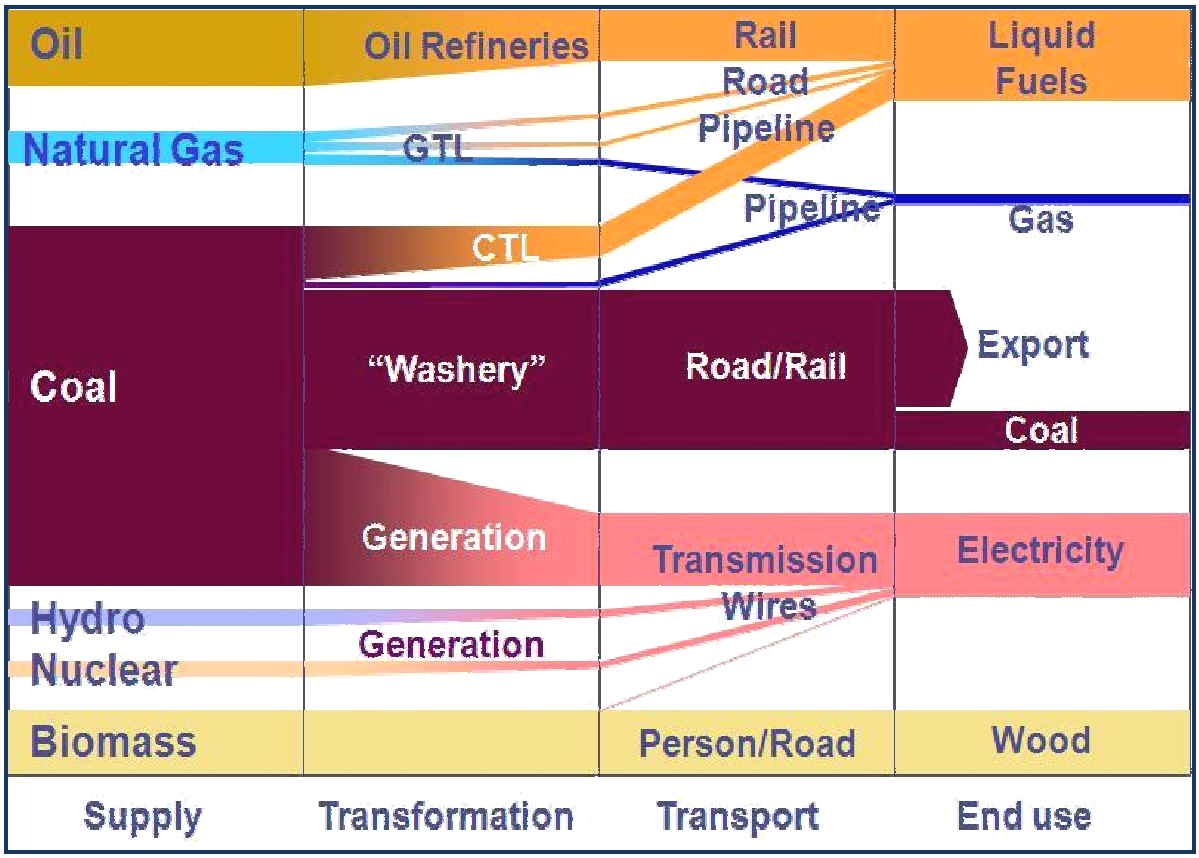
DIGEST OF SOUTH AFRICAN ENERGY STATISTICS 2009



Directorate: Energy Information Management, Process Design and Publication

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Department:
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DIGEST OF

SOUTH AFRICAN

ENERGY STATISTICS

2009

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FOREWORD

It gives me great pleasure to introduce the 5th issue of the Digest of South African Energy Statistics, 2009.

The publication presents energy data for South Africa in a format which shows, inter-alia, the overall picture of annual energy production, transformation and final consumption of all forms of energy for all economic sectors, with quantities expressed in terms of a single accounting unit for the purposes of comparison and aggregation.

Since 2001 the Department of Energy (DoE) has been collecting energy data for our Energy Balances and been publishing this data in the Digest. I am pleased that we are continually developing skills within the Department for collection, collation, verification and publication of energy data because such data is vitally required by our country for planning, policy development and research purposes.

One of the key challenges that the Department faces is the lack of accurate, timely and reliable provision of data from our various sources. As a result this Digest only includes statistics for the years up to and including 2006 while we are in the process of collecting and verifying 2007 and 2008 data. In addition to hampering the timely production of our annual publications, the lack of data also creates a challenge to policy formulation as there are limited measurable input and output indicators. The Department has undertaken the following initiatives to address these challenges:

- The National Energy Act, which was promulgated in November 2008, enables the mandatory provision of energy data by suppliers. In this regard the Department is in the process of drafting regulations for the provision of energy data which will also be used for energy planning purposes.

- Officials from the Directorate: Energy Information Management, Process Design and Publication attend annual meetings of the Oslo Working Group on Energy Statistics and the United Nations International Energy Workshop. They are active participants in the development of International Recommendations on Energy Statistics (IRES), which once complete, will be used as a benchmark to develop an Energy Statistics Methodology Manual for South Africa.

- The Department has been actively engaging with Statistics South Africa around the issue of integrating efforts for the collection and production of energy statistics as well as the certification of energy statistics disseminated by the Department as “official statistics”. To this end a Memorandum of Understanding has been signed between the Statistician General and the Director-General of the Department of Energy.

- The Department publishes its energy statistics on the DoE website (www.energy.gov.za) after it has been reviewed by energy statistics experts from within South Africa as well as international organisations.

The Digest is published by the Directorate: Energy Information Management, Process Design and Publications, formerly known as Energy Planning and Development. The Directorate is responsible, inter-alia, for the collection of energy data and information, verification and analysis of such data as well as the compilation of energy balances for South Africa.

It must be highlighted that the Energy Balances are first published on the DME website and only after they have been reviewed are they then published in the Energy Digest. The Directorate is striving to reduce the time lags in the publishing of energy statistics and hopes that the Digest will become a standard work of reference among energy professionals in South Africa and abroad.

Finally, I would like to thank and congratulate all the staff in the Directorate: Energy Information Management, Process Design and Publication for the hard and successful work that went into the compilation of this publication (in particular Mr. Johan van Wyk who has worked on this and previous publications and has recently retired from the Department).

Ms N Magubane
Director General
Department of Energy

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Introduction

Detailed, complete, timely and reliable statistics are essential to monitor the energy situation in South Africa. In addition, energy statistics on supply, trade, stocks, transformation and demand are the basis for any sound policy decisions.

The Department of Energy (DoE), in collaboration with Statistics South Africa, is responsible for providing energy data and statistics. To this effect, the Department has entered into a memorandum of understanding (MoU) with Statistics South Africa. This MoU is intended to enable the Department to participate in the National Statistical System (NSS), which will improve the expertise and knowledge of the Departmental staff in the collection and dissemination of energy statistics. This collaboration with StatsSA will furthermore not only assist in the provision of reliable and quality energy statistics, but will also enable for certain statistics to be designated as "official statistics".

Furthermore, the Department intends to reduce the backlog in providing energy balances to one year. In this regard, the department is in the process of developing regulations in terms of section 19 of National Energy Act, Act 34 of 2008. These regulations will make the provision of energy data mandatory. It is hoped that the regulations will assist in reducing the backlog in providing energy balances as well as providing timely statistics.

Energy statistics are published by the Department in publications such as the *Energy Digest* and *Energy Price Report*. These publications are made available as a hard copy, as well as electronically on the department's website (http://www.energy.gov.za/energy/statistics.stm.).

Whilst every effort has been made to collect complete data and to verify the data, certain data have had to be estimated. Where this has been done it has been indicated in a footnote.

Section 1

1.1 Overview

Energy utilisation in South Africa is characterised by high dependence on cheap and abundantly available coal. South Africa imports a large amount of crude oil. A limited quantity of natural gas is also available. The country also mines uranium which is exported and imports enriched uranium for its nuclear power plant, koeberg. South Africa uses renewable energy in the form of electricity generated by hydropower most of which is imported. Electricity is also generated from other renewable energy sources mainly biomass and to a lesser extent solar and energy. The government intends to diversify energy supply and hence is promoting the use of renewable energy technology as well as other new energy technologies. In addition, it aims to improve energy efficiency throughout the economy.

1.2 Primary Energy Supply

As mentioned, the South African energy sector is dominated by coal which is abundant and relatively cheap by international standards. Most of South Africa's liquid fuel requirements are imported in the form of crude oil. Approximately 30% is sourced from coal through Sasol and 100% of the natural gas production from PetroSA is converted into liquid fuels, supplying about 7% of liquid fuel requirements.

Renewable energy comprises biomass and natural processes that are replenished and can be used as an energy source. Biomass is used commercially in the pulp and paper mills and sugar refineries by burning bulk from logs, black liquor and bagasse to produce process heat. The energy produced is used by the industries concerned to meet their needs. In future, some of this energy could be sold to the national grid (depending on electricity prices and environmental regulations). The White Paper on Renewable Energy of 2004 sets a medium term target of 10 000 GWh renewable energy contribution to final energy consumption by 2013. The DoE has developed a Biofuel Strategy to contribute towards the production of renewable energy using agriculture and to decrease our dependence on imported crude oil. About 1.4% of the national arable land will be utilised to achieve a market penetration of 2% of liquid fuels used for road transport by 2013[1].

In households, biomass is used for cooking and heating. Biomass is estimated to comprise 8% of South Africa's primary energy supply.

Wind as an energy source is only practical in areas that have strong and steady winds. South Africa has a fair wind potential, especially along the coastal areas of Western and Eastern Cape. Currently the

[1] Biofuel Industrial Strategy of RSA December 2007.

Klipheuwel wind farm is operating near Cape Town. Its overall total production annually has been more that 4GWh[2].

The department is encouraging the use of solar water heaters as part of the government's plan to increase the use of renewable energy within the current generation mix and decrease electricity consumption.

From table 1.1 and graph 1.1, it can be seen that coal is the major primary energy supplier with a contribution of 65.9% to the total primary energy supply in 2006. However its contribution to the total energy supply has decreased by 2.3% since 2004. Crude oil supply has seen an increase of 2.1% since 2004. Gas supply has increased from 1.6% in 2004 to 2.8% in 2006. Nuclear supply has decreased from 2.8% in 2004 to 1.9% in 2006. Hydro and renewables supply have seen little changes since 2004, hydro supply had an increase of about 0.1 since 2004 while renewables supply declined by 0.4%.

[2] http://www.dme.gov.za/energy/renew_wind.stm

Table 1.1: Total Primary Energy Supply-TJ: 2003-2006

Total Primary Energy Supply - TJ

	2003	%	2004	%	2005	%	2006	%
Coal	3,277,600	72.7%	3,573,343	68.2%	3,651,726	71.8%	3,721,156	65.9%
Crude Oil	615,689	13.7%	1,016,664	19.4%	724,774	14.2%	1,214,122	21.5%
Gas	50,218	1.1%	84,152	1.6%	153,078	3.0%	160,318	2.8%
Nuclear	138,142	3.1%	145,801	2.8%	123,193	2.4%	109,375	1.9%
Hydro	2,890	0.1%	2,890	0.1%	4,199	0.1%	11,069	0.2%
Renewables	422,979	9.4%	418,058	8.0%	430,427	8.5%	428,396	7.6%
TOTAL	**4,507,518**		**5,240,908**		**5,087,397**		**5,644,436**	

