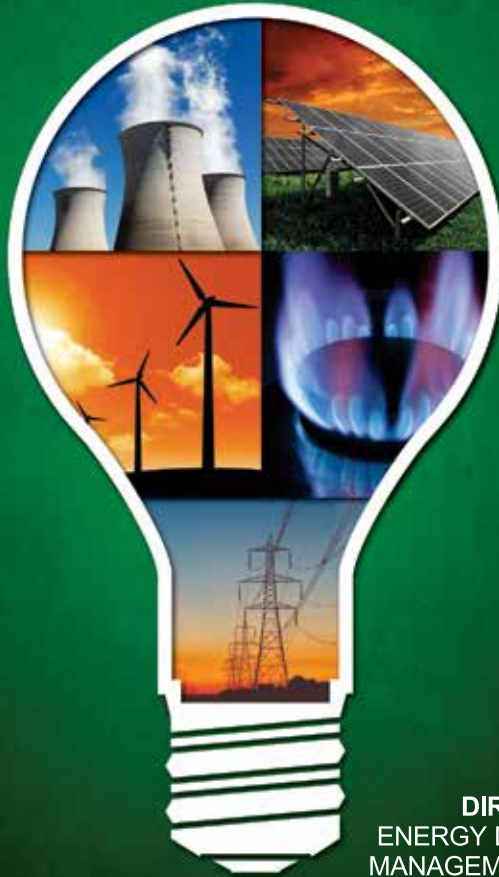


2016

SOUTH AFRICAN ENERGY PRICE REPORT



DIRECTORATE:
ENERGY DATA COLLECTION,
MANAGEMENT AND ANALYSIS



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Department:
Energy
REPUBLIC OF SOUTH AFRICA



2016 ENERGY PRICE REPORT

Directorate: Energy Data Collection, Management and Analysis

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FOREWORD

It gives me a great pleasure to introduce the 2016 edition of the Energy Price Report for South Africa. The Energy Price Report is based on the information collated from government departments, state-owned-entities, oil and gas industries. This publication covers a broad overview and analysis of the South African energy prices and aims to keep stakeholders informed about energy prices and key issues affecting the energy industry.

This edition presents energy prices data in a format which provides an overall picture of monthly and annual trends for common energy carriers used in South Africa. In order to clearly present and analyse the energy pricing trends, this report is divided into four main focus areas: Petroleum; Natural Gas, Coal; and Electricity. I extend my most sincere thanks and appreciation to the Energy Data Collection, Management and Analysis Directorate for the hard work that went into the compilation of this publication. I would also like to express my appreciation to all the energy data providers who have helped us to accomplish what is set out in this report.

This report only covers energy price data and analysis for 2015 as historical information will always be available in our previous editions respectively.

The Department of Energy is working hard to reduce delays in the publishing of Energy Price Report and hopes that the publication will become a standard work of reference among energy analysts in South Africa and abroad. Comments and inputs are welcome and could be addressed to publications@energy.gov.za.

Mr Thabane Zulu
Director General: Energy
Date:

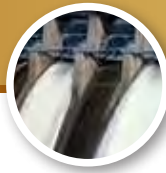


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ABBREVIATIONS AND ACRONYMS

BFP	–	Basic Fuel Price
CIF	–	Cost, Insurance and Freight
COC	–	Customer Own Collection
CPI	–	Consumer Price Index
DME	–	Department of Minerals and Energy
DoE	–	Department of Energy
FOB	–	Free on Board
FOR	–	Free on Road
HFO	–	Heavy Furnace Oil
IBLC	–	In-Bond-Landed-Cost
IEA	–	International Energy Agency
LPG	–	Liquefied Petroleum Gas
LRP	–	Lead Replacement Petrol
MRGP	–	Maximum Refinery Gate Price
NERSA	–	National Energy Regulator of South Africa
OECD	–	The Organisation for Economic Co-operation and Development
OPEC	–	Organization of the Petroleum Exporting Countries
PPI	–	Producer Price Index
RAF	–	Road Accident Fund
RFA	–	Road Freight Association
RTC	–	Rail Tank Car
SA	–	South Africa
SAPIA	–	South African Petroleum Industry Association
SSLM	–	Self-adjusting Slate Levy Mechanism
StatsSA	–	Statistics South Africa
ULP	–	Unleaded Petrol
US\$	–	United States Dollar
WTI	–	West Texas Intermediate



1 INTRODUCTION

Energy is a key strategic sector in the South African economy because it underpins the growth and developmental objectives set out by government. Energy is the vital force that powers businesses, manufacturing, the transportation of goods and the delivery of services to the nation. South Africa's steady economic growth, coupled with an increasing focus on industrialisation and a mass electrification programme to take power into deep rural areas, has seen a steep increase in the demand for energy. In fact, South Africa's energy demand is expected to be twice the current levels by 2030.¹

The purpose of the Energy Price Report is to provide an overview of latest energy pricing trends and analysis for the major energy carriers in South Africa i.e. coal, natural gas and crude oil. Energy prices are significant indicators in the cost of providing services such as transport or electricity.

This report covers monthly prices as well as trend analysis of various energy carriers for the year 2015. In South Africa, electricity prices are reviewed once a year while petroleum products prices are changed once a month due to fluctuations in international oil prices (quoted in US dollars) and the rand/dollar exchange rate.

The report consists of the following sections:

- Section 2 covers prices of crude oil, and all major petroleum products (petrol, diesel, illuminating paraffin and liquid petroleum gas).
- Section 3 covers natural gas prices.
- Section 4 covers the prices of locally consumed and exported coal.
- Section 5 presents the national Eskom electricity prices. This does not include the prices of electricity sold by individual/various municipalities to end customers.

Each section gives a brief introduction followed by a table of prices and graphs depicting the price movements over time. Where possible a brief analysis of possible reasons for price fluctuations is provided.

2 PETROLEUM

This section covers the international crude oil prices as well as a breakdown of prices for petroleum products sold nationally for 2015. The main focus of the analysis in this section is on the price fluctuations as well as related global and national events that led to the fluctuations.

¹ South African Yearbook 2013/14, Energy

2.1 Crude Oil

Oil is the main resource that fuels the world economy. It provides one third of global primary energy supply and supplies approximately 95% of the energy powering the global transport systems in the form of petroleum fuels. Similarly, South Africa's transport system depends on petroleum fuels for almost all of its energy needs, with more than 80% of the petroleum fuels consumption made up of petrol and diesel.²

Over the years, the South African petroleum sector has evolved in line with global trends. This evolution has been influenced primarily by environmental challenges and geopolitical uncertainties, status of the socio-economics, international trade as well as changes in vehicle technology.

Crude oil is imported into South Africa by the local manufactures (refineries) and licenced wholesalers. For energy-importing countries like South Africa, oil is the key to the country's energy security. High oil prices are a major threat to the country's overall energy security and lead to high direct costs to consumers.

Crude oil prices combined with the Rand/Dollar exchange rate therefore have a major impact on fuel prices. A crude-oil refinery's biggest input cost is crude oil. In order for a refinery to make a profit, the price for the product manufactured from crude oil has to be higher than that of the crude oil price. When crude oil prices increase, prices for refined products also increases so that crude oil refineries are able to recover their production and logistical costs.

The major international benchmarks of crude oil which are defined below are Dubai in the Arab Gulf Region, West Texas Intermediate (WTI) in North America and Brent in Europe. In the South African case, Brent and Dubai benchmarks are used for oil prices. However, the price of crude oil is primarily pegged to one of three primary benchmarks:

- ✓ *Brent* – Roughly two-thirds of all crude contracts around the world reference Brent, making it the most widely used marker of all. These days, “Brent” actually refers to oil from four different fields in the North Sea. Crude from this region is light and sweet, making them ideal for the refining of diesel, petrol and other high-demand products. And because the supply is water-borne, it's easy to transport to distant locations.
- ✓ *WTI* refers to oil extracted from wells in the U.S. The fact that supplies are land-locked is one of the drawbacks to West Texas crude – it's relatively expensive to ship to certain parts of the globe. The product itself is very light and very sweet, making it ideal for petrol refining, in particular. WTI continues to be the main benchmark for oil consumed in the United States.
- ✓ *Dubai* – This Middle Eastern crude is a useful reference for oil of a slightly lower grade than WTI or Brent. A “basket” product consisting of crude from Dubai, Oman or Abu Dhabi, it's somewhat heavier and has higher sulphur content, putting it in the “sour” category. Dubai is the main reference for Persian Gulf oil delivered to the Asian market.³

The average monthly prices of Brent and Dubai crude oils for 2015 are shown in Table 2.1. The crude oil prices are presented in US\$/bbl (i.e. US dollar per barrel).

