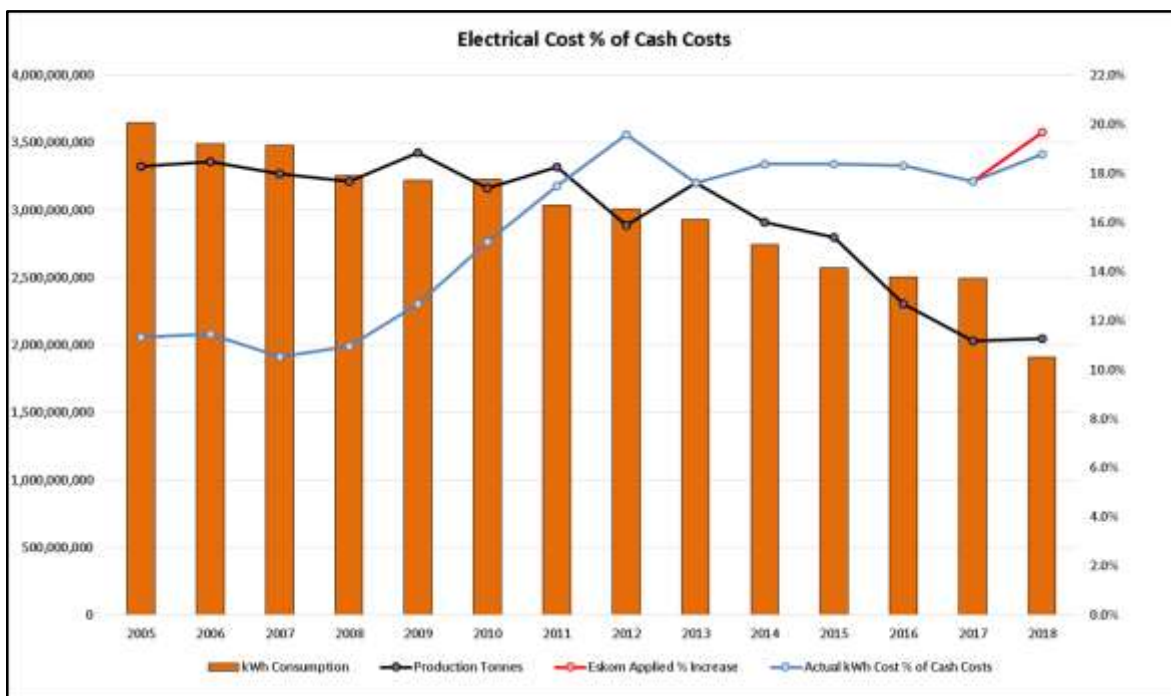
**Table 4 – All in costs (pre and post 19.9% electricity adjustment.**

Commodity	Average All – In-Costs (Scenario 1 – Status Quo)	Average All – In-Costs (Scenario 2 – 19.9% adjustment to electricity)	2017 YTD Selling Price
Iron Ore	R500/ton	R536.50/ton	R980/ton
Coal (export)	R412/ton	R442.08/ton	R 489/ton

**Source: Chamber of Mines estimates, Mining Company Financial Statements**

Moreover, this shows the complexity of costs versus selling price of a particular commodity; selling prices are not determined by the company incurring the cost of production. Increased input costs, places greater pressure on the sustainability of the sector.

**Graph 13: Illustration of the potential impact of a 19,9% tariff increase on one gold mine = - R63 million (decline) in ‘free cash flow’.**



**Source: Chamber of Mines Member Company**

## 5.1 In Summary;

1. The recent increase in commodity prices presents an accommodative environment for mining companies to attempt to repair balance sheets that have been adversely affected by the period of low commodity prices (2011 to 2015). However, rising input costs erode this opportunity, particularly such a steep increase in electricity.
2. Electricity makes up as much as 16% to 20% of inputs costs for certain commodities of the mining sector. This therefore exaggerates the impact that an increase in electricity prices has on the profitability of mining companies.
3. An increase of 19.9% would result in a R 3,21 billion increase in the input cost bill of the mining sector.
4. Currently 66% of gold mining is not sustainable at year to date gold prices. Our estimates are that an increase of 19.9% in electricity tariffs will increase the number of unsustainable gold mines to 82%.
5. Our estimates show that a total of 47 492 employment opportunities (between gold and PGM commodities) are at risk from a 19.9% increase in electricity tariffs.