Graph 1.1: Primary Energy Supply: 2006

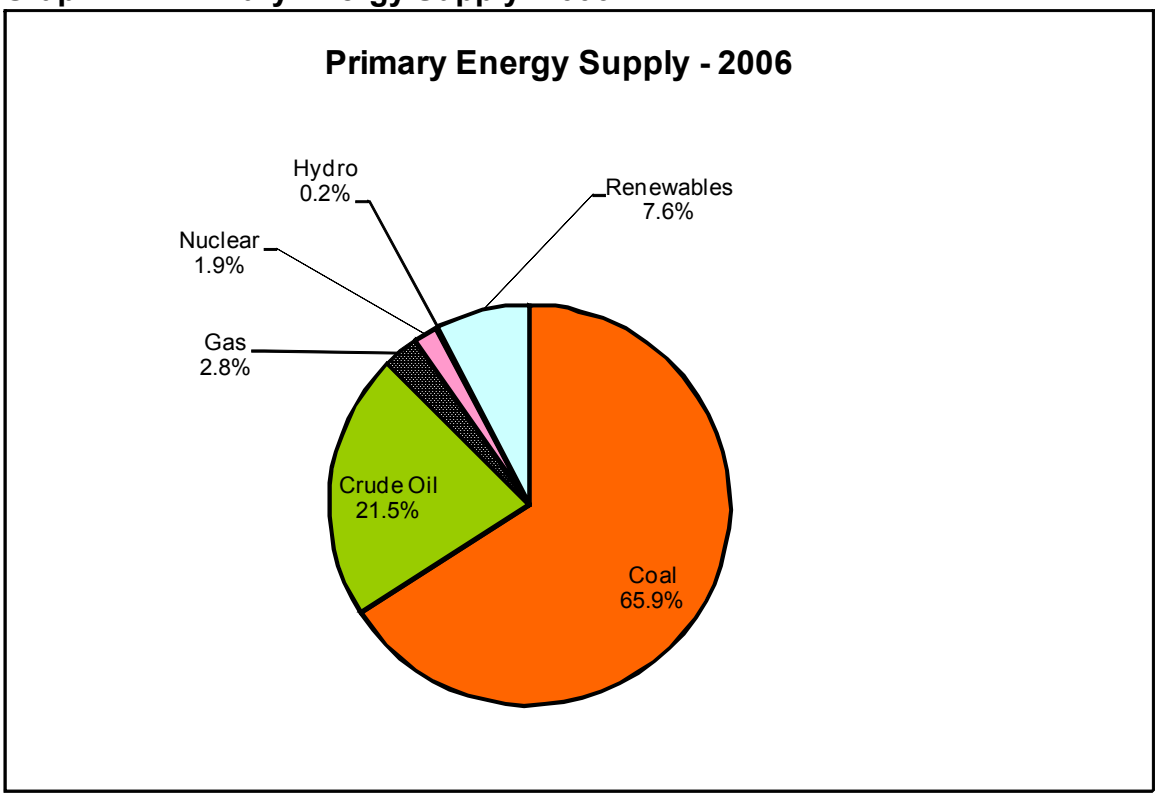


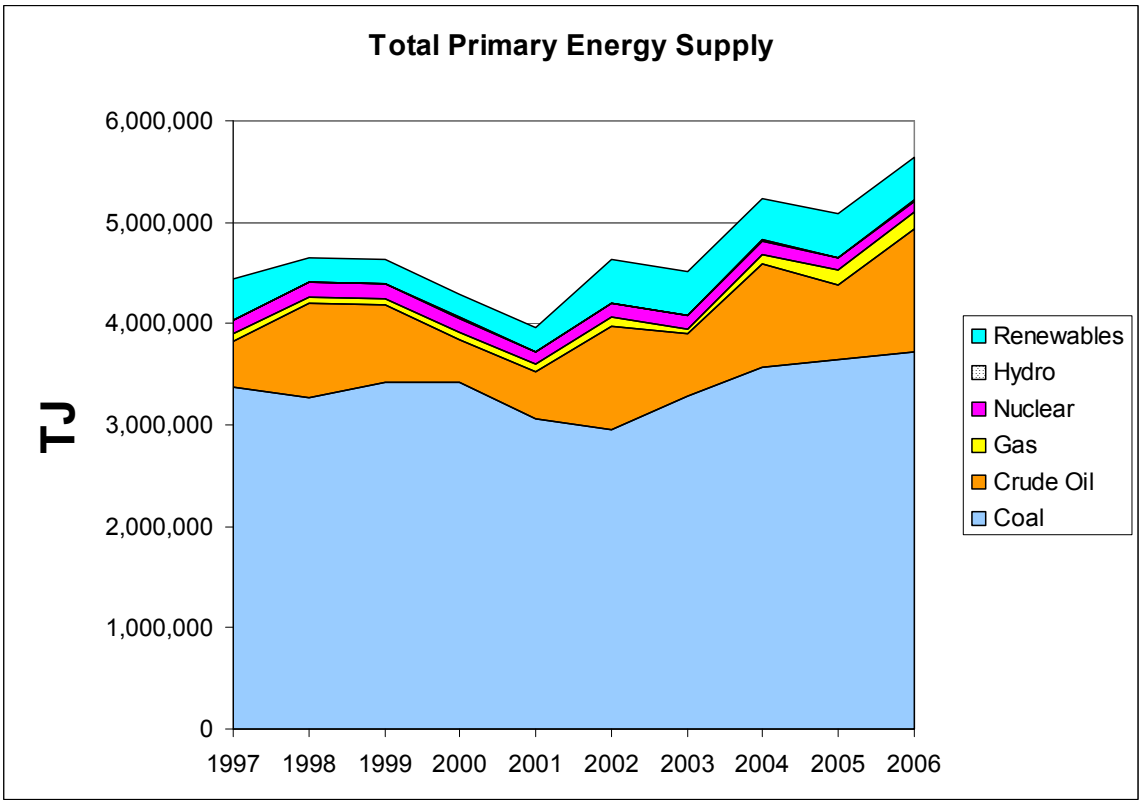
Table 1.2: Total Primary Energy

Total Primary Energy Supply TJ

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Coal	3,268,198	3,413,499	3,425,725	3,065,619	2,961,026	3,277,600	3,573,343	3,651,726	3,721,156
Crude Oil	933,682	764,067	420,746	452,895	1,018,769	615,689	1,016,664	724,774	1,214,122
Gas	53,983	70,628	65,024	84,478	83,764	50,218	84,152	153,078	160,318
Nuclear	148,375	140,040	141,927	116,935	130,811	138,142	145,801	123,193	109,375
Hydro	5,742	2,614	4,835	7,420	8,485	2,890	2,890	4,199	11,069
Renewables	237,400	237,400	237,400	237,400	426,467	422,979	418,058	430,427	428,396
TOTAL	**4,647,379**	**4,628,248**	**4,295,657**	**3,964,746**	**4,629,322**	**4,507,518**	**5,240,908**	**5,087,397**	**5,644,436**

Supply TJ: 1992-2006

Graph 1.2: Total Primary Energy Supply



1.3 Final Sectoral Consumption

Industry[3], residential and transport sectors remains the three major energy consuming sectors. In 2004 they accounted together for 79.6% whilst in 2005 and 2006 they accounted for 78.2% and 78.4% of final energy demand respectively. This shows a decrease of energy consumption from these three major energy consuming sectors combined together of 1.4% in 2005 and a marginal increase of 0.2% in 2006. The value for residential is boosted by the inclusion of estimated biomass consumption figures. The category “non-energy use” is for energy carriers such as petroleum product solvents, lubricants and bitumen, which are not utilised for their energy properties.

[3] The decrease in total consumption of energy by the industry sector was due to a decrease in consumption of coal by the Chemical and Petrochemical industry. Due to the fact that only preliminary coal data was available by the time of this publication, the coal figures can only be confirmed and updated at a later stage.

Table 1.3: Final Sectoral Consumption of Energy-TJ: 2003 – 2006

Final Sectoral Consumption of Energy-TJ

Sector	2003	%	2004	%	2005	%	2006	%
Industry	854,793	34.5%	983,167	36.2%	903,908	33.5%	870,784	32.2%
Commerce	162,272	6.5%	183,359	6.7%	197,161	7.3%	211,386	7.8%
Residential	455,733	18.4%	485,692	17.9%	498,256	18.4%	524,690	19.4%
Mining	180,699	7.3%	190,274	7.0%	204,592	7.6%	201,665	7.5%
Transport	656,520	26.5%	698,552	25.7%	710,943	26.3%	725,321	26.8%
Agriculture	74,998	3.0%	77,988	2.9%	71,534	2.6%	70,291	2.6%
Non-specified(other)	64,574	2.6%	78,830	2.9%	95,156	3.5%	81,469	3.0%
Non-energy use	31,000	1.2%	20,000	0.7%	19,670	0.7%	19,730	0.7%
Total	**2,480,589**		**2,717,862**		**2,701,220**		**2,705,336**	

Source: National Energy Balances

Graph 1.3: Sectoral Consumption of Energy: 2006

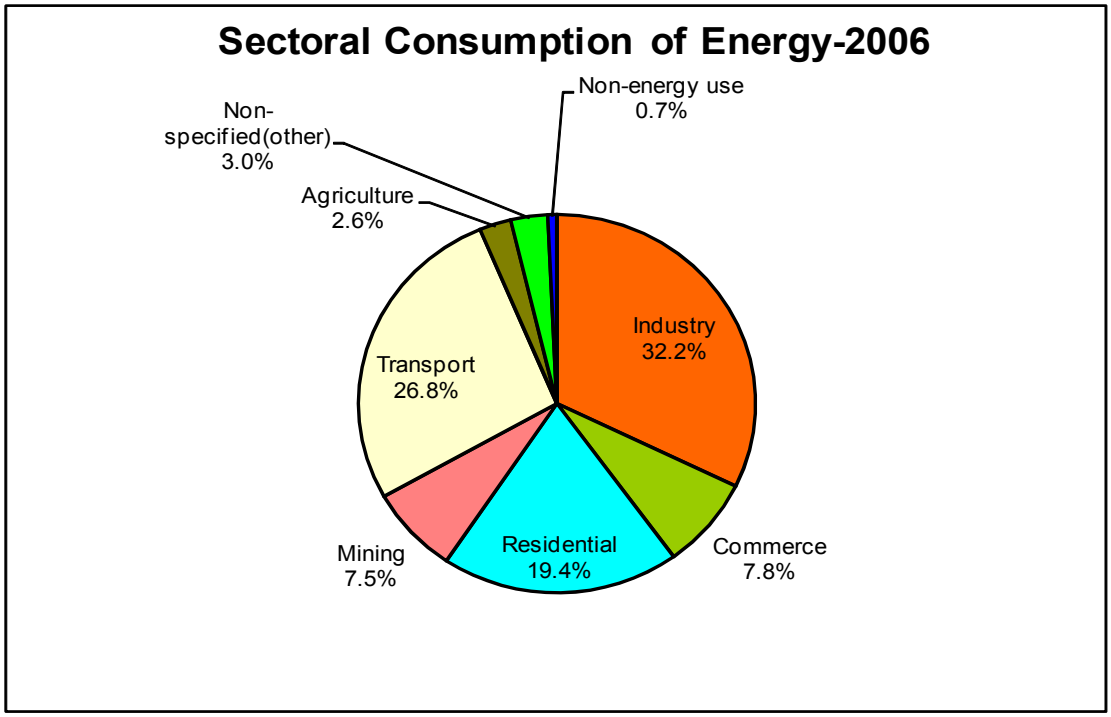


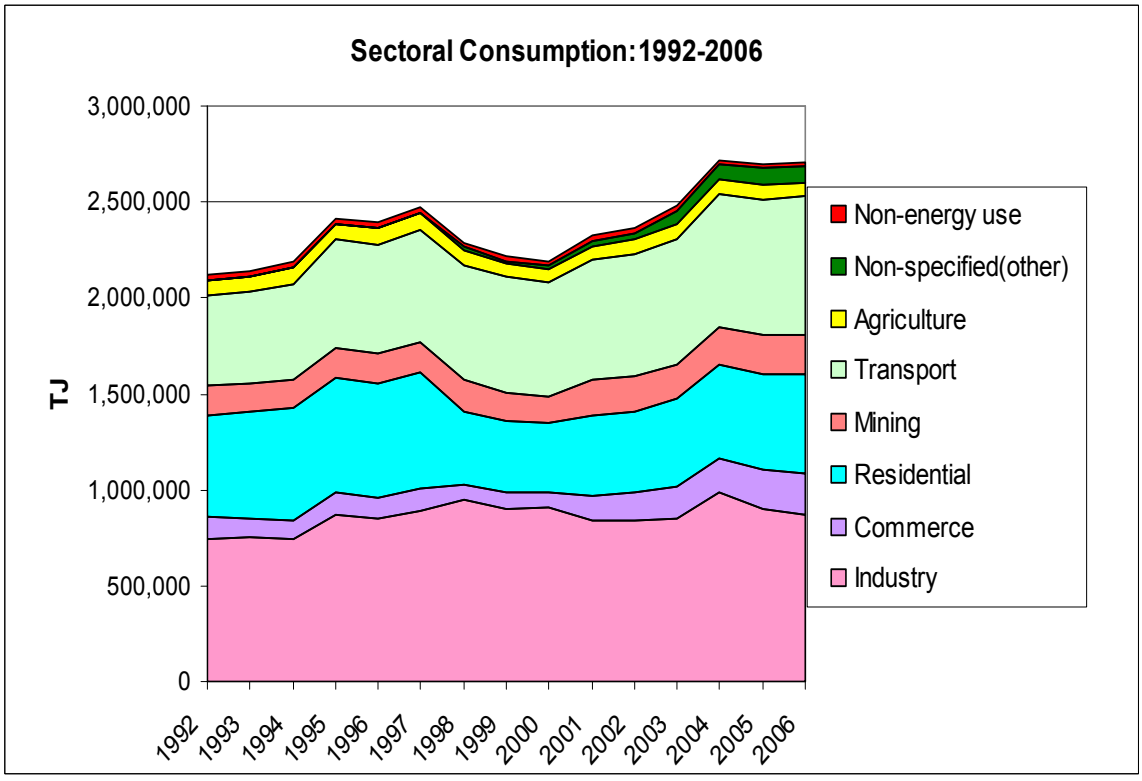
Table 1.4: Sectoral consumption of Energy TJ: 1994-2006

Sectoral Consumption of Energy-TJ

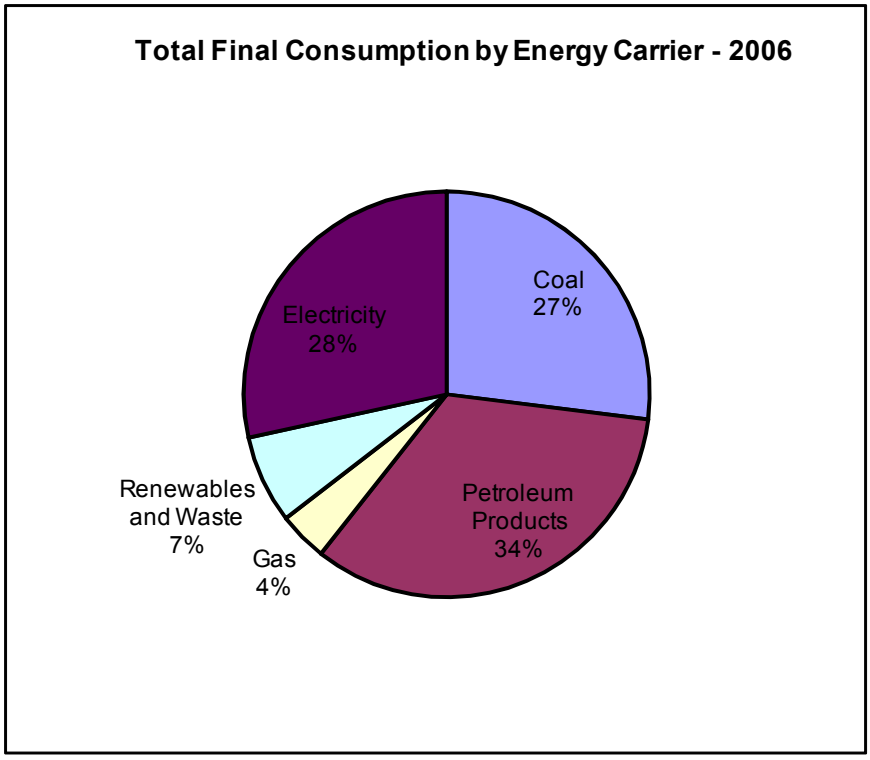
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Industry	951 810	900 717	906 785	837 675	839 654	854 793	983 167	903 908	870 784
Commerce	76 022	85 140	82 975	134 447	143 556	162 272	183 359	197 161	211 386
Residential	376 504	369 078	360 467	419 903	425 379	455 733	485 692	498 256	524 690
Mining	166 934	145 386	130 759	183 744	183 795	180 699	190 274	204 592	201 665
Transport	599 766	605 790	603 985	620 916	636 332	656 520	698 552	710 943	725 321
Agriculture	79 387	74 832	64 109	70 003	72 904	74 998	77 988	71 534	70 291
Non-specified(other)	11 979	11 111	21 911	32 033	34 583	64 574	78 830	95 156	81 469
Non-energy use	26 100	24 740	22 352	29 721	31 687	31 000	20 000	19 670	19 730
Total	**2 288 502**	**2 216 793**	**2 193 342**	**2 328 443**	**2 367 889**	**2 480 589**	**2 717 862**	**2 701 220**	**2 705 336**

Source: National Energy balances

Graph 1.4: Sectoral Consumption: 1994-2006



Graph 1.5: Total final consumption by energy carrier: 2006



1.4 Energy and the economy (Energy Intensity)

The energy intensity of the county shows much energy is needed to produce a single unit of GDP. High energy intensities indicate a high price or cost of converting energy into GDP. Low energy intensities indicate a lower price or cost of converting energy into GDP.