² Overview of petrol and diesel market in South Africa between 2002 and 2013

³ <http://www.investopedia.com/articles/investing/102314/understanding-benchmark-oils-brent-blend-wti-and-dubai.asp>

Table 2.1: 2015 Average Monthly Crude Oil in US\$/bbl

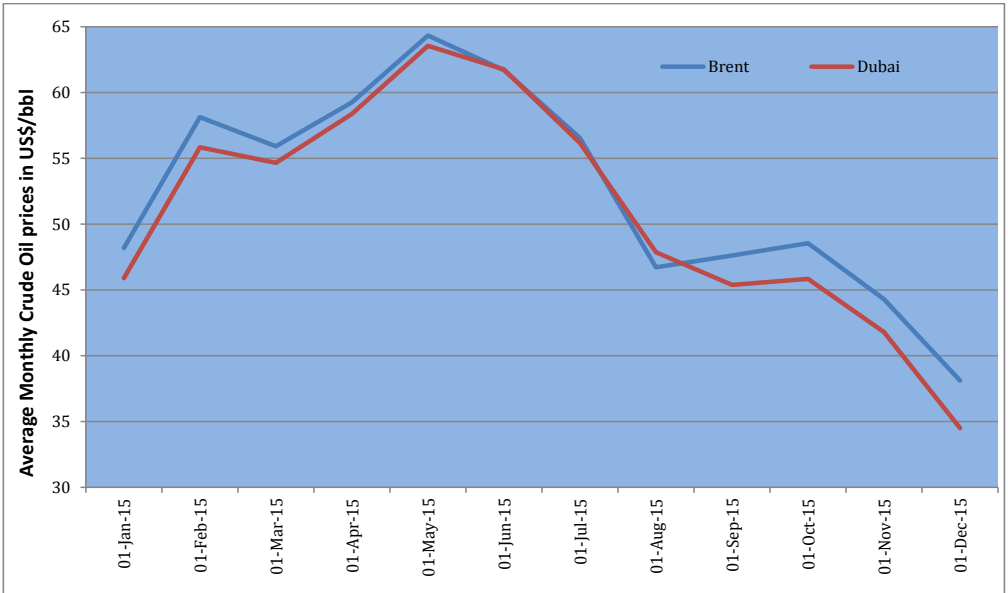
Period	Brent	Dubai
07-Jan-15	48.18	45.91
04-Feb-15	58.13	55.85
04-Mar-15	55.92	54.66
01-Apr-15	59.26	58.38
06-May-15	64.32	63.54
03-Jun-15	61.69	61.76
01-Jul-15	56.54	56.15
05-Aug-15	46.72	47.87
02-Sep-15	47.61	45.38
07-Oct-15	48.56	45.84
04-Nov-15	44.29	41.79
02-Dec-15	38.11	34.52

Source: South African Petroleum Industry Association (SAPIA)

The price of Brent crude oil plummeted to a six-year low of US\$45 per barrel in January 2015 as depicted on figure 2.1. The sharp fall was driven by the strong US dollar and lower forecasted global demand while supply continued to rise. Prices have subsequently recovered to levels of around US\$60 per barrel since mid-February 2015 as a decline in the number of rigs in shale formations is expected to slow US production and curb supply. Global oil supply increased to 94,3 million barrels per day in the last quarter of 2014 with Iraqi output reaching a 35-year high, compensating for lower production in Libya. Brent crude oil futures contracts for delivery in the second quarter of 2015 traded around US\$60 per barrel in early March 2015.⁴

⁴ the above analysis is based on the South African Reserve Bank 2015 Quarterly Bulletins

Figure 2.1: 2015 Average Monthly Brent Crude Oil and Dubai Crude Oil Price in US\$/bbl



Source: South African Petroleum Industry Association (SAPIA)

After plummeting to US\$45 per barrel in January 2015, Brent crude oil prices rebounded to a four month high of US\$66 per barrel in early May. The increase was mostly driven by a continued decline in the number of rigs deployed in shale formations and the geopolitical turmoil in the Middle East. Global oil supply decreased for the first time in two years to 94,5 million barrels per day in the first quarter of 2015, despite oil production in Saudi Arabia reaching a record high of 10,3 million barrels per day in March. Crude oil prices trended downwards during May, reaching levels of around US\$62 per barrel in mid-June, mainly due to US dollar strength and the decision by the Organization of the Petroleum Exporting Countries (OPEC) to leave oil production levels unchanged. Brent crude oil futures contracts for delivery in the fourth quarter of 2015 traded around US\$66 per barrel in early June 2015.

Having been fairly stable at around US\$110 per barrel for almost four years, the price of Brent crude oil declined to US\$45 per barrel at the end of January 2015. This sharp drop in the price of crude oil could be attributed to ample supply, weak global demand, the unwinding of some geopolitical risks, and the strong US dollar. Crude oil prices briefly rebounded to levels of around US\$66 per barrel in mid-May 2015 before declining again to below US\$41 per barrel in mid-August due to subdued global growth and expectations of a rise in supply when oil from Iran returns to the market. Oil prices remain volatile and jumped towards the end of August by 23 % in three days to US\$51 per barrel due to technical factors rather than fundamentals. Prices dropped back to US\$47 per barrel in early September amid concerns about Chinese growth prospects. Brent crude oil futures contracts for delivery in the fourth quarter of 2015 traded at around US\$50 per barrel in early September 2015.

The price of Brent crude oil declined from US\$65 per barrel in early May 2015 to a six-year low

of around US\$40 per barrel in mid-August. The sharp decline was brought about by heightened concerns about global growth, particularly in China, and the continuing oversupply in global oil markets. Crude oil prices recovered towards the end of August to levels just above US\$50 per barrel due to offsetting of positions by hedge funds and other speculators. Weak economic growth in China subsequently pushed prices lower to levels around US\$44 per barrel in recent weeks.⁵

2.2 Petroleum Products

Fuel prices in South Africa are adjusted on a monthly basis; such adjustments are informed by international and local factors. The main international factor is the crude oil prices and foremost local factor is the exchange rate of the Rand against the US dollar. The other local factor causing fuel price increases is fuel levies and the Road Accident Fund levy that are determined annually by the Minister of Finance which are effected in April annually. These levies contributed to the highest fuel increases of the year which manifested in April. The contribution of these levies by 80 cents per litre coupled with the depreciation of the Rand against the US dollar led to diesel and petrol prices increasing by R1.24 and R1.62 per litre respectively.

Petrol 95 Octane Unleaded, Petrol 93 Unleaded, Petrol 95 LRP, Petrol 93 LRP, Diesel 0.05% Sulphur, Diesel 0.005% Sulphur and Illuminating Paraffin are the products covered by the calculation of the Basic Fuel Price (BFP). The BFP is based on an import parity principle. In other words, it is what it would cost a South African importer of petrol to buy the petrol from an international refinery, transport the product from that refinery, insure the product against losses at sea and land the product on South African shores. The BFP formula reflects the realistic cost of importing a litre of product from international refineries with products of a similar quality compared to local South African specifications on a sustainable basis.

Fuel prices in South Africa are linked to the price of crude oil in international markets. With any increase in crude oil prices – as has been the case over the past three years – the fuel prices also increases so that crude oil refineries are able to cover their own costs.

The prices of different petrol grades can also move in different directions, as happened in October petrol 93 Octane decreased by 2 cents per litre whereas petrol 95 Octane increased by 4 cents per litre.⁶

The tables, graphs and analysis of main petroleum products for 2015 are illustrated and expounded in the subsequent sections.

2.2.1 Petrol

Figure and Table 2.2 depicts the coastal and inland prices of petrol ULP 93 and ULP 95 in 2015. Petrol prices in 2015 never reached R14.00 mark as it did in 2014. Month-on-month price comparisons between 2014 and 2015 illustrate that petrol prices were lower in 2015 compared to 2014. The price of petrol ULP 95 inland was R12.89 per litre compared to R14.39 in April 2014. The price of petrol decreased by R4.02 since July 2014 was until February 2015 and taking the current increase into account, a litre of petrol was R1.50 cheaper than it was in April 2015.

⁵ the above analysis is based on the South African Reserve Bank 2015 Quarterly Bulletin

⁶ the above analysis is based on media statements issued by the Department of Energy on the adjustment of fuel prices on the first Wednesday of every month which can be accessed on http://www.energy.gov.za/files/petroleum_frame.html

Table 2.2: 2015 Monthly Petrol Retail Prices in cents per litre

Period	Petrol (ULP) 93		Petrol (ULP) 95	
	Coast	Gauteng	Coast	Gauteng
07-Jan-15	1071	1102	1083	1124
04-Feb-15	978	1009	990	1031
04-Mar-15	1074	1105	1086	1127
01-Apr-15	1228	1261	1246	1289
06-May-15	1228	1261	1246	1289
03-Jun-15	1275	1308	1293	1336
01-Jul-15	1319	1352	1334	1377
05-Aug-15	1268	1301	1283	1326
02-Sep-15	1199	1232	1214	1257
07-Oct-15	1197	1230	1218	1261
04-Nov-15	1175	1208	1196	1239
02-Dec-15	1176	1209	1197	1240

Source: Department of Energy (DoE)

Petrol prices in January 2015 commenced with a 10.9 % decline from R12.47 in December 2014 to R11.24 in the inland. Further reduction manifested in February to R10.31, which was the lowest price per litre during the year. The drop was perpetuated by the continued drop in the price of crude oil.