## 6. Structural Adjustment needed over the Medium to Longer Term

The Chamber of Mines is of the view that Eskom does not appreciate the structural adjustment needed in the energy sector (and therefore of the organization itself). It has been argued above that this tariff application (if successful) has the potential to drag the sector and country into a spiral of no growth (or economic contraction), job losses and credit downgrades. Eskom's response to its budget shortfall is reclaiming its 'allowable revenue'.

The requirements for ***an efficient electricity pricing regime*** goes much further than Eskom's submission would care to entertain. This criterion must be applied to the holistic electricity provision regime in SA and not only the Eskom share of it.

One has to agree with Eskom on the following principles;

- A 'long run cost reflective tariff' must be equal to the long run marginal cost of supply, (with the 'rate of return on assets' as the best indicator of this), and
- That sound and least cost investments should be made over the long run.

It is true that tariffs under the 'rate of return' method depends heavily on the basis of asset evaluation and the rules of depreciating the asset base (regulated asset base). It is argued that the asset base could be 'overvalued' by as much as R 200 billion due to the cost overruns on Medupi and Kusile. This 'penalty' for overruns in cost of construction (which is included in the calculation of 'allowed revenue') is estimated to be R 7 billion, and simply passed on to consumers. Furthermore, one has to take into account the possible beneficial impact of 'accelerated depreciation' of the asset base derived from the earlier decommissioning of the old power stations. The table (5) below shows the evolution of the asset base over time.

'Sound and least cost' investments should be the norm for long term investments in power generation capacity for the country. It is argued that Eskom does not take the growing body of evidence of lower cost options (outside of the Eskom controlled environment) into account in its calculations. It is argued that this does not take into account the structural shift which started inadvertently with the advent of IPP's and needs to be enhanced, not stalled, which is the result of what Eskom is trying to achieve.

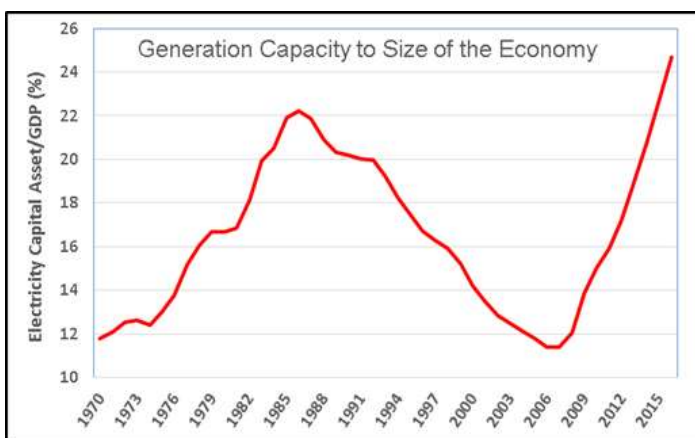
**Table 5: Eskom's fixed asset base, depreciation and the impact of the weighted average of cost of capital.**

	Fixed Asset	Depreciation	End of Year	WACC
	R mill	R mill	R mill	2,97%
				R mill
1990	80 841	4 710	76 131	2 261
1991	87 330	5 125	82 205	2 442
1992	91 454	5 490	85 964	2 553
1993	94 802	6 091	88 711	2 635
1994	99 741	6 618	93 123	2 766
1995	104 738	6 966	97 771	2 904
1996	109 800	7 414	102 386	3 041
1997	115 808	7 759	108 049	3 209
1998	115 974	7 789	108 186	3 213
1999	121 485	8 085	113 400	3 368
2000	126 778	8 286	118 492	3 519
2001	129 597	8 111	121 486	3 608
2002	139 162	8 383	130 779	3 884
2003	140 358	8 052	132 306	3 929
2004	144 035	7 981	136 055	4 041
2005	155 759	8 316	147 443	4 379
2006	153 706	7 943	145 763	4 329
2007	179 928	8 917	171 012	5 079
2008	235 305	10 877	224 428	6 666
2009	276 490	11 800	264 691	7 861
2010	319 140	12 730	306 410	9 100
2011	374 200	14 020	360 180	10 697
2012	441 355	15 625	425 730	12 644
2013	532 402	17 966	514 436	15 279
2014	630 586	21 096	609 490	18 102
2015	705 384	23 061	682 323	20 265
2016	810 276	25 537	784 740	23 307

Sources: SARB, Statistics SA & Quantec

Looked at holistically, the electricity sector in SA is headed for large over capacity over the five year period under discussion (and beyond). Eskom itself anticipates a gross load factor of 56% in 2017/18 and anticipates that it will go down to 53,3% in 2018/19 due to new capacity coming on stream and increased excess electricity available (and lower sales).