South Africa's energy intensity is above average, with only 10 other countries having higher commercial primary energy intensities.[4] This is largely due to the economy's structure with dominating large-scale, energy-intensive primary mineral beneficiation and mining industries. However this has shown a slow down-ward trend between 1993 and 2004.

Coal, as the major indigenous energy resource, is relied on for the generation of most of the country's electricity and a significant proportion of its liquid fuels. Diversification of the primary energy mix, which comprises about 65.9% coal, is especially challenging. South Africa has an abundance of low-cost coal, which means that reliable and inexpensive supplies are at hand.

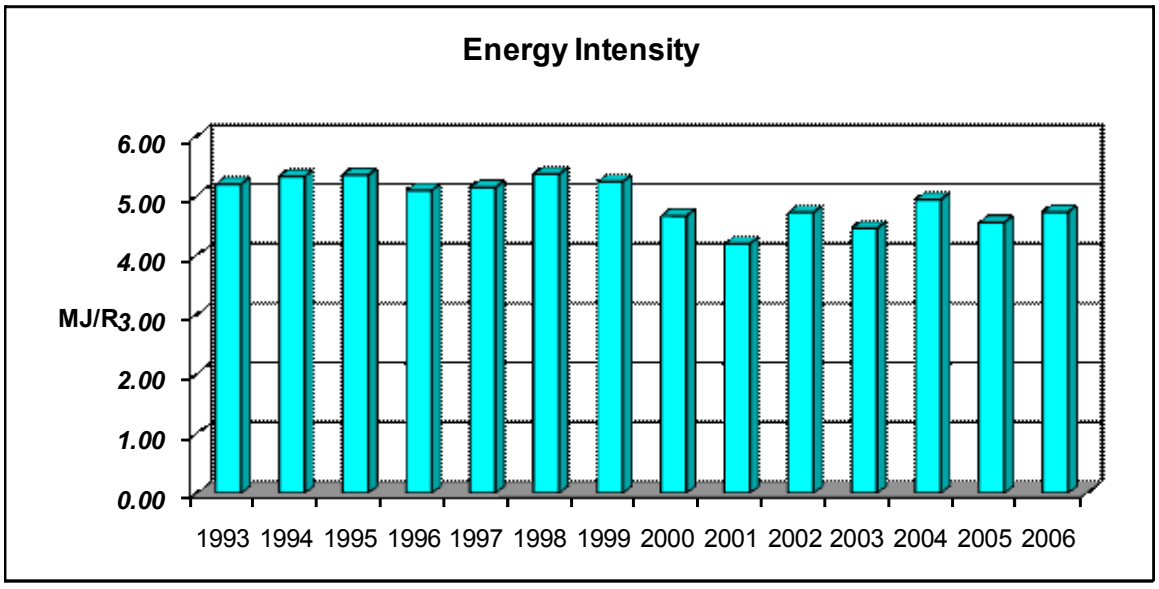
4 http://www.eia.doe.gov/emeu/cabs/South_Africa/pdf.pdf

Table 1.6: Energy intensity: 1993-2006

Year	GDP at market prices	Primary Energy Supply TJ	Intensity MJ/R
1993	755 009	3 924 315	5.20
1994	779 424	4 150 999	5.33
1995	803 710	4 299 195	5.35
1996	838 326	4 269 622	5.09
1997	860 516	4 423 365	5.14
1998	864 968	4 639 614	5.36
1999	885 365	4 636 914	5.24
2000	922 148	4 298 220	4.66
2001	947 373	3 972 681	4.19
2002	982 122	4 637 437	4.72
2003	1 012 763	4 507 518	4.45
2004	1 061 769	5 240 908	4.94
2005	1 115 875	5 078 962	4.55
2006	1 171 507	5 536 070	4.73

Sources: National Energy Balances
Stats SA Quartely GDP by industry at constant 2000 prices (R million)

Graph 1.6: Energy Intensity: 1993-2006



Section 2

Energy Balances

The energy balance is a useful way to present an overview of the energy flows for a specific time period. A balance shows, in a consistent accounting framework, the production, transformation and final consumption of all forms of energy for a given geographical area and a given period of time, with quantities expressed in terms of a single accounting unit for purposes of comparison and aggregation. The format enjoying international recognition is that developed by the International Energy Agency (IEA). Therefore the DoE uses the IEA format for its Energy Balances. The 2005 and 2006 Energy Balances uses Terajoule (TJ) as the accounting unit and these are presented on the following pages.

Interested readers are referred to the IEA website (http://www.iea.org) for details on the methodologies and conventions used in Energy Balance format.

ENERGY BALANCE - 2005 (Aggregated, Energy Units) Page 1

(TERAJOULES)	Coal	Crude Oil	Petroleum Products	Gas	Nuclear
Indigenous Production	5 793 803	282 359	-	107 694	123 193
Import	57 616	772 180	102 500	45 383	-
Export	-2 001 951	-219	-318 397	-	-
Intl. Marine Bunkers	-	-	-113 649	-	-
Stock Changes	-197 741	-	-	-	-
Total Primary Energy Supply	**3 651 726**	**1 054 319**	**-329 545**	**153 078**	**123 193**
Transfers	-	-	-	-	-
Statistical Differences	179 863	-282 359	21 194	-	-
Public Electricity Plant	-2 113 751	-	-	-	-123 193
Autoproducer Electricity Plant	-28 281	-	-	-	-
Public CHP Plant	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-
Public Heat Plant	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-
Heat pumps	-	-	-	-	-
Electric boilers	-	-	-	-	-
Gas Works	-	-	-	16 810	-
Oil Refineries	-	-771 960	1 189 190	-	-
Coal Transformation	-10 926	-	-	-	-
Liquefaction	-907 635	-	-	-82 976	-
Non-specified (Transformation)	-	-	-	-	-
Own Use	-	-	-	-	-
Distribution Losses	-	-	-	-	-
Total Final Consumption	**770 997**	**-**	**880 839**	**86 912**	**-**
Industry Sector	567 121	-	47 890	86 586	-
Iron and Steel	206 818	-	-	21 838	-
Chemical and Petrochemical	61 087	-	-	44 430	-
Memo: Feedst.Use In Petchem.Ind.	*61 087*	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-
Non-Metallic Minerals	58 311	-	-	7 129	-
Transport Equipment	-	-	-	-	-
Machinery	-	-	-	2 127	-
Mining and Quarrying	57 066	-	31 543	2 557	-
Food and Tobacco	-	-	-	1 046	-
Paper Pulp and Print	-	-	-	2 322	-
Wood and Wood Products	-	-	-	-	-
Construction	-	-	16 347	-	-
Textile and Leather	-	-	-	-	-
Non-specified (Industry)	183 838	-	-	5 137	-
Transport Sector	-	-	690 982	-	-
International Civil Aviation	-	-	31 739	-	-
Domestic Air Transport	-	-	43 832	-	-
Road	-	-	612 495	-	-
Rail	-	-	2 918	-	-
Pipeline Transport	-	-	-	-	-
Internal Navigation	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-
Other Sectors	203 876	-	122 296	326	-
Agriculture	379	-	51 284	-	-
Commerce and Public Services	67 671	-	31 592	326	-
Residential	135 343	-	39 420	-	-
Non-specified (Other)	483	-	-	-	-
Non-Energy Use	-	-	19 670	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	19 670	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-
Elect.Output in GWh	214 533	-	-	86	11 293
Elect.Output-public elec. plant	206 606	-	-	78	11 293
Elect.Output-autoprod. elec. plant	7 928	-	-	8	-
Elect.Output-public CHP plant	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-

ENERGY BALANCE - 2005 (Aggregated, Energy Units) Page 2

(TERAJOULES)	Hydro	Geothermal Solar etc	Renewables & Waste	Electricity	Heat	Total
Indigenous Production	4 199	2 031	428 396	-	-	6 741 675
Import	-	-	-	39 884	-	1 017 563
Export	-	-	-	-48 319	-	-2 368 887
Intl. Marine Bunkers	-	-	-	-	-	-113 649
Stock Changes	-	-	-	-	-	-197 741
Total Primary Energy Supply	**4 199**	**2 031**	**428 396**	**-8 435**	**-**	**5 078 962**
Transfers	-	-	-	-	-	-
Statistical Differences	-	-	-	14 972 883	-	14 891 582
Public Electricity Plant	-3 513	-2 031	-	790 259	-	-1 452 228
Autoproducer Electricity Plant	-687	-	-	29 254	-	287
Public CHP Plant	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-237 996	692	-	-237 304
Public Heat Plant	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-
Electric boilers	-	-	-	-	-	-
Gas Works	-	-	-	-	-	16 810
Oil Refineries	-	-	-	-28 234	-	388 995
Coal Transformation	-	-	-	-	-	-10 926
Liquefaction	-	-	-	-	-	-990 611
Non-specified (Transformation)	-	-	-	-	-	-
Own Use	-	-	-	-14 975 539	-	-14 975 539
Distribution Losses	-	-	-	-8 809	-	-8 809
Total Final Consumption	**-**	**-**	**190 400**	**772 072**	**-**	**2 701 220**
Industry Sector	-	-	-	406 902	-	1 108 500
Iron and Steel	-	-	-	76 831	-	305 487
Chemical and Petrochemical	-	-	-	36 292	-	141 809
Memo: Feedst.Use In Petchem.Ind.	-	-	-	-	-	*61 087*
Non-Ferrous Metals	-	-	-	67 104	-	67 104
Non-Metallic Minerals	-	-	-	9 377	-	74 818
Transport Equipment	-	-	-	332	-	332
Machinery	-	-	-	150	-	2 278
Mining and Quarrying	-	-	-	113 425	-	204 592
Food and Tobacco	-	-	-	2 738	-	3 783
Paper Pulp and Print	-	-	-	6 313	-	8 635
Wood and Wood Products	-	-	-	1 068	-	1 068
Construction	-	-	-	188	-	16 535
Textile and Leather	-	-	-	1 868	-	1 868
Non-specified (Industry)	-	-	-	91 215	-	280 190
Transport Sector	-	-	-	19 961	-	710 943
International Civil Aviation	-	-	-	-	-	31 739
Domestic Air Transport	-	-	-	180	-	44 012
Road	-	-	-	69	-	612 564
Rail	-	-	-	11 808	-	14 726
Pipeline Transport	-	-	-	284	-	284
Internal Navigation	-	-	-	181	-	181
Non-specified (Transport)	-	-	-	7 439	-	7 439
Other Sectors	-	-	190 400	345 209	-	862 107
Agriculture	-	-	-	19 871	-	71 534
Commerce and Public Services	-	-	-	97 572	-	197 161
Residential	-	-	190 400	133 093	-	498 256
Non-specified (Other)	-	-	-	94 673	-	95 156
Non-Energy Use	-	-	-	-	-	19 670
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	19 670
Memo:Non-Energy Use in Transport	-	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-	-
Elect.Output in GWh	1 166	564	192	-	-	227 835
Elect.Output-public elec. plant	976	564	-	-	-	219 517
Elect.Output-autoprod. elec. plant	191	-	-	-	-	8 126
Elect.Output-public CHP plant	-	-	-	-	-	-