In 2015 ULP 95 prices in the inland traversed the R13.00 mark in June right through to August. Since then the prices plunged below R13.00 all the way to December where they settled at R12.40 per litre. In July particularly, petrol prices were the highest where they peaked at R13.37 per litre for ULP 95 and R13.52 for ULP 93 inland. The increase was mainly due to strong demand for petrol (driving season) in Europe and to pre-Ramadan buying in the Asian market.⁷

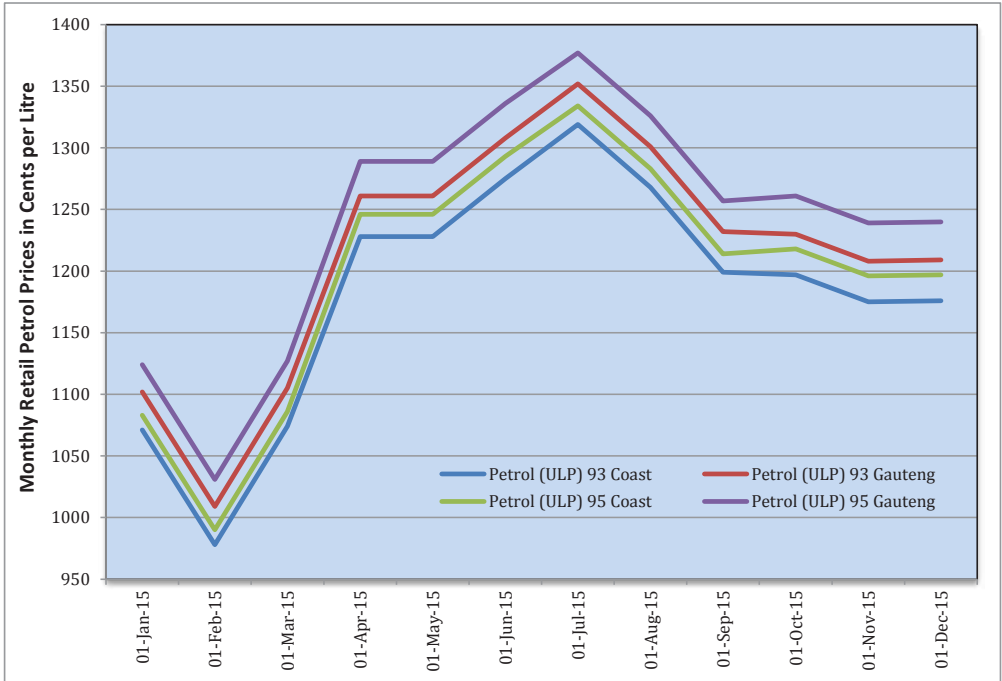
Unleaded petrol was first introduced into the South African market in 1996. Since that date, the use of unleaded petrol has gradually increased and in 2015 ULP petrol sales were over 11 billion litres. As from the 1st of January 2006, lead was no longer added to petrol in the production process and leaded petrol was no longer marketed by the oil companies. The government had determined that three octane grades of unleaded petrol (ULP) will be permitted in South Africa (in both the coastal and inland regions) after the 1st of January 2006, namely 91, 93 and 95 Research Octane Number (RON). In addition two octane grades of lead replacement petrol (LRP) will be permissible, a 95 octane grade at the coast and 93 octane grade inland.

Lead has been widely used as a petrol additive since the 1920's. However, leaded petrol cannot be used by cars equipped with catalytic converters designed to reduce harmful exhaust emissions, as lead very rapidly and permanently renders the catalyst completely ineffective. It was realized that lead emitted from vehicle exhausts has the potential to adversely affect

⁷ the above analysis is based on media statements issued by the Department of Energy on the adjustment of fuel prices on the first Wednesday of every month which can be accessed on http://www.energy.gov.za/files/petroleum_frame.html

human health, resulted in it being phased out, first in North America and then across Europe and, increasingly, the rest of the world.⁸

Figure 2.2: 2015 Monthly Retail Price Petrol ULP 93 and ULP 95 in cents per litre



Source: Department of Energy (DoE)

The elements that make up the price of unleaded petrol 93 are depicted on table 2.3. The difference between the retail price of ULP 93 and ULP 95 in the inland region of around 15 cents per litre on average is mainly due to the 10 cents per litre Demand-Side Management levy charged on ULP 95 as well as quarterly adjustments of octane/grade zone differentials.

Table 2.3: 2015 Monthly Individual Components Mogas 93 - Coast Price in cents per litre

Period	BFP	Custom & Excise duty	Dealers margin	Fuel Levy	Incremental transport recover levy	IP Tracer levy	Petroleum Pipeline levy	RAF levy	Service cost recoveries	Slate levy	Wholesale Margin	Zone differential in Gauteng	DMSL	Equalisation Fund levy	Pump Rounding
07-Jan-15	521.25	4.00	151.10	224.50	0.00	0.00	0.15	104.00	0.00	0.00	33.50	33.10	0.00	0.00	0.40
04-Feb-15	428.25	4.00	151.10	224.50	0.00	0.00	0.15	104.00	0.00	0.00	33.50	33.10	0.00	0.00	0.40
04-Mar-15	524.25	4.00	151.10	224.50	0.00	0.00	0.15	104.00	0.00	0.00	33.50	33.10	0.00	0.00	0.40
01-Apr-15	579.65	4.00	151.10	255.00	0.00	0.00	0.15	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
06-May-15	579.65	4.00	151.10	255.00	0.00	0.00	0.15	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30

⁸ <http://www.naamsa.co.za/unleaded/faq.htm>, accessed on 2016 February 17

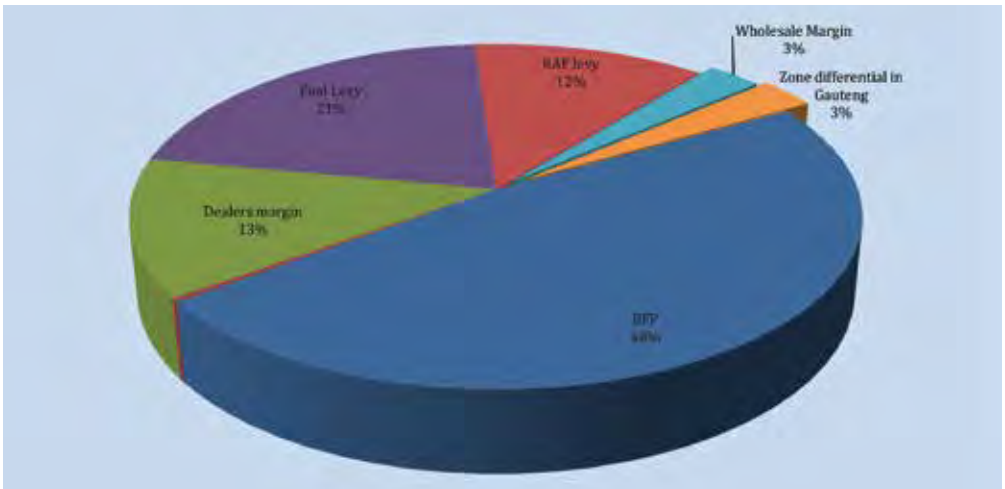
Period	BFP	Custom & Excise duty	Dealers margin	Fuel Levy	Incremental transport recover levy	IP Tracer levy	Petroleum Pipeline levy	RAF levy	Service cost recoveries	Slate levy	Wholesale Margin	Zone differential in Gauteng	DMSL	Equalisation Fund levy	Pump Rounding
03-Jun-15	644.60	4.00	151.10	255.00	0.00	0.00	0.15	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
01-Jul-15	688.65	4.00	151.10	255.00	0.00	0.00	0.15	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
05-Aug-15	637.47	4.00	151.10	255.00	0.00	0.00	0.33	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
02-Sep-15	563.87	4.00	155.70	255.00	0.00	0.00	0.33	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
07-Oct-15	561.87	4.00	155.70	255.00	0.00	0.00	0.33	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
04-Nov-15	539.87	4.00	155.70	255.00	0.00	0.00	0.33	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30
02-Dec-15	532.97	4.00	161.70	255.00	0.00	0.00	0.33	154.00	0.00	0.00	33.50	35.30	0.00	0.00	0.30

Source: Department of Energy (DoE)

To identify the contribution of each component to the final retail price of petrol, all the components are illustrated in Figure 2.4 with their percentage contributions. The BFP and fuel levy had a larger share in the final retail price of Petrol ULP 93 in 2015, contributing 48% and 21% respectively. The dealer's margin and Road Accident Fund (RAF) contributed 13% and 12% respectively. The wholesale margin and the zone differential in Gauteng contributed 3% each to the final retail price of petrol. The rest of the components contributed a negligible amount towards the final retail price.