**Graph 14: The value of electricity generation capacity relative to the size of the economy.**



The graph clearly shows that the ratio of electricity generation capacity to GDP is out of kilter due to

- Late capital build program
- Crisis response in terms of the accelerated I PP program
  - Rate of additional capacity built relative to rate of expansion of the economy.

Sources: SARB, Statistics SA & Quantec.

## 6.1 The components of a structural adjustment program

1. The low economic growth and declining electricity intensity of the economy provides an important (if not unique) opportunity for the country to make the necessary adjustments in its electricity sector.
2. The least damaging solution must be found for the approaching (possible) cash crunch in the short term.

This will have to consist of two balancing acts;

- Carefully substituting electricity supply away from the old power stations to new capacity (IPP's and Medupi, Kusile and Ingula) to ensure adequate supply and no/limited electricity disruptions, and
  - Carefully managing the financial provisions (servicing debt, cutting costs by decommissioning old power stations and rightsizing personnel) and financing new capacity coming on stream.
3. Drastic changes are needed at Eskom;
    - a. Accelerate the decommissioning of old inefficient power stations.
    - b. Bring Eskom operational cost (primarily head count) in line with international standards.
    - c. Complete regulated asset base (RAC) re-evaluation as soon as possible so that the return on asset (ROA) absolute value diminish although weighted average cost of capital (WACC) stays the same.
    - d. Accelerate the completion and commissioning of the new more efficient power stations.
  4. Accelerate the buying of electricity from IPP's and continue the program.
  5. Or/and establish the Independent Systems Market Operator which would introduce a proper competitive regime amongst electricity producers and would manage the transmission network. The current stalemate of Eskom refusing to sign IPP offtake agreements would not have existed in such an environment.
  6. Revisit the MYPD and RCA regulatory regime.
  7. **Over the short term, the least damaging solution must be found for the approaching (possible) cash crunch at Eskom.**

### 7.1 Eskom will have to accept that drastic (structural) changes are needed at the institution.

NERSA or the Department of Energy will have to play a role in enforcing a holistic evaluation of the country's electricity demand and supply dynamics. Eskom's role in this transition will have to be spelt out clearly as it may be 'a bridge to far' for itself to voluntarily move away from the notion that 'it will not commit suicide' (statement made by a previous CEO in relation to signing of new IPP contracts).

At the moment the approach towards renewables and the independent power producers is that electricity supplied by IPPs increases at a rate above demand growth, which is negatively impacting primary energy costs and displacing Eskom generated electricity, as the initial bid windows' IPP costs are higher than the short run marginal cost of Eskom's coal fleet.

The Integrated Resource Plan determines the energy mix of the country. The DoE made a determination in terms of allowable renewables in the IRP and Independent Power Producers invested to ensure SA can keep the lights on. Electricity produced is cleaner and progressively becoming cheaper than Eskom's tariffs.

It is time for Eskom to re-evaluate its role in the energy mix of the country and seriously consider closing power stations that are approaching their end of life. The expected revenues from renewables is R 31 billion for 2018/19.

## **7.2 Accelerate the decommissioning of old inefficient power stations.**

The total revenue for the 30 TWh of sales not realised using the price in 2017/18 which is 89.13c/kWh would have been R 27 billion. With the 30 TWh reduction in sales volume Eskom only considers a reduction in variable costs of R 10.8 billion and does not consider restructuring their fixed/base costs which amounts to R 17 billion to ensure efficiencies and economies of scale for their operations.

In any other industry these base costs would be restructured to ensure that the business plan is optimized. Since this is a rebasing year it is only prudent to restructure now to ensure that going into the MYPD4 we do not face similar challenges. NERSA is requested to assess the prudence of the fixed/base costs that are being suggested as they are high and geared for higher sales volumes which are not being achieved. The 30TWh according to Eskom relates to 3300 MW of base load which is a full power station.