ENERGY BALANCE - 2006 (Aggregated, Energy Units) Page 1

(TERAJOULES)	Coal	Crude Oil	Petroleum Products	Gas	Nuclear
Indigenous Production	5 788 411	308 604	-	108 116	109 375
Import	57 428	926 356	132 292	52 202	-
Export	-1 926 942	-20 838	-124 100	-	-
Intl. Marine Bunkers	-	-	-107 515	-	-
Stock Changes	-197 741	-	-	-	-
Total Primary Energy Supply	**3 721 156**	**1 214 122**	**-99 323**	**160 318**	**109 375**
Transfers	-	-	-	-	-
Statistical Differences	160 997	-308 604	18 485	-	-
Public Electricity Plant	-2 155 477	-	-	-	-109 375
Autoproducer Electricity Plant	-39 627	-	-	-	-
Public CHP Plant	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-
Public Heat Plant	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-
Heat pumps	-	-	-	-	-
Electric boilers	-	-	-	-	-
Gas Works	-	-	-	17 681	-
Oil Refineries	-	-905 518	991 731	-	-
Coal Transformation	989	-	-	-	-
Liquefaction	-958 308	-	-	-72 314	-
Non-specified (Transformation)	-	-	-	-	-
Own Use	-	-	-	-	-
Distribution Losses	-	-	-	-	-
Total Final Consumption	**729 730**	-	**910 893**	**105 685**	**-**
Industry Sector	499 964	-	47 793	104 820	-
Iron and Steel	194 617	-	-	21 976	-
Chemical and Petrochemical	52 211	-	-	59 122	-
Memo: Feedst.Use In Petchem.Ind.	*52 211*	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-
Non-Metallic Minerals	27 617	-	-	7 869	-
Transport Equipment	-	-	-	-	-
Machinery	-	-	-	2 329	-
Mining and Quarrying	53 282	-	32 070	2 900	-
Food and Tobacco	-	-	-	1 397	-
Paper Pulp and Print	-	-	-	3 121	-
Wood and Wood Products	-	-	-	-	-
Construction	-	-	15 723	-	-
Textile and Leather	-	-	-	-	-
Non-specified (Industry)	172 236	-	-	6 108	-
Transport Sector	-	-	712 795	-	-
International Civil Aviation	-	-	35 178	-	-
Domestic Air Transport	-	-	43 510	-	-
Road	-	-	631 227	-	-
Rail	-	-	2 880	-	-
Pipeline Transport	-	-	-	-	-
Internal Navigation	-	-	-	-	-
Non-specified (Transport)	-	-	-		
Other Sectors	229 766	-	130 575	864	-
Agriculture	763	-	48 498	-	-
Commerce and Public Services	76 302	-	30 422	864	-
Residential	152 604	-	38 871	-	-
Non-specified (Other)	98	-	12 784	-	-
Non-Energy Use	-	-	19 730	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	19 730	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-
Elect.Output in GWh	220 991	-	-	-	10 026
Elect.Output-public elec. plant	214 328	-	-	-	10 026
Elect.Output-autoprod. elec. plant	6 663	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-
Heat Output-public CHP plant	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-
Heat Output in TJ	-	-	-	-	-

ENERGY BALANCE - 2006 (Aggregated, Energy Units) Page 2

(TERAJOULES)	Hydro	Geothermal Solar etc	Renewables & Waste	Electricity	Heat	Total
Indigenous Production	11 069	2 031	428 396	-	-	6 756 001
Import	-	-	-	38 246	-	1 206 524
Export	-	-	-	-48 920	-	-2 120 800
Intl. Marine Bunkers	-	-	-	-	-	-107 515
Stock Changes	-	-	-	-	-	-197 741
Total Primary Energy Supply	**11 069**	**2 031**	**428 396**	**-10 674**	-	**5 536 470**
Transfers	-	-	-	-	-	-
Statistical Differences	-	-	-	14 753 039	-	14 623 918
Public Electricity Plant	-10 430	-2 031	-	820 135	-	-1 457 177
Autoproducer Electricity Plant	-639	-	-	24 626	-	-15 640
Public CHP Plant	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-237 996	734	-	-237 262
Public Heat Plant	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-
Electric boilers	-	-	-	-	-	-
Gas Works	-	-	-	-	-	17 681
Oil Refineries	-	-	-	-29 226	-	56 986
Coal Transformation	-	-	-	-	-	989
Liquefaction	-	-	-	-	-	-1 030 622
Non-specified (Transformation)	-	-	-	-	-	-
Own Use	-	-	-	-14 756 361	-	-14 756 361
						-
Distribution Losses	-	-	-	-33 646	-	-33 646
Total Final Consumption	**-**	**-**	**190 400**	**768 628**	-	**2 705 336**
Industry Sector	-	-	-	419 871	-	1 072 449
Iron and Steel	-	-	-	76 832	-	293 426
Chemical and Petrochemical	-	-	-	36 292	-	147 625
Memo: Feedst.Use In Petchem.Ind.	-	-	-	-	-	*52 211*
Non-Ferrous Metals	-	-	-	67 106	-	67 106
Non-Metallic Minerals	-	-	-	9 381	-	44 867
Transport Equipment	-	-	-	329	-	329
Machinery	-	-	-	150	-	2 479
Mining and Quarrying	-	-	-	113 412	-	201 665
Food and Tobacco	-	-	-	2 738	-	4 135
Paper Pulp and Print	-	-	-	6 321	-	9 441
Wood and Wood Products	-	-	-	1 069	-	1 069
Construction	-	-	-	194	-	15 917
Textile and Leather	-	-	-	1 868	-	1 868
Non-specified (Industry)	-	-	-	104 178	-	282 522
Transport Sector	-	-	-	12 527	-	725 322
International Civil Aviation	-	-	-	-	-	35 178
Domestic Air Transport	-	-	-	180	-	43 690
Road	-	-	-	71	-	631 298
Rail	-	-	-	11 810	-	14 689
Pipeline Transport	-	-	-	284	-	284
Internal Navigation	-	-	-	181	-	181
Non-specified (Transport)			-	1	-	1
Other Sectors	-	-	190 400	336 230	-	887 836
Agriculture	-	-	-	21 029	-	70 291
Commerce and Public Services	-	-	-	103 798	-	211 386
Residential	-	-	190 400	142 815	-	524 690
Non-specified (Other)	-	-	-	68 587	-	81 469
						-
Non-Energy Use	-	-	-	-	-	19 730
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	19 730
Memo:Non-Energy Use in Transport	-	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-	-
Elect.Output in GWh	3 075	564	204	-	-	234 860
Elect.Output-public elec. plant	2 897	564	-	-	-	227 815
Elect.Output-autoprod. elec. plant	178	-	-	-	-	6 841
Elect.Output-public CHP plant	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	204	-	-	204
		-				
Heat Output-public CHP plant	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-
Heat Output in TJ	-	3 160	-	-	-	-

Section 3

National Energy Consumption

The Energy Balances on the previous pages combine in one document all the various fuels as measured in energy units (terajoules). However, it is also of value to present these energy balances in units that the various fuels are normally measured. The following tables provide this information for 2005 and 2006.

ENERGY BALANCE - 2005 (Disaggregated, Natural Units) - Page 1/3

Supply & Consumption	Hard Coal tons	Coking Coal tons	Bituminous Coal tons	Coke oven coke tons	Gasworks Gas TJ	Coke oven Gas TJ	Blast Furnace Gas TJ	Solid Biomass TJ	Natural Gas TJ	Crude + NGLs + Feedstocks tons
Indigenous Production	244 985 995	1 639 676	243 346 319	1 904 805	-	-	31 137	428 396	82 976	170 932
From Other Sources	-	-	-	-	16 810	-	-	-	24 718	4 232 926
Import	1 858 565	1 858 565	-	-	-	-	-	-	45 383	18 100 795
Export	-71 442 092	-524 305	-70 917 787	-	-	-	-	-	-	-5 144
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-	-
Stock Changes	-7 323 738	-	-7 323 738	-	-	-	-	-	-	-
Domestic Supply	**168 078 730**	**2 973 936**	**165 104 794**	**1 904 805**	**16 810**	**-**	**31 137**	**428 396**	**153 078**	**22 499 508**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	-8 026 615	-458 036	-7 568 579	-	-70 102	-	-	-	70 102	6 349 389
	-	-	-	-	-	-	-	-	-	-
Transformation Sector	**150 370 289**	**2 716 603**	**147 653 686**	**393 983**	**-**	**-**	**-**	**237 996**	**82 976**	**16 150 119**
Public Electricity Plant	105 161 727	-	105 161 727	-	-	-	-	-	-	-
Autoproducer Electricity Plant	1 047 426	-	1 047 426	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	237 996	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	2 716 603	2 716 603	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	393 983	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	**16 150 119**
Liquefaction	41 444 533	-	41 444 533	-	-	-	-	-	82 976	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mines	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	-
Final Consumption	**25 735 056**	**715 369**	**25 019 687**	**1 510 822**	**86 912**	**-**	**31 137**	**190 400**	**-**	**-**
Industry Sector	**18 208 359**	**551 533**	**17 656 826**	**1 510 822**	**86 586**	**-**	**31 137**	**-**	**-**	**-**
Iron and Steel	4 903 700	282 292	4 621 408	1 510 822	21 838	-	31 137	-	-	-
Chemical and Petrochemical	2 253 956	57 610	2 196 346	-	44 430	-	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	-
Non-Metallic Minerals	2 129 393	204 456	1 924 937	-	7 129	-	-	-	-	-
Transport Equipment	-	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	2 127	-	-	-	-	-
Mining and Quarrying	2 113 424	971	2 112 453	-	2 557	-	-	-	-	-
Food and Tobacco	-	-	-	-	1 046	-	-	-	-	-
Paper Pulp and Print	-	-	-	-	2 322	-	-	-	-	-
Wood and Wood Products	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Textile and Leather	-	-	-	-	-	-	-	-	-	-
Non-specified (Industry)	6 807 886	6 204	6 801 682	-	5 137	-	-	-	-	-
Transport Sector	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
International Civil Aviation	-	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	-	-	-	-	-	-
Road	-	-	-	-	-	-	-	-	-	-
Rail	-	-	-	-	-	-	-	-	-	-
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	-
Other Sectors	**7 526 697**	**163 836**	**7 362 861**	**-**	**326**	**-**	**-**	**190 400**	**-**	**-**
Agriculture	14 021	-	14 021	-	-	-	-	-	-	-
Commerce and Public Services	2 498 261	54 612	2 443 649	-	326	-	-	-	-	-
Residential	4 996 522	109 224	4 887 298	-	-	-	-	190 400	-	-
Non-specified (Other)	17 893	-	17 893	-	-	-	-	-	-	-
Non-Energy Use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	2 253 956	57 610	2 196 346	-	-	-	-	-	-	-
Elect.Output in GWh	**214 533**	**-**	**214 533**	**-**	**-**	**-**	**-**	**192**	**86**	**-**
Elect.Output-public elec. plant	206 606	-	206 606	-	-	-	-	-	78	-
Elect.Output-autoprod. elec. plant	7 928	-	7 928	-	-	-	-	-	8	-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	192	-	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-	-

Data Source: Department of Minerals and Energy
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2005 (Disaggregated, Natural Units) - Page2/3

Supply & Consumption	Crude Oil	Natural Gas Liquids	Non-Conventional Crude	LPG	Petrol	Avgas	Jet Fuel	Other Kerosene	Diesel	Residual Fuel
	tons	tons	tons	kl	kl	kl	kl	kl	kl	kl
Indigenous Production	-	170 932	-	549 952	10 882 675	24 172	2 324 995	773 283	10 986 374	5 128 241
From Other Sources	-	-	4 232 926	-	-	-	-	-	-	-
Import	18 100 795	-	-	214	1 045 235	11 467	123 623	54	873 509	98 777
Export	-5 144	-	-	-167	-764 046	-11 971	-268 794	-11 322	-3 428 551	-2 305 037
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-326 211	-2 433 174
Stock Changes	-	-	-	-	-	-	-	-	-	-
Domestic Supply	**18 095 650**	**170 932**	**4 232 926**	**549 999**	**11 163 864**	**23 668**	**2 179 824**	**762 015**	**8 105 121**	**488 807**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	6 349 389	-	-	0	-	-	0	0
	-	-	-	-	-	-	-	-	-	-
Transformation Sector	**18 095 650**	**170 932**	**-2 116 463**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Public Electricity Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	18 095 650	170 932	-2 116 463	-	-	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mines	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	-
Final Consumption	**-**	**-**	**-**	**549 999**	**11 163 864**	**23 668**	**2 179 824**	**762 015**	**8 105 121**	**488 807**
Industry Sector	**-**	**-**	**-**	**13 534**	**23 297**	**-**	**-**	**17 580**	**967 014**	**4 187**
Iron and Steel	-	-	-	-	-	-	-	-	-	-
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	-
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-	-
Transport Equipment	-	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-	-	-
Mining and Quarrying	-	-	-	6 858	15 416	-	-	14 014	742 716	1 803
Food and Tobacco	-	-	-	-	-	-	-	-	-	-
Paper Pulp and Print	-	-	-	-	-	-	-	-	-	-
Wood and Wood Products	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	6 676	7 881	-	-	3 567	224 298	2 384
Textile and Leather	-	-	-	-	-	-	-	-	-	-
Non-specified (Industry)	-	-	-	-	-	-	-	-	-	-
Transport Sector	**-**	**-**	**-**	**-**	**10 953 062**	**23 668**	**2 179 824**	**8 211**	**6 012 749**	**2 876**
International Civil Aviation	-	-	-	-	-	-	925 325	-	-	-
Domestic Air Transport	-	-	-	-	-	23 668	1 254 498	-	-	-
Road	-	-	-	-	10 953 060	-	-	8 084	5 940 007	2 876
Rail	-	-	-	-	2	-	-	127	72 741	-
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	-
Other Sectors	**-**	**-**	**-**	**536 465**	**187 505**	**-**	**-**	**736 223**	**1 125 358**	**481 744**
Agriculture	-	-	-	55	155 281	-	-	77 837	1 051 298	48 478
Commerce and Public Services	-	-	-	83 241	7 762	-	-	2 506	22 099	432 745
Residential	-	-	-	453 169	24 463	-	-	655 881	51 961	522
Non-specified (Other)	-	-	-	-	-	-	-	-	-	-
Non-Energy Use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Elect.Output-public elec. plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-	-

Data Source: Department of Minerals and Energy
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2005 (Disaggregated, Natural Units) - Page 3/3