During the 2015 budget speech, the Minister of Finance announced adjustments to the taxes levied per litre of fuel to motorists by government at the filling stations. The two levies involved are fuel levy and Road Accident Fund which were raised by 30.5 cents per litre on the petrol price the general fuel levy increase of 30.5 and 50 cents per litre respectively. These adjustments are implemented on the 1st of April annually.

Figure 2.3: 2015 Retail ULP 93 Prices - Individual Components in cents per litre



Source: Department of Energy (DoE)

The petrol margins are adjusted on an annual basis in December. Therefore in December 2015 the Minister of Energy approved the implementation of the Regulatory Accounts System margins with an adjustment of 7.9 cents per litre on petrol and 2.2 cents per litre adjustment to margins applicable in the wholesale list price structures of diesel and illuminating paraffin.

2.2.2 Diesel

Diesel prices have traditionally been lower than petrol prices. The lowest diesel prices occurred during the first quarter of the year with prices dropping to R9.26 per litre in February from R10.28 per litre in January in the inland. Diesel 0.05% sulphur diesel prices for 2015 are recorded on the table below and schematically represented on the figure 2.4.

Table 2.4: 2015 Monthly Diesel Wholesale Prices in cents per litre

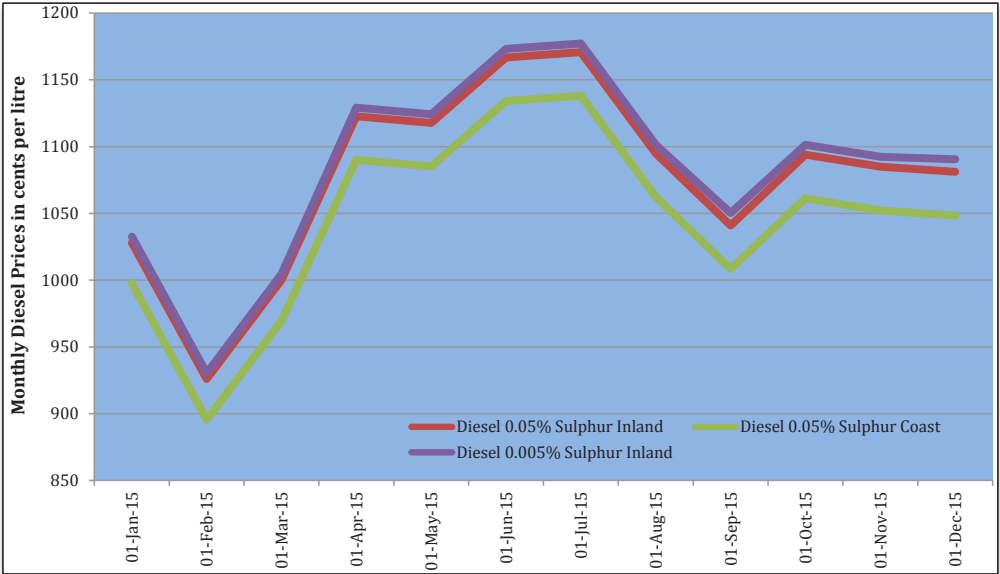
Period	Diesel 0.05% Sulphur		Diesel 0.005% Sulphur
	Coast	Inland	Inland
07-Jan-15	997.49	1028.09	1032.49
04-Feb-15	895.49	926.09	930.49
04-Mar-15	969.49	1000.09	1004.49
01-Apr-15	1090.09	1122.79	1129.19
06-May-15	1085.09	1117.79	1124.19
03-Jun-15	1134.09	1166.79	1173.19
01-Jul-15	1138.09	1170.79	1177.19
05-Aug-15	1062.27	1094.97	1101.37
02-Sep-15	1008.27	1040.97	1050.37
07-Oct-15	1061.27	1093.97	1101.37
04-Nov-15	1052.27	1084.97	1092.37
02-Dec-15	1048.47	1081.17	1090.57

Source: Department of Energy (DoE)

In April diesel prices bounced back to a R10.00 streak in the inland, the main reason for the increase being the average increase in the price of crude oil by about 20% and the depreciation of the Rand against the US Dollar. Beyond March diesel prices crossed over the R11.00 mark for the first time in the year until July.

The ratio of petrol to diesel production in South Africa's refineries and the demand for petrol and diesel do not match. This resulted in surplus diesel in relation to the demand in the past. However, the increase in diesel vehicles and the growing demand for liquid fuels has reduced this imbalance. The demand for diesel has increased over time from around 7 billion litres in 2002 to around 13.4 billion litres in 2015. The petroleum products prices are all priced on an import parity basis, petrol is the most expensive of the fuels, over the period 2006 to 2013 it was 6% above the price of diesel.

Figure 2.4: 2015 Monthly 0.05% Sulphur Diesel Prices in cents per litre



Source: Department of Energy (DoE)

As a result of negative sentiment on emerging markets globally, the Rand lost around 40 cents against the US Dollar since the end of May 2015. This led to the increase in fuel prices with diesel prices experiencing a trivial increase of 4 cents per litre in July.

Diesel dropped by 75.82 cents per litre to R10.94 per litre in August in the inland, the reason being the decline of Brent crude prices to below \$55 a barrel for the first time in three months amid a global supply glut. A further decline of 54 cents per litre was experienced in September; this was triggered mainly by the continued drop in the Brent crude oil prices to about \$46.93 per barrel (on average) due to oversupply. The fourth quarter of the year saw a relentless decline diesel prices from R10.93 per litre in October to R10.81 in December in the inland.⁹

It should be noted that with effect from 2nd January 2002 the current 0.5% sulphur content diesel grade was replaced by 0.3% sulphur content diesel grade; on 4th January 2006 0.3% sulphur was replaced with 0.05% sulphur. And as from March 1998 the wholesale price of diesel was regulated but not the retail price. The Department of Energy started to report prices of diesel with 0.05% sulphur in 2006.

⁹ the above analysis is based on media statements issued by the Department of Energy on the adjustment of fuel prices on the first Wednesday of every month which can be accessed on http://www.energy.gov.za/files/petroleum_frame.html

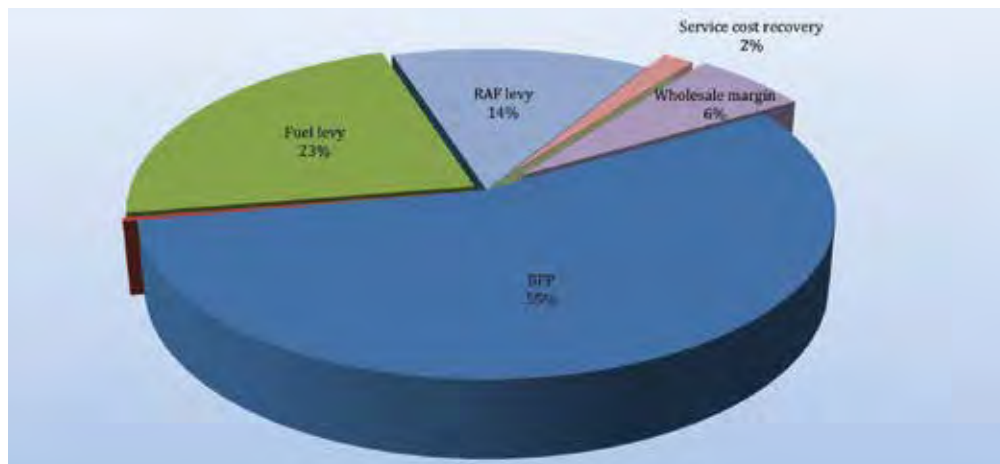
Table 2.5: 2015 Monthly wholesale diesel prices - individual components in cents per litre

Period	BFP	Custom & Excise duty	Fuel levy	Incremental In-land Transport	IP Tracer levy	Petroleum pipeline levy	RAF levy	Service cost recovery	Slate levy	Wholesale margin	Zone differential in Gauteng	Wholesale price
Diesel 0.05% Sulphur												
07-Jan-15	582.63	4.00	209.50	0.00	0.01	0.15	104.00	17.40	0.00	64.70	0.00	582.63
04-Feb-15	480.63	4.00	209.50	0.00	0.01	0.15	104.00	17.40	0.00	64.70	0.00	480.63
04-Mar-15	554.63	4.00	209.50	0.00	0.01	0.15	104.00	17.40	0.00	64.70	0.00	554.63
01-Apr-15	594.63	4.00	240.00	0.00	0.01	0.15	154.00	17.40	0.00	64.70	0.00	594.63
06-May-15	589.63	4.00	240.00	0.00	0.01	0.15	154.00	17.40	0.00	64.70	0.00	589.63
03-Jun-15	638.63	4.00	240.00	0.00	0.01	0.15	154.00	17.40	0.00	64.70	0.00	638.63
01-Jul-15	642.63	4.00	240.00	0.00	0.01	0.15	154.00	17.40	0.00	64.70	0.00	642.63
05-Aug-15	566.63	4.00	240.00	0.00	0.01	0.33	154.00	17.40	0.00	64.70	0.00	566.63
02-Sep-15	528.33	4.00	240.00	0.00	0.01	0.33	154.00	17.40	0.00	64.70	0.00	528.33
07-Oct-15	565.63	4.00	240.00	0.00	0.01	0.33	154.00	17.40	0.00	64.70	0.00	565.63
04-Nov-15	556.63	4.00	240.00	0.00	0.01	0.33	154.00	17.40	0.00	64.70	0.00	556.63

Source: Department of Energy (DoE)

To identify the contribution of each component to the diesel wholesale price, all the components are shown in Figure 2.5. In 2015 the BFP was the largest contributor to the total wholesale price of diesel with 55%. The second largest contributor to diesel wholesale price was fuel levy contributing 23%, followed by Road Accident Fund (RAF) levy at 14%, wholesale margin and service cost recovery's contributions amounting to 6% and 2% respectively. The rest of the components contributed a negligible amount towards the final price.