***Lean Preservation of Power Station:*** In 2016 the Eskom board identified Hendrina, Grootvlei and Komati Power Stations as the stations with the biggest cash impact and the decision was to ramp them down to zero production and to place them in 'lean preservation' to minimize surplus capacity and optimally manage generation cost. The plan was to implement the lean preservation of Hendrina (2 000 MW) in 2018/19, Grootvlei (1 100MW) in 2019/20 and Komati (1 000 MW) in 2020/2021.

This will accelerate depreciation costs, and operational costs will also reduce and staff will be absorbed into these activities and new power stations. A decision on the implementation of the above rests upon Eskom and the Department of Energy (Eskom Integrated Report). The Chamber argues that this initiative be accelerated with the country-wide, and alternative sources of electricity taken into account.

## **7.3 Bring Eskom operational cost (primarily head count) in line with international standards.**

There is uncertainty as to the actual head count at Eskom which should be clarified.

Eskom has kept its staff complement high over the years and have not really reduced the numbers to reflect that they are cutting costs. Almost half of the operating costs are attributable to employee benefits at 46%. This is a very high percentage of costs and should be reduced to be in tandem with international standards.

The Eton Group completed a study of Eskom's finances and used a World Bank Study of Utilities in Africa considering staffing data for 36 countries. Staff costs represent a significant portion of operating costs for a utility: on average US\$27,000 per employee, per year in constant 2014 US dollars. This result is heavily skewed by the South African utility staff costs, at an average of US\$61,000 per employee. Excluding South Africa, staff costs are on average US\$13,000 per employee.

According to the World Bank, Eskom stands out for overstaffing in absolute terms, reporting 41,800 employees against the estimated benchmark of 14,200. This suggests overstaffing of 27,500. Fractal Value Advisors (*Eskom Limited – Financial Benchmarking Exercise for the Energy Intensive Users Group” February 2017*) came to essentially the same conclusions as the World Bank.

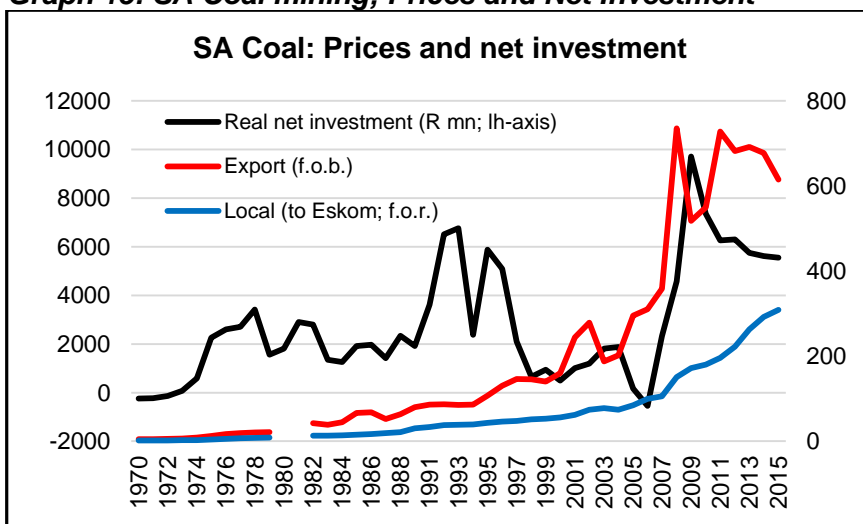
#### 7.4 Primary energy cost and structure of contractual arrangements

Eskom’s actions and initiatives regarding primary energy are of major importance to the coal mining industry in South Africa. In 2016 the coal industry employed 77,506 people, representing 17% of the total employment in the mining sector. These employees earned R21 billion in wages and salaries. In the same year the coal industry spent R60 billion procuring goods and services, most of it locally. This contributed in creating and maintaining jobs in other industries. Indirectly the coal industry created 173,093 jobs and these were mainly in the transport and storage sector where almost 120,000 jobs were created representing 69% of all indirect jobs. This highlights the importance of the coal sector in supporting the transport industry (transport represented 53% of input costs in 2016).

There are a number of factors that drive the investment levels in the coal industry. Domestic and export prices seems to drive investment primarily.