Supply & Consumption	White Spirit	Lubricants	Bitumen	Parrafin Wax	Other Petroleum products	Nuclear	Hydro	Solar	Wind	Electricity
	kl	tons	tons	tons	tons	GWh	GWh	GWh	GWh	MWh
Indigenous Production	98 694	564 334	802 122	57 841	11 181	34 220	4 199	1 043 000	32	230 867 400
From Other Sources	-	-	-	-	-	-	-	-	-	-
Import	891	119 178	360	38 045	-	-	-	-	-	11 079 000
Export	-2 694	-291 106	-510 055	-87 174	-	-	-	-	-	-13 422 000
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-	-
Stock Changes	-	-	-	-	-	-	-	-	-	-
Domestic Supply	**96 891**	**392 406**	**292 428**	**8 712**	**11 181**	**34 220**	**4 199**	**1 043 000**	**32**	**228 524 400**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	0	-	-	-	-	-	-	-4 846 353
	-	-	-	-	-	-	-	-	-	-
Transformation Sector	**-**	**-**	**-**	**-**	**-**	**34 220**	**4 199**	**-**	**32**	**4 453 229**
Public Electricity Plant	-	-	-	-	-	34 220	4 008	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	191	-	32	4 453 229
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12 006 155**
Coal Mines	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	7 842 900
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	351
Used for Pump Storage	-	-	-	-	-	-	-	-	-	4 162 904
Nuclear Industry	-	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	2 447 000
Final Consumption	**96 891**	**392 406**	**292 428**	**8 712**	**11 181**	**-**	**-**	**1 043 000**	**-**	**214 464 369**
Industry Sector	**615**	**54 312**	**170 517**	**40**	**1**	**-**	**-**	**-**	**-**	**113 028 378**
Iron and Steel	-	-	-	-	-	-	-	-	-	21 341 990
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-	10 081 160
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	18 640 120
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-	2 604 680
Transport Equipment	-	-	-	-	-	-	-	-	-	92 350
Machinery	-	-	-	-	-	-	-	-	-	41 800
Mining and Quarrying	600	47 713	-	-	0	-	-	-	-	31 506 930
Food and Tobacco	-	-	-	-	-	-	-	-	-	760 440
Paper Pulp and Print	-	-	-	-	-	-	-	-	-	1 753 580
Wood and Wood Products	-	-	-	-	-	-	-	-	-	296 580
Construction	15	6 600	170 517	40	0	-	-	-	-	52 350
Textile and Leather	-	-	-	-	-	-	-	-	-	518 960
Non-specified (Industry)	-	-	-	-	-	-	-	-	-	25 337 438
Transport Sector	**91**	**281 210**	**-**	**-**	**0**	**-**	**-**	**-**	**-**	**5 544 622**
International Civil Aviation	-	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	-	-	-	-	-	49 970
Road	83	277 701	-	-	0	-	-	-	-	19 210
Rail	8	3 509	-	-	0	-	-	-	-	3 279 980
Pipeline Transport	-	-	-	-	-	-	-	-	-	78 890
Internal Navigation	-	-	-	-	-	-	-	-	-	50 220
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	2 066 352
Other Sectors	**96 185**	**56 884**	**121 911**	**8 672**	**11 180**	**-**	**-**	**1 043 000**	**-**	**95 891 369**
Agriculture	4 173	21 225	-	-	0	-	-	-	-	5 519 706
Commerce and Public Services	92 012	35 659	116 560	8 672	11 180	-	-	-	-	27 103 280
Residential	-	-	5 351	-	0	-	-	1 043 000	-	36 970 239
Non-specified (Other)	-	-	-	-	-	-	-	-	-	26 298 144
Non-Energy Use	**96 891**	**392 406**	**-**	**-**	**11 181**	**-**	**-**	**-**	**-**	**-**
Memo:Non-Energy Use Ind/Transf/Ener	96 891	392 406	-	-	11 181	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	**-**	**-**	**-**	**-**	**-**	**11 293**	**4 199**	**532**	**32**	**230 867**
Elect.Output-public elec. plant	-	-	-	-	-	11 293	4 008	532	32	222 549
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	191	-	-	8 126
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	-	192
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-	-

Data Source: Department of Minerals and Energy
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2006 (Disaggregated, Natural Units) - Page 1/3

Supply & Consumption	Hard Coal	Coking Coal	Bituminous Coal	Coke oven coke	Gasworks Gas	Coke oven Gas	Blast Furnace Gas	Solid Biomass	Natural Gas	Crude + NGLs + Feedstocks
	tons	tons	tons	tons	TJ	TJ	TJ	TJ	TJ	tons
Indigenous Production	244 774 833	1 584 424	243 190 409	2 144 222	-	-	19 054	428 396	72 314	145 644
From Other Sources	-	-	-	-	17 681	-	-	-	35 802	4 626 370
Import	1 852 520	1 852 520	-	-	-	-	-	-	52 202	21 714 869
Export	-68 747 339	-672 065	-68 075 274	-	-	-	-	-	-	-488 468
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-	-
Stock Changes	-7 323 738	-	-7 323 738	-	-	-	-	-	-	-
Domestic Supply	**170 556 276**	**2 764 879**	**167 791 397**	**2 144 222**	**17 681**	-	**19 054**	**428 396**	**160 318**	**25 998 416**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	-8 573 386	-252 325	-8 321 061	-	-88 004	-	-	-	88 004	9 252 740
Transformation Sector	**154 667 409**	**2 203 732**	**152 463 677**	**343 133**	-	-	-	**237 996**	**72 314**	**16 745 676**
Public Electricity Plant	107 237 639	-	107 237 639	-	-	-	-	-	-	-
Autoproducer Electricity Plant	1 467 678	-	1 467 678	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	237 996	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	2 203 732	2 203 732	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	343 133	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	**16 745 676**
Liquefaction	43 758 360	-	43 758 360	-	-	-	-	-	72 314	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	-	-
Coal Mines	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	-
Final Consumption	**24 462 253**	**813 472**	**23 648 781**	**1 801 089**	**105 685**	-	**15 745**	**190 400**	-	-
Industry Sector	**15 974 088**	**667 031**	**15 307 057**	**1 801 089**	**104 820**	-	**15 745**	-	-	-
Iron and Steel	4 710 119	362 165	4 347 954	1 801 089	21 976	-	15 745	-	-	-
Chemical and Petrochemical	1 927 182	44 149	1 883 033	-	59 122	-	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	-
Non-Metallic Minerals	987 720	237 255	750 465	-	7 869	-	-	-	-	-
Transport Equipment	-	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	2 329	-	-	-	-	-
Mining and Quarrying	1 973 421	-	1 973 421	-	2 900	-	-	-	-	-
Food and Tobacco	-	-	-	-	1 397	-	-	-	-	-
Paper Pulp and Print	-	-	-	-	3 121	-	-	-	-	-
Wood and Wood Products	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Textile and Leather	-	-	-	-	-	-	-	-	-	-
Non-specified (Industry)	6 375 646	23 462	6 352 184	-	6 108	-	-	-	-	-
Transport Sector	-	-	-	-	-	-	-	-	-	-
International Civil Aviation	-	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	-	-	-	-	-	-
Road	-	-	-	-	-	-	-	-	-	-
Rail	-	-	-	-	-	-	-	-	-	-
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	-
Other Sectors	**8 488 165**	**146 441**	**8 341 724**	-	**864**	-	-	**190 400**	-	-
Agriculture	28 269	-	28 269	-	-	-	-	-	-	-
Commerce and Public Services	2 818 759	48 814	2 769 946	-	864	-	-	-	-	-
Residential	5 637 519	97 627	5 539 891	-	-	-	-	190 400	-	-
Non-specified (Other)	3 618	-	3 618	-	-	-	-	-	-	-
Non-Energy Use	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	1 927 182	44 149	1 883 033	-	-	-	-	-	-	-
Elect.Output in GWh	**220 991**	-	**220 991**	-	-	-	-	**204** -		-
Elect.Output-public elec. plant	214 328	-	214 328	-	-	-	-	- -		-
Elect.Output-autoprod. elec. plant	6 663	-	6 663	-	-	-	-	- -		-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	204	-	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-	-

Data Source: Department of Minerals and Energy
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2006 (Disaggregated, Natural Units) - Page2/3

Supply & Consumption	Crude Oil	Natural Gas Liquids	Non-Conventional Crude	LPG	Petrol	Avgas	Jet Fuel	Other Kerosene	Diesel	Residual Fuel
	tons	tons	tons	kl	kl	kl	kl	kl	kl	kl
Indigenous Production	-	145 644	-	517 726	10 954 815	-12 505	2 141 200	743 862	7 457 922	4 208 531
From Other Sources	-	-	4 626 370	-	-	-	-	-	-	-
Import	21 714 869	-	-	3 938	438 209	41 130	271 759	50	1 964 411	101 115
Export	-488 468	-	-	-20 597	-103 767	-6 656	-140 570	-5 562	-754 241	-1 487 677
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-260 414	-2 345 982
Stock Changes	-	-	-	-	-	-	-	-	-	-
Domestic Supply	**21 226 402**	**145 644**	**4 626 370**	**501 067**	**11 289 256**	**21 969**	**2 272 389**	**738 349**	**8 407 678**	**475 987**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	9 252 740	-	-	0	-	-	-	0
Transformation Sector	**21 226 402**	**145 644**	**-4 626 370**	-	-	-	-	-	-	-
Public Electricity Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	21 226 402	145 644	-4 626 370	-	-	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	-	-
Coal Mines	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	-
Final Consumption	-	-	-	**501 067**	**11 289 256**	**21 969**	**2 272 389**	**738 349**	**8 407 678**	**475 987**
Industry Sector	-	-	-	**145**	**15 473**	-	-	**16 184**	**945 275**	**4 015**
Iron and Steel	-	-	-	-	-	-	-	-	-	-
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	-
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-	-
Transport Equipment	-	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-	-	-
Mining and Quarrying	-	-	-	2	13 589	-	-	13 419	738 823	1 857
Food and Tobacco	-	-	-	-	-	-	-	-	-	-
Paper Pulp and Print	-	-	-	-	-	-	-	-	-	-
Wood and Wood Products	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	142	1 884	-	-	2 765	206 452	2 157
Textile and Leather	-	-	-	-	-	-	-	-	-	-
Non-specified (Industry)	-	-	-	-	-	-	-	-	-	-
Transport Sector	-	-	-	-	**11 102 021**	**21 969**	**2 272 389**	**7 353**	**6 366 748**	**2 463**
International Civil Aviation	-	-	-	-	-	-	1 025 599	-	-	-
Domestic Air Transport	-	-	-	-	-	21 969	1 246 790	-	-	-
Road	-	-	-	-	11 102 013	-	-	7 329	6 294 170	2 463
Rail	-	-	-	-	8	-	-	24	72 578	-
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	-
Other Sectors	-	-	-	**500 922**	**171 762**	-	-	**714 812**	**1 095 655**	**469 509**
Agriculture	-	-	-	51	145 152	-	-	67 832	1 003 310	42 399
Commerce and Public Services	-	-	-	-	6 933	-	-	27 225	45 722	427 082
Residential	-	-	-	500 871	19 677	-	-	619 755	46 622	28
Non-specified (Other)	-	-	-	-	-	-	-	-	-	-
Non-Energy Use	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	-	-	-	-	-	-	-	-	-	-
Elect.Output-public elec. plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-	-

Data Source: Department of Minerals and Energy
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2006 (Disaggregated, Natural Units) - Page 3/3

Supply & Consumption	White Spirit	Lubricants	Bitumen	Parrafin Wax	Other Petroleum products	Nuclear	Hydro	Solar	Wind	Electricity
	kl	tons	tons	tons	tons	GWh	GWh	GWh	GWh	MWh
Indigenous Production	120 221	310 450	519 118	103 399	42 896	30 382	5 845	1 043 000	32	237 629 854
From Other Sources	-	-	-	-	-	-	-	-	-	-
Import	5 349	210 990	159	29 190	436 697	-	-	-	-	10 624 000
Export	-19 750	-105 424	-222 168	-105 454	-147 309	-	-	-	-	-13 589 000
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-	-
Stock Changes	-	-	-	-	-	-	-	-	-	-
Domestic Supply	**105 821**	**416 016**	**297 110**	**27 136**	**332 284**	**30 382**	**5 845**	**1 043 000**	**32**	**234 664 854**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	0	31 045	-20 765	20 680	1 285	-	-	-	-	-4 289 346
Transformation Sector	-	-	-	-	-	**30 382**	**5 845**	-	**32**	**3 880 222**
Public Electricity Plant	-	-	-	-	-	30 382	5 667	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	178	-	32	3 880 222
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	-	**12 220 186**
Coal Mines	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	8 118 427
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-	4 101 759
Nuclear Industry	-	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	9 346 000
Final Consumption	**105 821**	**384 971**	**317 875**	**6 456**	**331 000**	-	-	**1 043 000**	-	**213 507 792**
Industry Sector	**688**	**77 503**	**182 434**	**53**	**0**	-	-	-	-	**116 630 874**
Iron and Steel	-	-	-	-	-	-	-	-	-	21 342 320
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-	10 081 220
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	18 640 440
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-	2 605 740
Transport Equipment	-	-	-	-	-	-	-	-	-	91 490
Machinery	-	-	-	-	-	-	-	-	-	41 680
Mining and Quarrying	678	71 026	-	-	-	-	-	-	-	31 503 470
Food and Tobacco	-	-	-	-	-	-	-	-	-	760 670
Paper Pulp and Print	-	-	-	-	-	-	-	-	-	1 755 710
Wood and Wood Products	-	-	-	-	-	-	-	-	-	296 890
Construction	10	6 477	182 434	53	0	-	-	-	-	53 980
Textile and Leather	-	-	-	-	-	-	-	-	-	518 950
Non-specified (Industry)	-	-	-	-	-	-	-	-	-	28 938 314
Transport Sector	**80**	**285 250**	-	-	**0**	-	-	-	-	**3 479 710**
International Civil Aviation	-	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	-	-	-	-	-	50 050
Road	73	282 440	-	-	0	-	-	-	-	19 740
Rail	7	2 810	-	-	0	-	-	-	-	3 280 420
Pipeline Transport	-	-	-	-	-	-	-	-	-	78 890
Internal Navigation	-	-	-	-	-	-	-	-	-	50 400
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	210
Other Sectors	**105 052**	**22 218**	**135 441**	**6 403**	**330 999**	-	-	**1 043 000**	-	**93 397 208**
Agriculture	4 640	21 047	-	-	1	-	-	-	-	5 841 498
Commerce and Public Services	100 412	1 169	132 543	6 403	12 990	-	-	-	-	28 832 795
Residential	-	2	2 898	-	-	-	-	1 043 000	-	39 670 915
Non-specified (Other)	-	-	-	-	318 009	-	-	-	-	19 052 000
Non-Energy Use	**105 821**	**384 971**	-	-	**12 991**	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	105 821	384 971	-	-	12 991	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	-	-	-	-	-	**10 026**	**5 845**	**532**	**32**	**237 630**
Elect.Output-public elec. plant	-	-	-	-	-	10 026	5 667	532	32	230 585
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	178	-	-	6 841
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	-	204
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-	-

Data Source: Department of Minerals and Energy
Energy Balance Format: International Energy Agency

Section 4

Coal

Coal dominates South Africa's energy market, reflecting the country's enormous proven reserves. In 2006, coal accounted for about 65.9% of total primary energy (see section1: Total primary energy supply). The primary export markets are the European Union (EU), mainly Germany and Spain, and East Asia, particularly Japan.