Figure 2.5: 2015 Annual Wholesale Diesel Prices - Individual Components-cents per litre



Source: Department of Energy (DoE)

The BFP contribution has dropped to 55% in 2015 from 66% in 2014. This was a result of the continued drop of oil prices during the year since BFP characterises the international elements of the components that make up the final fuel price. On the other end, RAF's contribution has significantly increased. In 2014 RAF levy was only increased by 8 cents whereas in 2015 it was increased by 30.5 cents. This increase led to over two times increased contribution of the RAF levy to the fuel price.

2.2.3 Illuminating Paraffin

The Department of Energy started to regulate the maximum retail price for illuminating paraffin, excluding the price of any form of packaging since January 2010. Paraffin, also known as kerosene, is widely used by poor households in developing countries for cooking, heating and lighting. It is also used in industry as industrial solvents, to power jet engines of aircrafts and some rocket engines. Paraffin lamps are widely used for lighting in rural areas of Asia and Africa where electrical distribution is not available or too costly for widespread use. The total consumption of paraffin in South Africa was over half a billion (556,007,302) litres in 2015.

Paraffin prices remained cheaper than other petroleum products in comparison in 2015. International oil prices and the Rand/Dollar exchange rate are the contributing factors to the movements in the prices of paraffin. The prices in the coastal and inland areas of illuminating paraffin for 2015 are illustrated on table and graph 2.6 respectively.

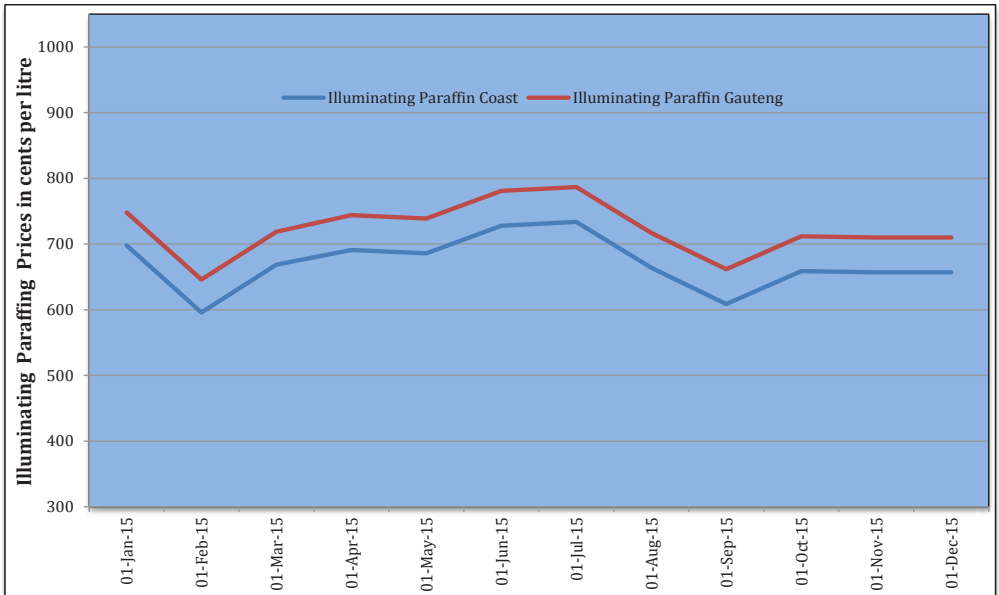
Table 2.6: 2015 Monthly Illuminating Paraffin Prices in cents per litre

Period	Illuminating Paraffin	
	Coast	Gauteng
07-Jan-15	697.72	747.92
04-Feb-15	595.72	645.92
04-Mar-15	668.72	718.92
01-Apr-15	690.82	743.82
06-May-15	685.82	738.82
03-Jun-15	727.82	780.82
01-Jul-15	733.82	786.82
05-Aug-15	663.82	716.82
02-Sep-15	608.82	661.82
07-Oct-15	658.82	711.82
04-Nov-15	697.72	747.92
02-Dec-15	595.72	645.92

Source: Department of Energy (DoE)

In 2014 paraffin prices were characterised by high paraffin prices which were above the R8.00 threshold right through the year. Nonetheless, 2015 became a favourable year for paraffin customers where prices were the lowest. This was evidenced by R1.44 cents per litre decline in January to R7.47 per litre in the inland region. Further decline of R1.50 c/l took place in February due to a continual drop in crude oil prices.

Figure 2.6: 2015 Monthly Illuminating Paraffin Price in cents per litre



Source: Department of Energy (DoE)

The apex prices for paraffin occurred at the beginning of the third quarter in July due to the weakening of the Rand against the US dollar. The prices per litre at the coastal and inland were R7.33 and R7.86 respectively. Paraffin prices are generally lower than all other petroleum prices in comparison.

2.2.4 Liquid Petroleum Gas (LPG)

LPG is a liquefied and mixed gaseous hydrocarbon. Although there are many variations of LPG, it is primarily made up of propane and butane, which are compressed into liquid form for ease of transport, storage and handling. LPG is primarily used as a thermal fuel and commonly used in mines to power smelting furnaces that are processing materials, such as platinum and vanadium, as well as domestically for cooking. In particular, LPG is used in the following industries:

- ✓ Industrial customers: for heating purposes where a readily controlled temperature is needed, i.e. motor vehicle paint shops or as fuel for fork lift trucks within warehouses etc.
- ✓ Commercial: This includes, for example, a shopping centre with a number of restaurants which may have one bulk tank with LPG reticulated to individual restaurants/stores.
- ✓ Households: LPG is mainly used by households for heating and cooking.

Table 2.7 depicts the prices of maximum refinery and retail prices for LPG. However, the analysis of LPG prices in this section is based on the regulated retail gate prices.

Table 2.7: 2015 Monthly Regulated Maximum Refinery Gate and Maximum Retail Prices for Liquefied Petroleum Gas (LPG)

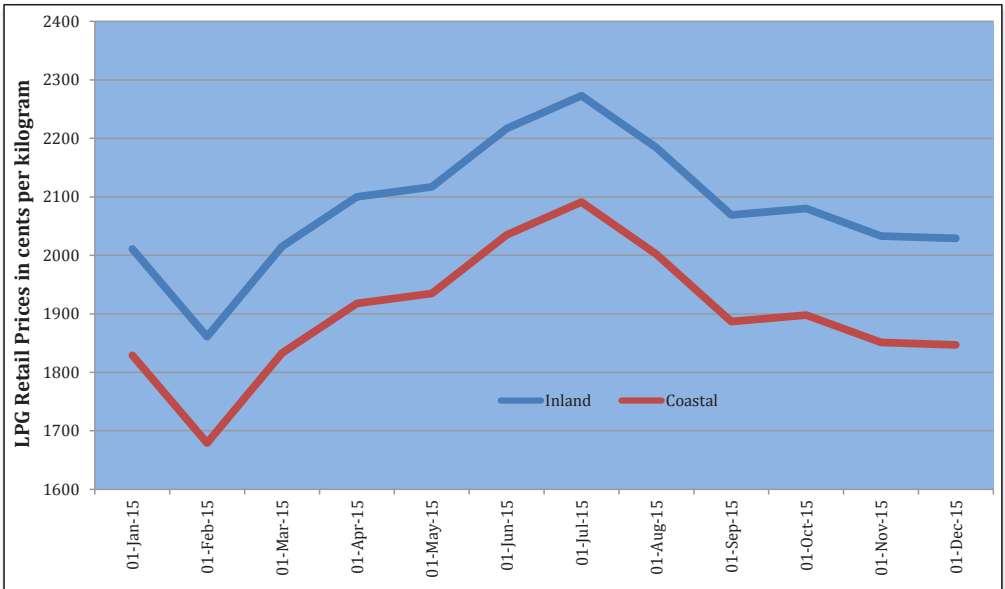
Period	Regulated Maximum Refinery Gate Prices					Regulated Maximum Retail Gate Prices (cents per kilogram)	
	Cents per kilogram	cents per litre	Rand per GigaJoule	Rand per kilogram	Rand per ton	Inland	Coastal
07-Jan-15	702.19	389.72	142.02	7.02	7021.93	2011.00	1829.00
04-Feb-15	702.19	389.72	14.20	7.02	7021.93	1861.00	1679.00
04-Mar-15	704.87	391.20	14.26	7.05	7048.68	2015.00	1833.00
01-Apr-15	770.11	427.41	15.58	7.70	7701.09	2100.00	1918.00
06-May-15	783.04	434.59	15.84	7.83	7830.37	2117.00	1935.00
03-Jun-15	858.78	476.63	17.37	8.59	8587.84	2217.00	2035.00
01-Jul-15	901.77	500.48	18.24	9.02	9017.73	2273.00	2091.00
05-Aug-15	833.68	462.69	16.86	8.34	8336.80	2184.00	2002.00
02-Sep-15	746.07	414.07	15.09	7.46	7460.65	2069.00	1887.00
07-Oct-15	754.89	418.96	15.27	7.55	7548.88	2080.00	1898.00
04-Nov-15	718.53	7185.31	14.53	7.19	7185.31	2033.00	1851.00
02-Dec-15	718.53	397.15	14.53	7.19	7185.31	2029.00	1847.00