Graph 15 depicts the relationship between prices – local and international – and net investment. Pre-1994 there seems to have been no relationship between prices and net investment, which was due to sanctions against coal exports, and the structure of the Eskom coal supply agreements. After 1994 there is a significant correlation between international prices and net investment even though Eskom consumed more than 60% of the country’s total coal production.

**Graph 15: SA Coal mining; Prices and Net Investment**



**Sources: Department of Energy, Price Report, 2016; Quantec**

Eskom coal consumption does not seem to influence net investment even though it buys most of the country’s coal output. Sasol, which consumes approximately 30% of the country’s coal is vertically integrated, which means it operates its own mines and therefore has very little impact on the domestic price of the mineral.

The correlation between the export (international) price and net investment in coal is important; even though Eskom provides certainty by engaging in long-terms or offtake agreements with coal companies this arrangement does not necessarily incentivize firms to invest more in order to increase production.

Coal procurement cost in 2017/18 is projected to be around R45.6 bill and R48.7 bill in the application year. The Eskom Integrated Report 2017 reported a coal burn of 113.74 Mt (120Mt purchased) with stockpile reserve for more than 75 days. Eskom forecasts that it will purchase 125Mt of coal in 2017/18 although the sales volumes have been dropping by an average of 0.6% for the whole MYPD3 period and stockpiles are almost at capacity at the start of the period. The application for 120 Mt of coal purchases in 2018/19 application is high and should be reconsidered by the NERSA.

Eskom has increased coal on roads to more than 32 Mt in 2017/18 and plans to decrease it to 20Mt in 2018/19. Road transport adds to the cost of the coal by an average of R 170/ton which amounts to about R 5.4 billion per annum spent on transport of coal. The 10Mt reduction in road transport is welcomed by the as it reduces the bill by R1.7 billion. The transport by road also subjects the country to a higher road maintenance capital regime which is inefficient use of our resources. The road repair was previously funded by the Treasury with the Environmental Levy to the tune of almost R1 billion yearly which did not remedy the full might of the road degradation due to coal movement. This allocation is no longer available and will result in MP roads condition worsening.

Procurement practices have been recently breached by Eskom which has also inflated the cost of coal. Eskom is encouraged to invest in long term coal mines or seek alternative funding methods for those mines by guaranteeing off take, to ensure that the cheapest coal is sourced for the benefit of SA. Coal from cost plus mines (conveyor belt) increased by only 1% indicating the lack of investment in these mines whereas other sources of coal increased their prices by up to 13%. Eskom estimates that it would need about R 9.4 billion on financing overdue expansion over the next five years.

The 10 Mt of coal that is removed from medium term road transport between the period 2016/17 to 2018/19 is added to the long term conveyor belt sources. This ensures that Eskom can claim an increased cost for primary energy coal.

## **7.5 Debt Arrears**

Eskom has allowable arrear debts amounting to 2% of their revenue of R 205 billion in 2017/18 which amounts to R 4 billion. Eskom is only allowed a variance of 0.5% on their arrear debt which means that Eskom is not complying with the MYPD by R 3 billion. The arrears are attributed mainly to municipalities. This situation is not arrested as the interventions being implemented are not successful.

In 2016/17 the Eskom Integrated Report published a municipal arrear debt of R 9.4 billion (greater than 15 days). This would mean that current Eskom debt for the MYPD 3, year four is about R13.4 billion.

The capacitation of municipalities is critical for the establishing of systems to collect revenues due to them, for generating invoices and ensuring that accounts are paid. NERSA issues electricity supply licenses to municipalities and Eskom. Additional to Eskom's efforts to collect municipal arrears,



NERSA should consider the cancellation of some of these licenses as a further incentive for municipalities to amend their ways.

A more aggressive strategy is to be adopted by Eskom to curb arrear debt which could be used to lower the financial burden on Eskom.

**7.6 Complete the regulated asset base (RAC) re-evaluation as soon as possible so that the return on asset (ROA) absolute value diminishes although weighted average cost of capital (WACC) stays the same.**

This evaluation, once completed, would reflect the 'starting point' from which the structural adjustment process should commence.

**7.7 Accelerate the completion and commissioning of the new more efficient power stations.**

It is accepted that the costs involved will have to be carefully managed so as not to exacerbate the short term financial bottleneck. It has therefore both short, medium and longer term implications.