Demand: Coal consumption has risen steadily in recent years to meet the energy demands of South Africa's growing economy. Sales on the domestic market increased from 155m tonnes in 2000 to an estimated 175m tonnes in 2006. In 2006 about 61% of coal consumed in South Africa was used by Eskom, the state electricity entity, in its power stations. Sasol consumed around 25% for its refinery activities, and industry and small consumers accounted for the remainder. In terms of supply use, total coal production in 2006 was utilised in electricity generation (44%), export (28%), conversion into oil (18%) and final consumption (11%).

Supply: South Africa has the world's sixth-largest recoverable coal reserves, at approximately 49bn tonnes. The country has 19 official coal fields, but 70% of recoverable reserves lie in just three: Highveld; Waterberg; and Witbank. Coal production was 245m tonnes in 2006, a 9% increase since 2001, which placed South Africa as the fifth-largest coal producer in the world after China, USA, India and Australia. South Africa is the world's fourth-largest net exporter of coal.

The coal-mining industry is highly concentrated, with six companies, Anglo Coal, BHP Billiton, Sasol Mining, Eyesizwe Coal, Kumba Coal, and Xstrata Coal accounting for 90% of coal production.

Export: Export volumes have increased significantly in recent years, from 11.2m tonnes in 2000 to an estimated 61m tonnes in 2008. Europe is by far the most important market, taking around 88% of the total. However, India has become a key market for South African coal in the past three years, as rapid economic growth and industrialisation have led to increased energy demand that cannot be fully met by domestic coal supplies.

Outlook: With such abundant coal reserves it is not surprising that coal, despite its adverse or negative effects on the environment, will remain the main primary source of energy. Coal will provide the bulk of new power in the coming years, despite a much greater focus on renewable energy. However this will create a new set of problems, including a sharp rise in emissions of carbon and other pollutants. Demand for coal is forecast to grow by 2.4% in 2009 and an annual average of 6% from 2010-2013. The short-term slowdown in growth reflects weaker demand in key export markets for power-generation supplies and South African produced goods, and the expected contraction in South African economic output in 2009.

However, the slowdown will be short-lived and South Africa's urgent need for and investment in increased power generation capacity will lead to an increase in demand for coal supply. In particular, Eskom intends to build new coal plants to boost electricity supply capacity over the next five years.

Table 4.1: Coal Utilisation-kt

Coal Utilisation- kt

	2003	%	2004	%	2005	%	2006	%
Export	71 530	29.6%	67 946	27.3%	71 442	28.9%	68 747	27.7%
Electricity Generation	103 073	42.6%	109 974	44.2%	106 209	42.9%	108 705	43.9%
Liquefaction	39 582	16.4%	41 051	16.5%	41 445	16.7%	43 758	17.7%
Other transformation	2 468	1.0%	2 633	1.1%	2 717	1.1%	2 204	0.9%
Final consumption	25 378	10.5%	27 379	11.0%	25 735	10.4%	24 462	9.9%
Total	**242 031**		**248 983**		**247 547**		**247 877**	

Source: National Energy Balances

Graph 4.1: Coal Utilisation: 2006

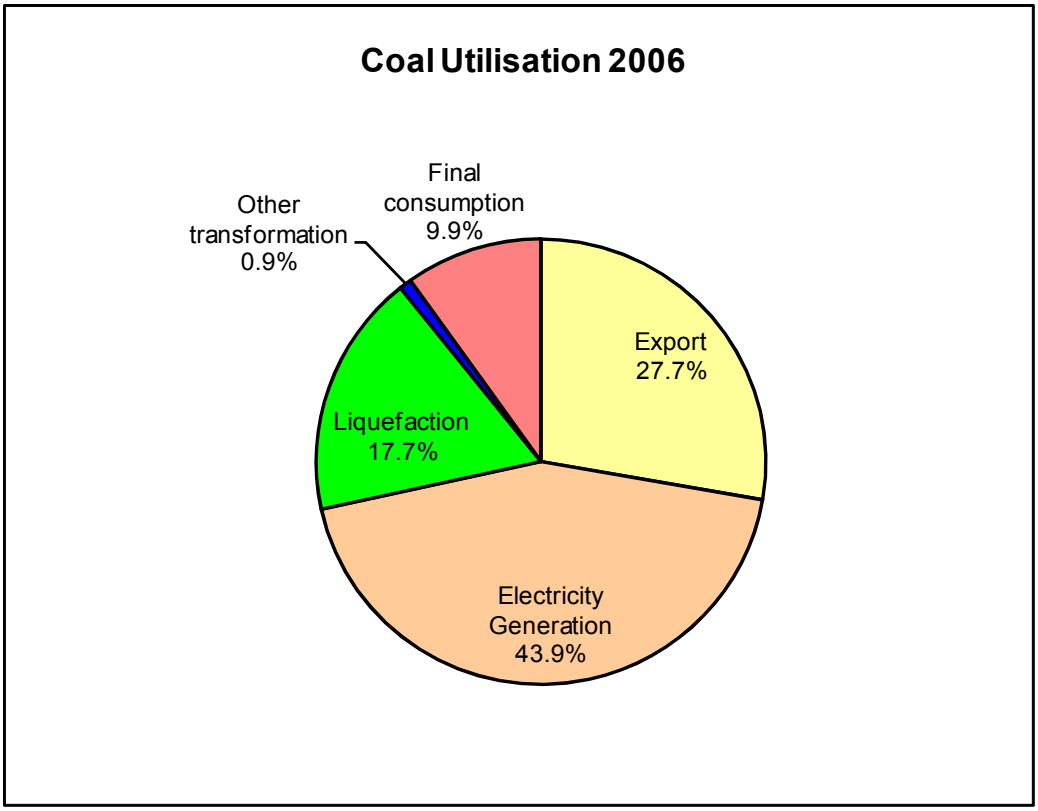


Table 4.2: Production and Export of Coal-mt: 1992-2006

	Production and Exports of Coal-Mt					
	Bituminous		Anthracite		Total	
Year	Production	Exports	Production	Exports	Production	Exports
1992	171.10	47.38	3.32	2.26	174.42	49.64
1993	179.03	50.10	3.25	2.09	182.28	52.19
1994	193.52	52.79	2.22	2.04	195.75	54.84
1995	204.07	57.66	2.14	2.02	206.21	59.68
1996	203.90	58.02	2.47	2.20	206.36	60.22
1997	217.87	63.15	2.00	1.65	219.87	64.80
1998	222.79	64.76	2.04	1.38	224.83	66.13
1999	220.40	63.80	1.87	1.11	222.27	64.91
2000	222.52	68.78	1.62	1.12	224.14	69.91
2001	222.11	68.24	1.46	0.97	223.56	69.21
2002	218.91	68.47	1.30	0.76	220.21	69.23
2003	237.54	70.95	1.21	0.58	238.75	71.53
2004	241.57	67.03	1.25	0.92	242.82	67.95
2005	243.35	70.92	1.64	0.52	244.99	71.44
2006	243.19	68.08	1.58	0.67	244.77	68.75

Sources: Mineral Bureau

Graph 4.2: Coal Production and Exports: 1992-2006

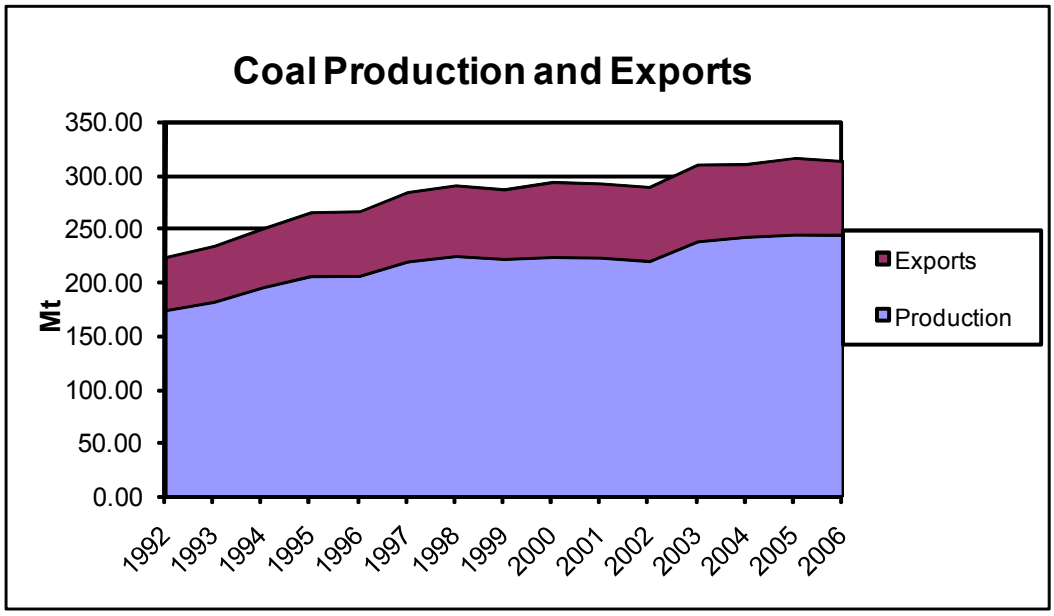


Table 4.3: Primary Supply of Coal-Mt: 1992-2006

Primary Supply of Coal-Mt							
Year	Available	Import	Statistical Differences	Stockpiling	Transformation	Energy Sector	Final Consumption
1992	134.45	0.00	2.49	0.00	112.27	0.00	19.68
1993	136.50	0.00	2.82	0.00	115.15	0.00	18.53
1994	140.97	0.00	5.43	0.00	116.84	0.00	18.70
1995	146.53	0.36	0.00	0.31	123.58	0.00	23.63
1996	146.14	0.43	-0.77	2.84	128.36	0.00	21.81
1997	155.87	0.43	-2.33	-2.45	132.85	0.00	23.33
1998	161.68	1.17	-8.51	-12.22	135.31	0.00	23.82
1999	148.20	0.86	-4.54	-1.68	130.21	0.00	21.72
2000	154.29	1.11	-0.14	1.74	135.53	0.00	21.74
2001	154.35	1.13	1.37	1.93	134.55	0.00	21.48
2002	150.98	1.58	-10.20	-0.96	138.12	0.00	23.68
2003	238.75	1.59	-3.93	-2.23	145.12	0.00	25.38
2004	242.82	1.68	-2.04	2.44	153.66	0.00	27.38
2005	244.99	1.86	-8.03	-7.32	150.37	0.00	25.74
2006	244.77	1.85	-8.57	-7.32	154.67	0.00	24.46

Source: National Energy Balances
Available=final consumption + energy sector + transformation - stockpiling (stock changes) + statistical differences - imports