Source: Central Energy Fund (CEF)

At the beginning of 2015 LPG prices recovered by R2.1 per kilogram and a further decline in February by 1.5 cents to R18.61 per kilogram. The decrease in January was caused by the continued drop in the price of crude oil. Prices began to reflect a persistent and increasing trend from February to July in 2015 to a peak of R22.73 per kilogram in the inland. Recuperating from peak prices in July, LPG prices dropped by 89 cents per kilogram in August to R21.84 cents per kilogram. This came as a result of plummeting oil prices and the weakening of the Rand. The weakening Rand reduced the over-recovery on the Basic Fuel Price slightly. The Rand fell considerably as commodity prices continued to tumble amid fresh concerns over China's economic slowdown.¹⁰

¹⁰ the above analysis is based on media statements issued by the Department of Energy on the adjustment of fuel prices on the first Wednesday of every month which can be accessed on http://www.energy.gov.za/files/petroleum_frame.html

Figure 2.7: 2015 Monthly Regulated Maximum Retail LPG Prices in cents per kilogram



Source: Department of Energy (DoE)

LPG is generally different from other energy sources on the basis of portability, convenience, low sulphur content, controllability and its clean burning nature. LPG has been identified as an alternative energy carrier for the provision of quick and effective solutions to energy requirements. The demand for LPG in South Africa seems to be growing as more end-users diversify their energy mix in response to, amongst others; the power shortfalls and increasing electricity price.

3. NATURAL GAS

Natural gas is the cleanest burning fossil fuel and produces far lower levels of CO₂, CO, SO₂, NO_x, and particulate matter compared with other fossil fuels. Natural gas consists mainly of methane with some ethane, propane and butane. Gas is transmitted by pipelines at high pressure and compressor stations may be required at certain intervals to maintain the pressure within the pipeline. Compressors are fuelled by gas from the pipeline.

Gas was first introduced in South Africa with the construction of the Cape Gas and Coke Company in Cape Town in 1847. Other gas plants followed in Port Elizabeth, Kimberly, Grahamstown, and eventually Johannesburg in 1892. Only the Johannesburg network has survived and it is now supplied by Sasol. Sasol has been selling coal gas since the 1960s and has been importing natural gas from Mozambique officially from 26 March 2004. Sasol Gas Ltd is the only supplier of natural gas in South Africa apart from PetroSA, who produces exclusively for own use. Sasol Gas imports the natural gas

from Mozambique and also produces methane rich gas in its plant in Secunda. The gas is then

sold to its sister companies within the Sasol Limited's group; to other gas traders and directly to industrial customers. Sasol Gas owns the transmission and distribution pipeline infrastructure that transport this gas to the South African market. Sasol Gas is a dominant player in the trading of gas at wholesale and retail levels.¹¹.

The use of natural gas in South Africa has been largely limited to applications in the industrial and residential markets. Only three types of gas are currently supplied to the South African market, namely: natural gas, synthetic gas (methane rich gas) and compressed natural gas. The gas supplied in South Africa is transported through a pipeline in line with the requirements of the Gas Act of 2001.

The National Energy Regulator of South Africa (NERSA) regulates *piped-gas maximum prices* in terms of the Gas Act of 2001. Section 4(g) of the Gas Act requires the National Energy Regulator to regulate prices in terms of section 21(1)(p) in the prescribed manner. The National Energy Regulator only approves a price ceiling, implying that the actual prices charged to customers should not exceed the maximum price. NERSA also regulates tariffs in terms of section 4(h) of the Gas Act, which only provides for the regulation of transmission and storage tariffs in accordance with section 22.

Table 3.1 presents the South African historical natural gas prices supplied by Sasol Gas for 2015. The tariffs are grouped into six customer categories of average annual consumption measured in GJ/a.

Table 3.1: 2015 Monthly Natural Gas Prices in Rand per GigaJoule

Period	Maximum Price	Class1	Class 2	Class 3	Class 4	Class 5	Class 6
		33 GJ	333 GJ	3 333 GJ	33 333 GJ	333 333 GJ	1 054 093 GJ
09-Jan-15	139.52	103.73	93.36	77.79	51.86	46.67	41.51
08-Feb-15	139.52	103.73	93.36	77.79	51.86	46.67	41.51
10-Mar-15	139.52	103.73	93.36	77.79	51.86	46.67	41.51
30-Apr-15	132.83	98.75	88.88	74.06	49.37	44.43	39.51
30-May-15	132.83	98.75	88.88	74.06	49.37	44.43	39.51
30-Jun-15	132.83	98.75	88.88	74.06	49.37	44.43	39.51
30-Jul-15	118.65	88.20	79.39	66.15	44.10	39.68	35.28
30-Aug-15	118.65	88.20	79.39	66.15	44.10	39.68	35.28
30-Sep-15	118.65	88.20	79.39	66.15	44.10	39.68	35.28
30-Oct-15	132.52	98.51	88.67	73.88	49.26	44.32	39.40
30-Nov-15	132.52	98.51	88.67	73.88	49.26	44.32	39.40
30-Dec-15	132.52	98.51	88.67	73.88	49.26	44.32	39.40

Source: SASOL

¹¹ Department Of Minerals And Energy, Republic Of South Africa, Document Title: Gas Infra-Structure Plan, V 19 April 2005 Update, page vi-vii

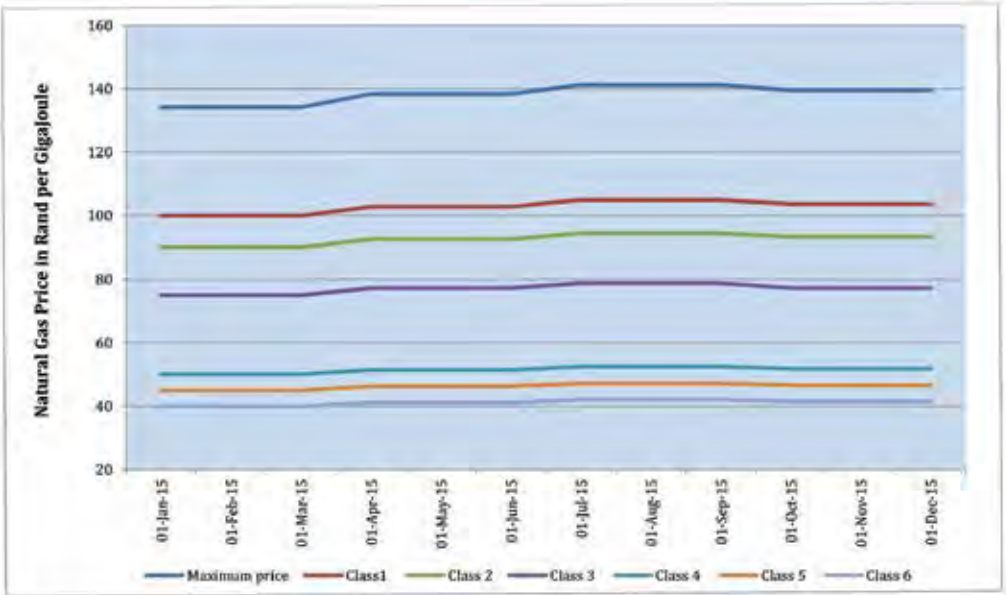
Explanatory Notes:

1. According to the Regulatory Agreement, in terms of Section 36 of the Gas Bill, Sasol Gas has to comply to the Market Value Pricing principle which are defined as follows:
 - a). The cost of the alternative fuel delivered to the customer's premises or anticipated place of use (in the case of Greenfields customers) plus;
 - b). The difference between all the operating costs of the customer's use of the alternative fuel and all the operating costs of using natural gas; plus
 - c). The difference between the Net Present Value (NPV) of the capital costs of the customer's continued use of the alternative fuel and the NPV of the capital costs involved in switching to natural gas, as would be reflected in the customer's accounts.\
2. Gas prices are negotiated with customers individually. The prices above are indicative of pipeline gas sold by Sasol Gas.
3. The prices above are exclusive of VAT.
4. Since April 2014, the above-mentioned indicative gas prices are subject to monthly adjustment in accordance with the applicable adjustment formula. The maximum Gas Energy Prices ("GE") are determined in accordance with the Methodology to Approve Maximum Prices of Piped-Gas in South Africa promulgated by NERSA in October 2011 (the "Methodology"). In terms of the said Methodology, the maximum energy prices are referenced to price indicators of certain energy sources.
5. Section 21(1)(p) of the Gas Act requires NERSA to approve maximum prices for distributors, reticulators and all classes of consumers. The Methodology states that NERSA will approve a single maximum GE Price for a licensee in terms of the Gas Act, based on which Gas class maximum GE Prices will be approved.

As depicted in Figure 3.1, the prices of pipeline natural gas sold by Sasol to various customers. Sasol Gas maximum price application is made in terms of the Energy Price Indicators Approach.¹²

¹² the above analysis is based on media statements issued on the 26th of March 2013 by NERSA on the *approval of piped-gas transmission tariffs for Sasol Gas for the period 26 March 2014 to 30 June 2015 and approval of Maximum Prices Application from Sasol Gas* which can be accessed on www.nersa.org.za

Figure 3.1: 2015 Monthly Natural Gas Prices in Rand per Gigajoule



Source: Sasol

The gas energy price is determined based on the wholesale prices of energy indicators and excludes transportation cost. The National Energy Regulator does not regulate the distribution tariff but regulates the other elements in the total price value chain. For instance in the total price of the trader listed below, the National Energy Regulator does not regulate the distribution tariff, but regulates all the other elements:

$$\text{Total Price}_{(\text{trader})} = \text{Gas Energy Price} + \text{Trading Margin} + \text{Transmission Tariff} + \text{Distribution Tariff} + \text{NERSA Levy}$$

Tariffs are added to the gas energy price and trading margin to arrive at the total charge as illustrated in formula above. Tariffs are a charge for services such as transportation, distribution and storage, whereas a price is the value/cost of the gas molecule.

4. COAL

According to South African Yearbook 2014/15, South Africa's indigenous energy-resource base is dominated by coal. By international standards, South Africa's coal deposits are relatively shallow with thick seams, making them easier and cheaper to mine. At the present production rate, it is estimated that there is more than 50 years of coal supply left. Coal provides for about 65% of South Africa's primary energy needs. This is unlikely to change significantly in the next two decades, owing to the relative lack of suitable alternatives to coal as an energy source. In addition to the extensive use of coal in the domestic economy, about 28% of South Africa's production is exported, mainly through the Richards Bay Coal Terminal, making South Africa the fourth largest coal exporting country in the world.

South Africa's coal is obtained from collieries that range from among the largest in the world to small-scale producers. About 51% of South African coal mining is done underground, while the rest is produced by open-cast methods. The coal-mining industry is highly concentrated, with five companies accounting for 85% of saleable coal production. Production is concentrated in large mines, with 11 mines accounting for 70% of the output. South African coal for local electricity production is among the cheapest in the world.

The beneficiation of coal, particularly for export, results in more than 65 Mt of coal discards being produced every year. About 21% of the run-of-mine coal produced is exported, and 21% is used locally (excluding power-station coal). The rest is not saleable and is discarded. The remainder of South Africa's coal production feeds the various local industries: 62% is used for electricity generation; 23% for petrochemical industries (Sasol) ;8% for general industry ;4% for the metallurgical industry (Mittal) and 4% is purchased by merchants and sold locally or exported.

The key role played by South Africa's coal reserves in the economy is illustrated by the fact that Eskom is ranked first in the world as a steam coal user and seventh as an electricity generator. Sasol is the largest coal-to-chemicals producer in the world.

The following section provides the prices of thermal coal sold locally and exported.

4.1 Local and export coal prices

Table 4.1 shows the average local and export prices of anthracite and bituminous coal from 2006 to 2015.

Table 4.1: Annual average local and export coal prices in Rand per ton

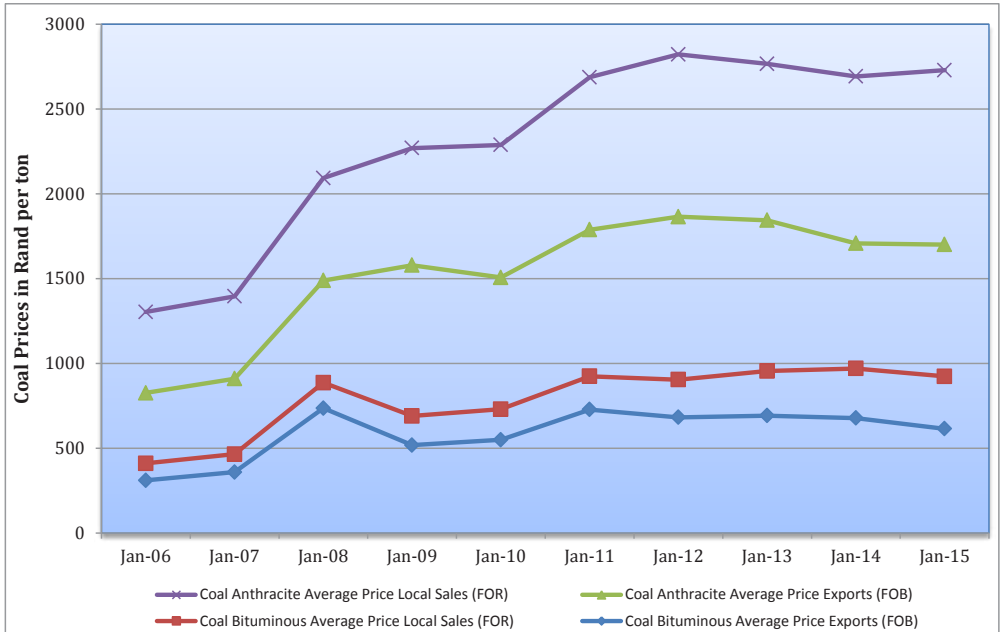
Period	Coal Bituminous		Coal Anthracite	
	Average Price Exports (FOB)	Average Price Local Sales (FOR)	Average Price Exports (FOB)	Average Price Local Sales (FOR)
Jan-06	310.42	100.00	415.58	477.17
Jan-07	358.83	105.86	444.93	485.67
Jan-08	735.64	150.68	602.11	604.24
Jan-09	517.91	171.63	889.64	690.36
Jan-10	549.33	180.50	776.83	781.75
Jan-11	727.85	196.02	864.65	898.90
Jan-12	682.00	222.00	961.00	957.00
Jan-13	692.00	263.00	889.00	922.00
Jan-14	677.50	292.42	738.17	983.92
Jan-15	614.98	308.58	777.25	1028.00

Source: Department of Mineral Resources

Explanatory Notes:

1. FOB: Free On Board.
2. FOR: Free On Road.
3. The prices are exclusive of VAT

Figure 4.1: Annual Average Local (FOR) and Exports Prices (FOB) in Rand per ton



Source: Department of Mineral Resources (DMR)

Anthracite is a hard, compact coal that has the highest carbon content, the fewest impurities, and the highest calorific content of all types of coal. It is used mainly in power generation. Bituminous is a relatively soft coal containing a tarlike substance called bitumen and it is of a poorer quality compared to anthracite.

Year-on-year comparisons depict a general increase in the price of coal across all grades. The annual average price of coal anthracite depicts an increase to a four digit figure of R1028 per ton for local sales. The average price export prices in 2015 for bituminous were almost double of local sales and plunged compared to the previous year as depicted in the Figure 4.1.

5. ELECTRICITY

The electricity sector in South Africa is dominated by the national utility Eskom, which owns and operates most of the national electricity generation infrastructure and supplies 95% of the country's electricity requirements and the remainder is supplied by municipalities, redistributors and Independent Power Producers (IPP's). In global terms, the utility is among the top seven in generating capacity, among the top nine in terms of sales, and has one of the world's biggest

dry-cooled power stations.

The National Energy Regulator (NERSA) is the regulatory authority over the energy sector in South Africa and its mandate includes the regulation of the electricity supply industry. Its regulation amongst others includes regulation of electricity prices and tariffs. The electricity pricing scheme employed by NERSA is based on the multi-year pricing determination (MYPD). The MYPD was implemented, based on Eskom's cost recovery requirements, such that the utility remains functioning and sustains itself economically. The electricity price is the Eskom average tariff approved by NERSA, per kWh converted into Rands per gigajoule. The average tariff approved by NERSA is an average of all Eskom's customer groupings. Bulk and industrial customers (a large proportion of consumers of piped gas) pay less than the average Eskom Tariff.