Graph 4.3: Local Consumption of Coal: 1992-2006

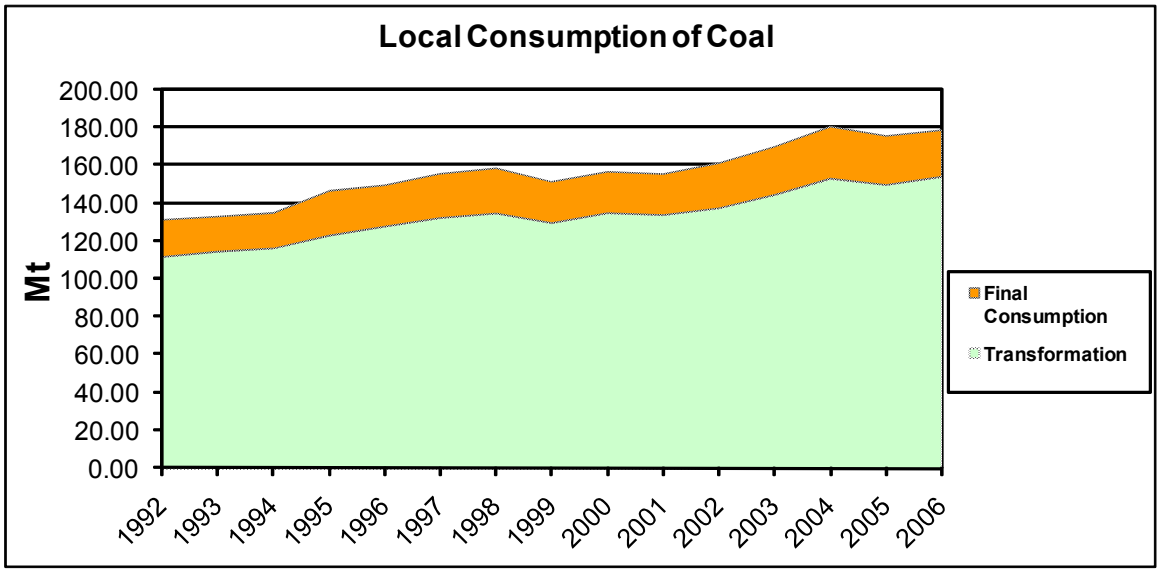


Table 4.4: Transformation Sector Coal Use-kt: 1992-2006

Transformation Sector Coal Use-kt

Year	Eskom	Other electricity	Electricity Total	Liquefication	Gas	Coke	Total
1992	72 919	3 917	76 836	24 457	6 112	4 866	112 271
1993	77 294	3 407	80 701	25 317	4 433	4 702	115 154
1994	79 140	3 424	82 564	25 506	4 483	4 283	116 836
1995	82 603	3 833	86 436	28 051	4 868	4 220	123 576
1996	87 214	3 679	90 893	28 526	4 982	3 958	128 359
1997	91 870	3 781	95 651	27 766	5 363	4 072	132 853
1998	95 556	4 075	99 631	27 541	4 799	3 337	135 309
1999	90 057	4 208	94 265	28 557	4 938	2 446	130 207
2000	93 845	4 298	98 143	29 878	4 941	2 569	135 532
2001	87 362	1 912	89 275	41 682	849	2 746	134 551
2002	90 619	2 107	92 726	41 515	952	2 926	138 119
2003	99 705	3 369	103 074	39 582	0	2 468	145 124
2004	107 332	2.642	107 335	41 052	0	2 633	151 020
2005	105 162	1.047	105 163	41 445	0	2 717	149 324
2006	107 238	1.468	107 239	43 758	0	2 204	153 201

Source: National Energy Balances

Graph 4.4: Transformation sector use –Kt: 1992-2006

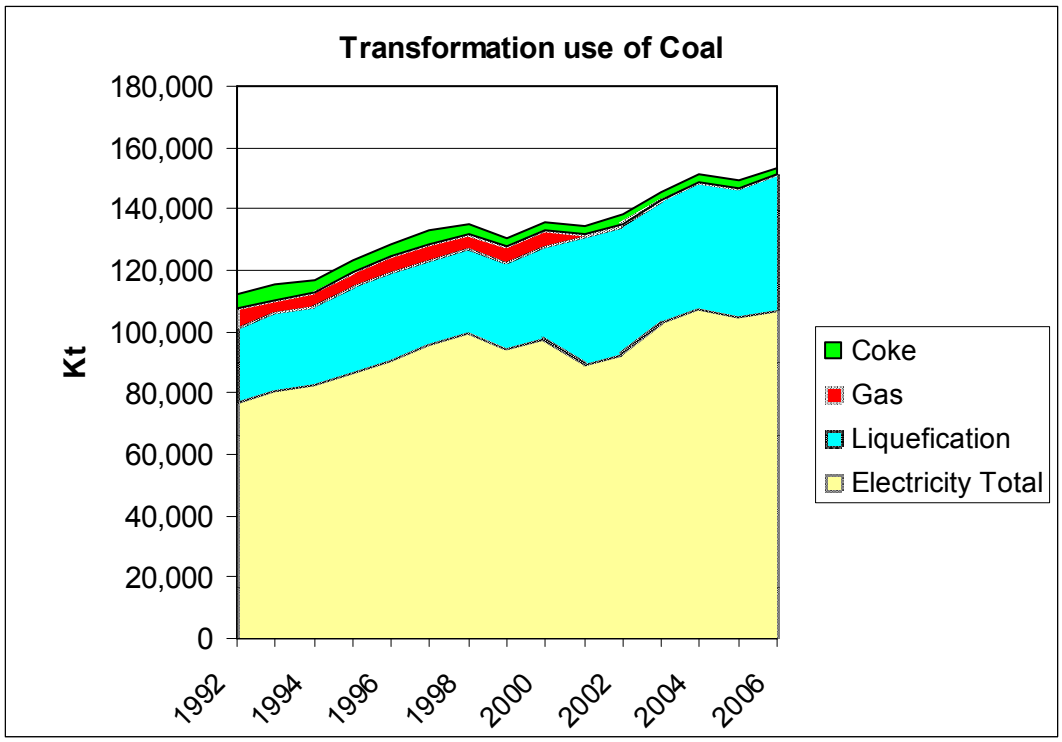


Table 4.5: Final Demand for coal by sector: 1996-2006

Final Demand for Coal by Sector- kt						
Year	Industry	Transport	Agriculture	Commerce	Domestic	Total
1996	18 039	23	242	1 302	2 200	21 807
1997	19 479	2	241	1 356	2 250	23 327
1998	20 814	23	182	935	1 870	23 824
1999	19 289	0	100	777	1 553	21 718
2000	19 364	0	69	770	1 541	21 744
2001	17 574	2	101	1 315	2 487	21 479
2002	18 564	0	90	1 694	3 332	23 681
2003	19 477	0	122	1 945	3 835	25 379
2004	20 489	0	166	2 258	4 516	27 429
2005	18 208	0	14	2 498	4 997	25 717
2006	15 974	0	28	2 819	5 638	24 459

Source: National Energy Balances

Graph 4.5: Sectoral consumption of coal: 1996-2006

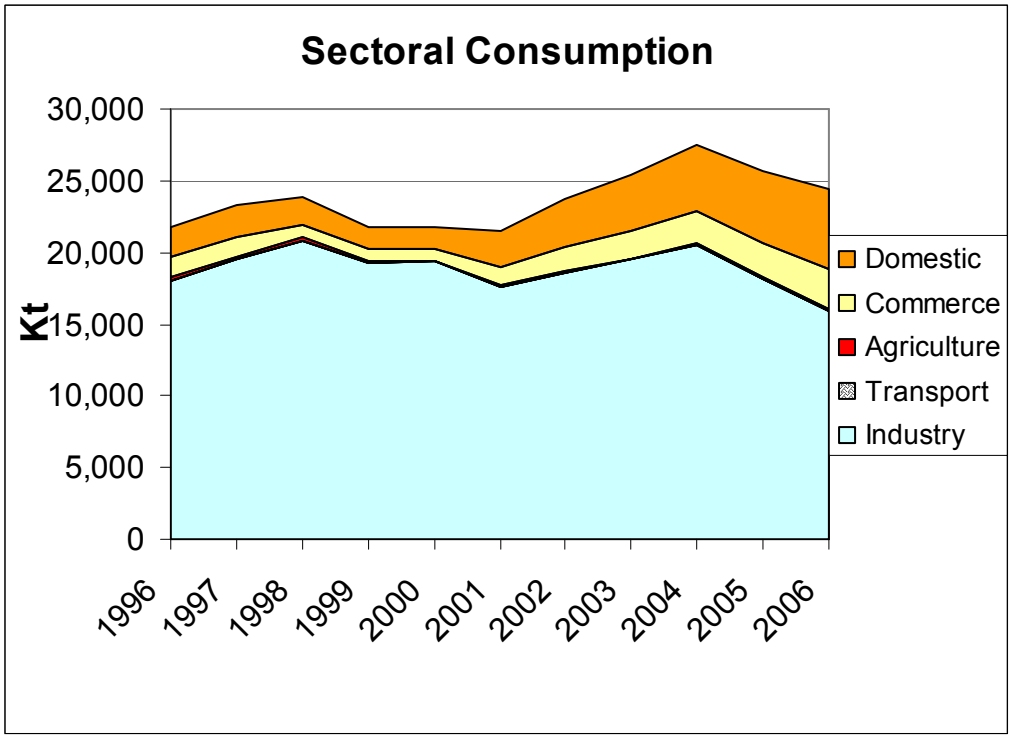


Table 4.6: Industrial Sector Use of Coal kt: 1992-2006

Industrial Sector Use of Coal-kt						
Year	Iron and Steel	Chemical	Non-Metallic Minerals	Mining	Not Specified	Total
1992	2 294	5 809	1 597	506	2 530	12 736
1993	2 433	6 540	1 470	470	2 257	13 171
1994	3 487	6 294	1 723	388	1430	13 323
1995	3 507	8 929	1 607	603	1 708	16 354
1996	2 709	9 290	1 206	555	4 280	18 039
1997	1 758	8 973	1 072	1 248	6 428	19 479
1998	3 747	9 702	1 259	1 517	4 589	20 814
1999	4 332	8 974	1 298	751	3 934	19 289
2000	4 277	9 376	1 248	145	4 318	19 364
2001	4 373	7 213	1 073	1 528	3 387	17 574
2002	4 728	6 961	1 079	1 508	4 287	18 564
2003	4 325	7 000	1 685	1 416	5 050	19 476
2004	4 816	5 577	1 953	1 499	6 644	20 489
2005	4 904	2 254	2 129	2 113	6 808	18 208
2006	4 710	1 927	988	1 973	6 376	15 974

Source: National Energy Balances

Graph 4.6: Industrial Consumption of Coal

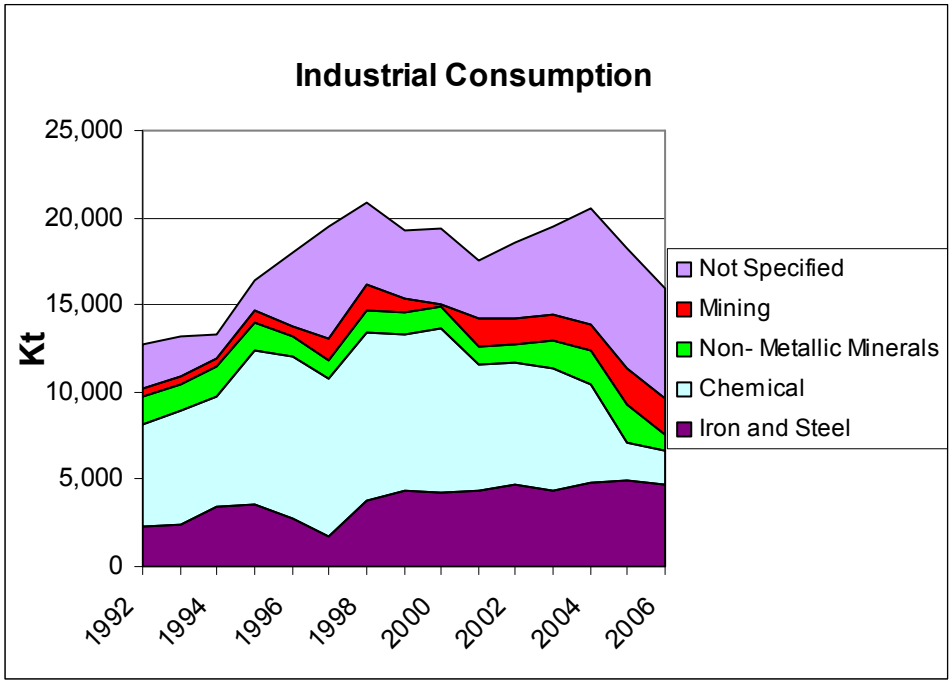
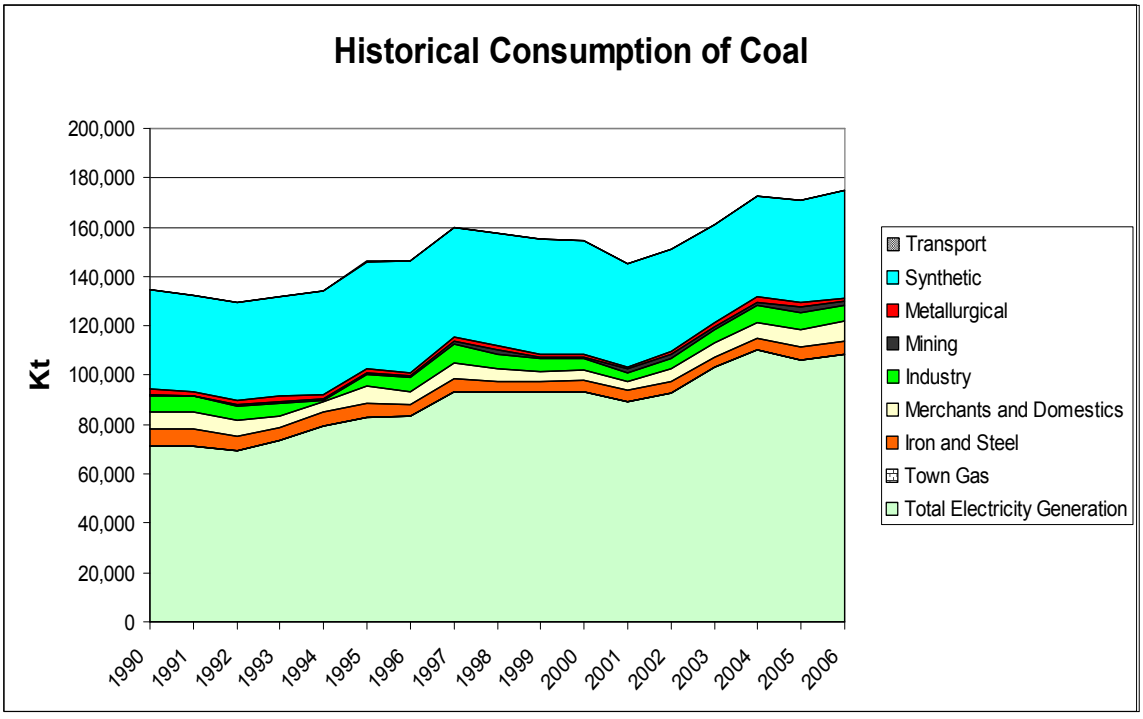