Eskom's average price for electricity is based on the overall cost of supply but, in order to determine tariffs, the overall costs are broken down into relevant cost categories. Costs are expressed in a manner that will ultimately be applied to derive the tariffs according to an appropriate cost driver.

The South African electricity industry has seen a dramatic increase in prices over the past few years. These increases have been blanket across all sectors and are based on a number of factors such as sector, usage and, in the case of domestic pricing, suburb. The cost of electricity in South Africa, particularly to the industrial sector, has been among the lowest in the world.

Eskom generates its revenue from different electricity users; Table 5.1 shows various types of electricity users from 2006 to 2015. The electricity usage includes electricity used for domestic and street lighting, commercial, industrial, international, mining and farming.

Table 5.1: Annual Average Eskom Prices by Customer Category in cents per kilowatt per hour (2006-2015)

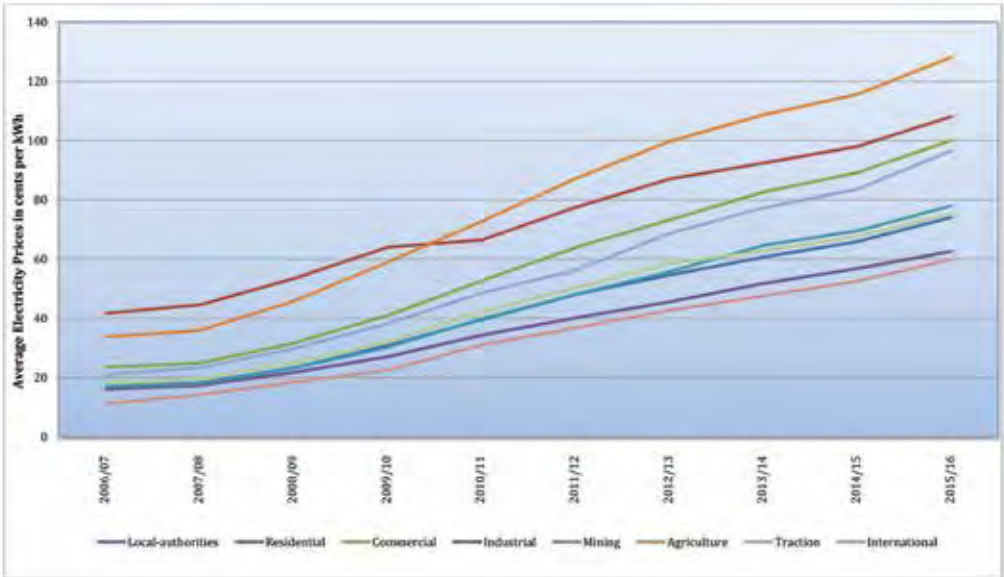
Period	Local-Authorities	Residential	Commercial	Industrial	Mining	Agriculture	Traction	International	Average Prices
2006/07	16.88	41.74	23.50	16.01	16.90	33.69	21.05	11.15	18.06
2007/08	18.21	44.56	24.85	17.28	17.99	35.91	23.31	14.16	19.60
2008/09	23.29	53.43	31.61	21.69	23.12	45.78	29.78	18.45	24.97
2009/10	30.84	63.98	40.97	27.03	30.25	58.96	38.23	22.47	31.95
2010/11	39.53	66.45	52.63	34.34	39.78	72.72	48.55	31.04	42.20
2011/12	48.03	77.50	63.92	40.12	48.10	87.22	56.24	36.73	50.27
2012/13	54.59	87.05	73.24	45.56	55.74	99.75	68.66	42.72	58.49
2013/14	60.67	92.41	82.67	51.79	64.66	108.75	77.34	47.56	62.81
2014/15	65.92	98.06	89.16	56.81	69.52	115.66	83.63	52.55	67.63
2015/16	74.11	108.11	100.07	62.64	78.01	128.19	96.60	59.82	75.38

Source: Eskom

Explanatory Notes:

1. The data in this table is from various Eskom Statistical Yearbooks and Annual Reports.
2. The price data in this table is only applicable to Eskom's direct sales to the categories as listed. Sales by local authorities to the Domestic, Commercial and Industry categories are not included in this table.
3. The prices are in c/kWh for each of a number of sales categories.
4. The real price was calculated by using the annual CPI with 2000 = 100 from 1970 till 2008 and 2008 = 100 from 2009 till 2011.
5. Prices are exclusive of VAT

Figure 5.1 Annual Average Eskom Prices by Customer Category in cents per kilowatt per hour (2006-2015)



Source: Eskom

Eskom's tariffs are adjusted on an annual basis – previously on 1 January, but due to the change in Eskom's financial year price adjustments now take place on 1 April every year. The average tariff adjustments for the past 10 years are indicated in Table 5.2.

Table 5.2 Eskom's Average Tariff Adjustment

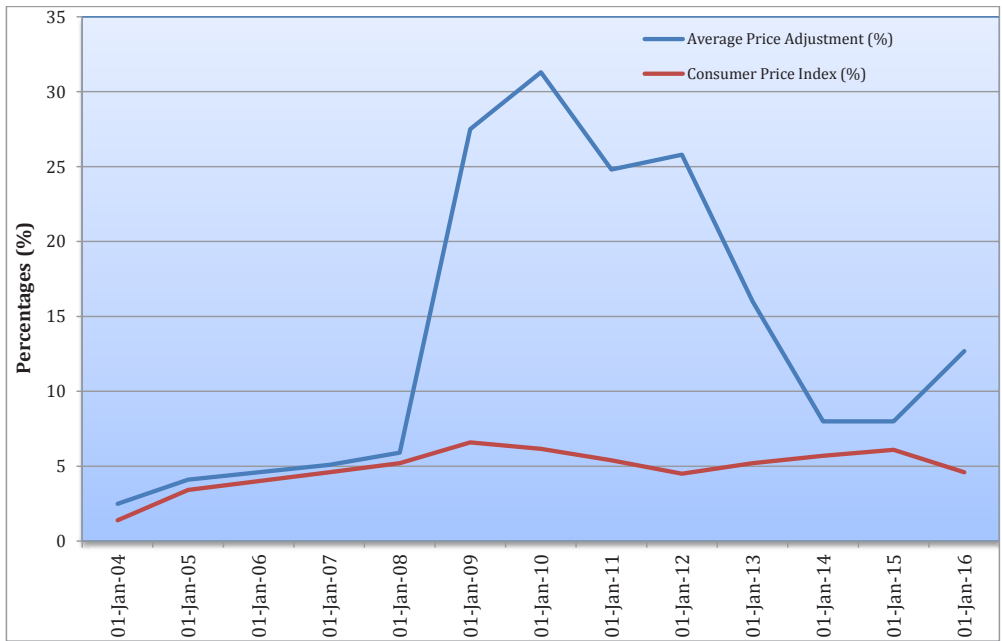
Period	Average Price Adjustment (%)	Consumer Price Index (%)
2006	5.1	4.6
2007	5.9	5.2
2008	27.5	6.6
2009	31.3	6.2
2010	24.8	5.4
2011	25.8	4.5
2012	16.0	5.2
2013	8.0	6.0
2014	8.0	6.0
2015	12.7	5.7

Source: Eskom

Explanatory Notes:

1. Eskom's average price tariffs were adjusted annually (calendar period: January to December) from 2002 to 2005
2. Eskom's average price tariffs are adjusted at the end of the financial year (end of April) from 2005 to 2015
3. Eskom's average tariff adjustment figures are published on Eskom's website.
4. The adjustments are according to Eskom's financial year end, which is end of the March.

Figure 5.2: Annual Eskom Average Tariff Adjustment



Source: Eskom

The overall price of electricity for Eskom is regulated and is based on approved costs plus a return on investment as determined by the NERSA. As an energy regulator NERSA exercises regulation over electricity pricing and tariffs by setting of tariff guidelines and structure, tariff methodologies, evaluates tariff applications from licensees and pricing frameworks. While Eskom's average price (total revenue/total consumption) is based on cost, individual price levels per customer or per customer class might not be cost representative. This is due to cost averaging, historical cross-subsidies and social factors such as the customer's ability to pay the determined price.

The NERSA approved revenue requirement including the return for each Eskom division (Generation, Transmission and Distribution) is used as the total cost of the business to be recovered through the tariffs. The approval of the revenue requirement determines the allowed revenues (cost plus return) for Eskom and from this the average price increase.¹³

As depicted in Figure 5.2 above, average tariff adjustments have deviated above the CPI since 2006 to date. The tariff adjusted for 2015 is 12.7% where the CPI was sitting at 5.7%. From the 2008 electricity crisis onwards, there is a clear and sharp inflection point for electricity tariffs in South Africa. The year 2009 had experienced a peak at 31.3% compared to inflation of 6.16%, this was the period of recession where the country experienced electricity shortfalls with increasing demand.

¹³ Tariff Design Methodology 2008/9

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