Table 4.7: Historical Consumption of Coal: 1990-2006

	Historical Consumption of Coal											
Year	Eskom	Other	Total Electricity Generation	Town Gas	Iron and Steel	Merchants and Domestics	Industry	Mining	Metallurgical	Synthetic	Transport	Total Inland Consumption
1990	69 075	2 176	71 251	116	6 953	6 963	6 174	452	2 533	40 287	69	134 797
1991	69 248	2 039	71 287	49	6 826	7 095	6 075	422	1 696	39 120	36	132 604
1992	67 389	1 882	69 271	45	5 791	6 451	6 177	506	1 370	39 960	9	129 580
1993	72 206	1 389	73 595	45	4 937	4 823	5 457	470	2 142	40 249	94	131 812
1994	76 998	2 249	79 247	62	5 767	4 415	517	388	2 003	41 734	42	134 174
1995	80 629	2 193	82 821	60	5 822	6 674	5 172	603	1 509	43 356	54	146 071
1996	81 274	2 100	83 374	10	4 877	5 269	5 557	506	1 313	45 640	17	146 564
1997	91 272	2 264	93 535		4 725	6 787	7 325	1 257	1 719	44 329	2	159 679
1998	91 049	2 213	93 262	37	4 350	4 749	6 272	1 517	1 620	45 544	23	157 374
1999	91 768	1 719	93 487	0.4	3 678	4 268	5 076	764	1 406	46 559		155 238
2000	91 811	1 556	93 367	0	4 465	3 920	5 175	145	1 272	46 335		154 680
2001	87 362	1 912	89 274	0	4 373	3 802	3 387	1 528	1 073	41 682	2	145 122
2002	90 619	2 107	92 726	0	4 728	5 026	4 287	1 508	1 079	41 515		150 870
2003	99 705	3 369	103 074	0	4 325	5 780	5 050	1 416	1 685	39 582		160 912
2004	107 332	2 642	109 974	0	4 816	6 774	6 644	1 499	1 953	41 051		172 711
2005	105 162	1 047	106 209	0	4 904	7 495	6 808	2 113	2 129	41 445		171 103
2006	107 238	1 468	108 705	0	4 710	8 456	6 376	1 973	988	43 758		174 967

Source: Minerals Bureau

Graph 4.7: Historical consumption of Coal 1990-2006



Section 5

Oil and Gas

South Africa has very limited oil reserves and about 95% of its crude oil requirements are met by imports from the Middle East and Africa (Saudi Arabia, Iran, Kuwait, the United Arab Emirates, Yemen, Qatar, Iraq, Nigeria, Egypt and Angola). Refined petroleum products such as petrol, diesel, residual fuel oil, paraffin, jet fuel, aviation gasoline, and LPG and refinery gas are produced by the following methods:

- crude oil refining (oil refineries)
- coal to liquid fuels and gas to liquid fuels (Sasol); and
- natural gas to liquid fuels (PetroSA).

Demand/Domestic supply: In 2006 consumption of petroleum products increased marginally. Petrol consumption increased steadily from 11.2 million kilo litres in 2005 to 11.3 million kilo liters in 2006. This could be attributed to an increase in GDP (5% in 2006 from 3.7% in 2002) which resulted in steady rise in the stock of passengers cars. In 2006 new passenger car sales grew by 14.7%, compared with the sales for the year 2005 (StatsSA motor car sales 2006) [5].Subsequently there was an increase of 4.1 % in the consumption of Jet fuel reflecting increased demand in air travel due to high economic growth rates and lower inflation rate environment that prevailed during this period. Consumption for other products went down marginally from 2005.

Supply/ Production: In 2006, South African refining capacity including GTL and CTL reached 10 954 815 kilolitres of petrol, 7 457 922 kilolitres of diesel, 7 43 862 kilolitres of Kerosene, 2 141 200 kilolitres of Jet fuel and 517 726 kilolitres of LPG (as depicted in Table 5.3: Production of Petroleum Product). Production for all the petroleum products, except for petrol, decreased marginally. Production of petrol increased marginally by 0.7 % in 2006 from a decrease of 2.1 % in 2005

Most current infrastructure development projects in South Africa are aimed at supporting the 2010 World Cup. PetroSA's 400 000 barrel per day crude oil refinery (project Mthombo) planned for Coega, in the Eastern Cape will be an important anchor project in the expected post 2010 project slump. PetroSA plans to commission the plant in 2015.
A macroeconomic study by (PetroSA in 2008)[6] estimates that at national level, household income in the economy will, on average be R2.6 billion a year higher owing to the direct and indirect impacts of the refinery. In line with the energy master plan project Mthombo will reduce South Africa's reliance on imported, expensive refined petroleum products, while at the same time, creating value-adding export markets on the African continent.

[5] http://www.statssa.gov.za/publications/P63432/P63432December2006.pdf
[6] http://www.petrosa.com/Mthombo

Liquefied Petroleum Gas

High LPG retail prices have prompted the department to investigate an appropriate and cost-effective way to deliver LPG to the people. The department has embarked on pilot programmes in partnership with municipalities. The department launched two pilot projects in Tshwane and Mpumalanga. By June 2008, more than 18 252 households had been connected through the Atteridgeville project. The Thembisile (Mpumalanga) pilot project had connected over 8 616 households. This demonstrates that the LPG uptake is on the increase and that households are keen to use it. The department is in the process of developing draft regulations in respect of the maximum retail price of LPG supplied to residential customers. The objective of these regulations is to regulate the price of LPG to make it more affordable for the consumer.

Table 5.1: Historical consumption of Petroleum Products: 1992-2006

Sectoral Consumption of Petroleum Products-TJ

Year	Non-energy use	Agriculture	Transport	Mining	Residential	Commerce	Non-Specified (other)	Construction
1992	28 938	57 421	458 436	16 812	28 832	132	150	41 091
1993	26 983	58 770	467 640	16 446	29 470	142	0	42 979
1994	29 109	57 811	485 877	17 477	30 800	503	0	46 277
1995	28 357	58 301	546 417	17 862	33 625	182	0	44 984
1996	31 600	62 750	548 162	18 677	30 682	148	0	55 123
1997	29 828	57 655	567 087	20 453	31 820	1 226	0	52 142
1998	26 100	54 215	582 419	20 342	27 033	369	3 403	55 609
1999	24 740	51 413	589 823	20 822	30 506	206	4 231	48 313
2000	22 352	48 009	584 476	21 927	25 214	151	2 477	26 834
2001	29 721	52 229	600 792	27 068	37 779	32 852	0	14 930
2002	31 687	53 730	613 816	28 231	35 909	32 162	0	15 401
2003	31 000	53 162	636 486	30 673	39 637	34 062	9 328	16 461
2004	20 000	52 661	675 863	30 795	43 278	32 295	11 633	15 796
2005	19 670	51 284	690 982	31 543	39 420	31 592	0	16 347
2006	19 730	48 498	712 795	32 070	38 871	30 422	12 784	15 723

Source: National Energy Balances

Graph 5.1: Historical consumption of Petroleum Products: 1992-2006

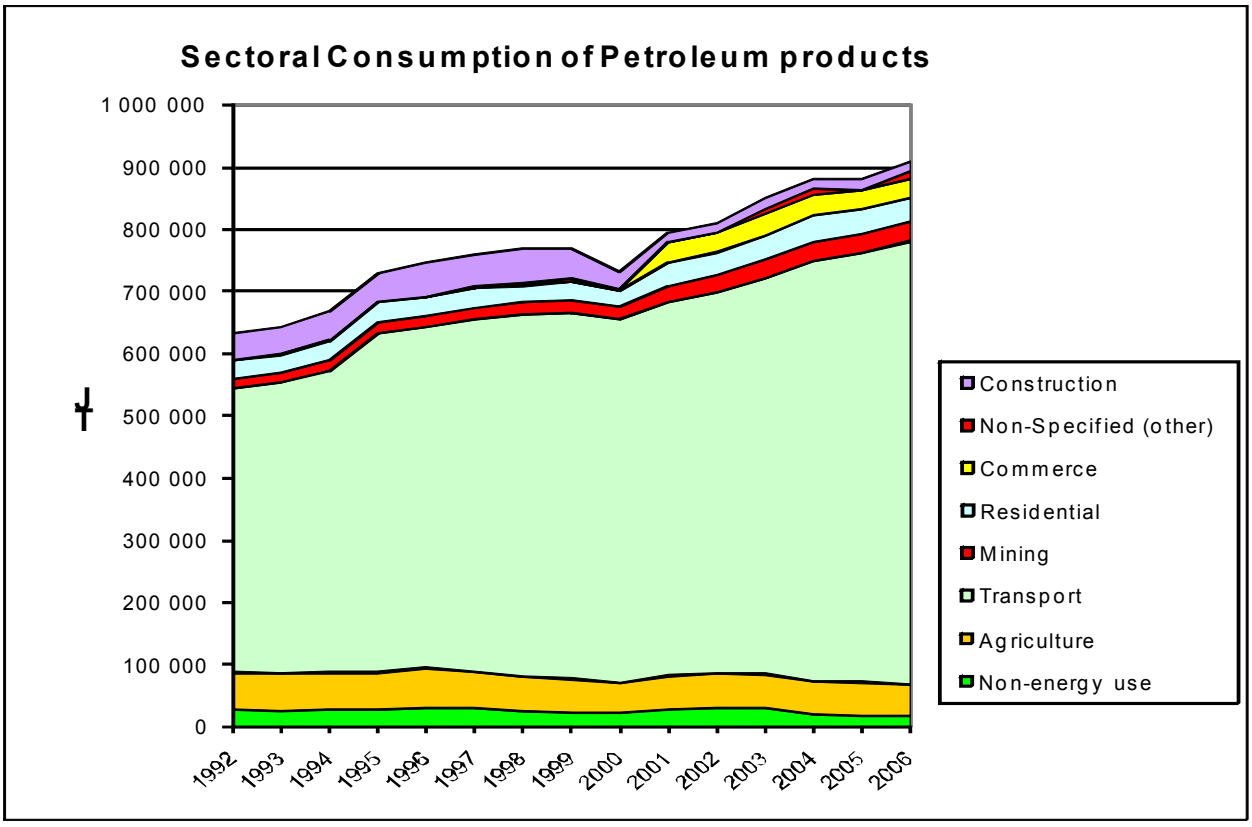


Table 5.2: Sectoral consumption of Petroleum Products 2006

Sectoral Consumption Of Petroleum Products-2006

Year	Industry	Agriculture	Commerce	Residential	Mining	Construction	Transport	Non-Specified (other)	Non-Energy Use
2006	47 793	48 498	30 422	38 871	32 070	15 723	712 795	12 784	19 730

Source:National Energy Balances

Graph 5.2: Sectoral consumption of Petroleum Products 2006

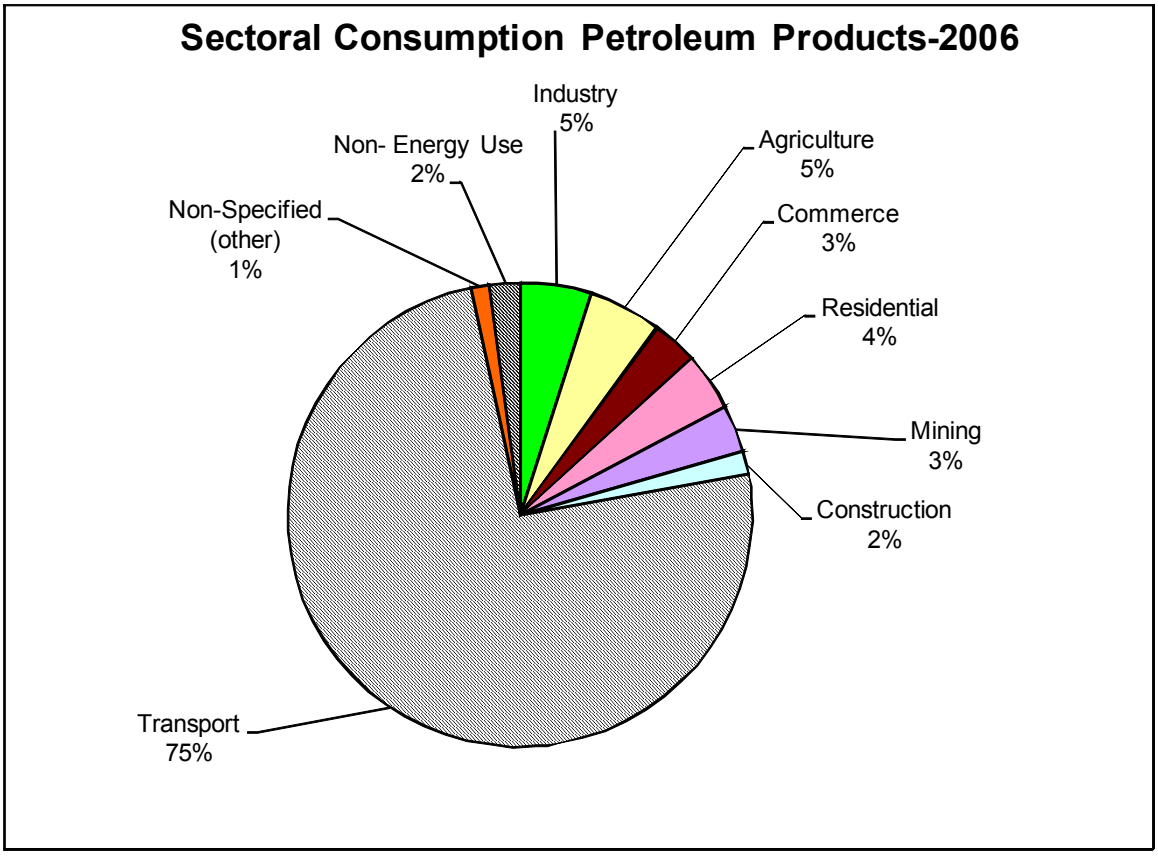


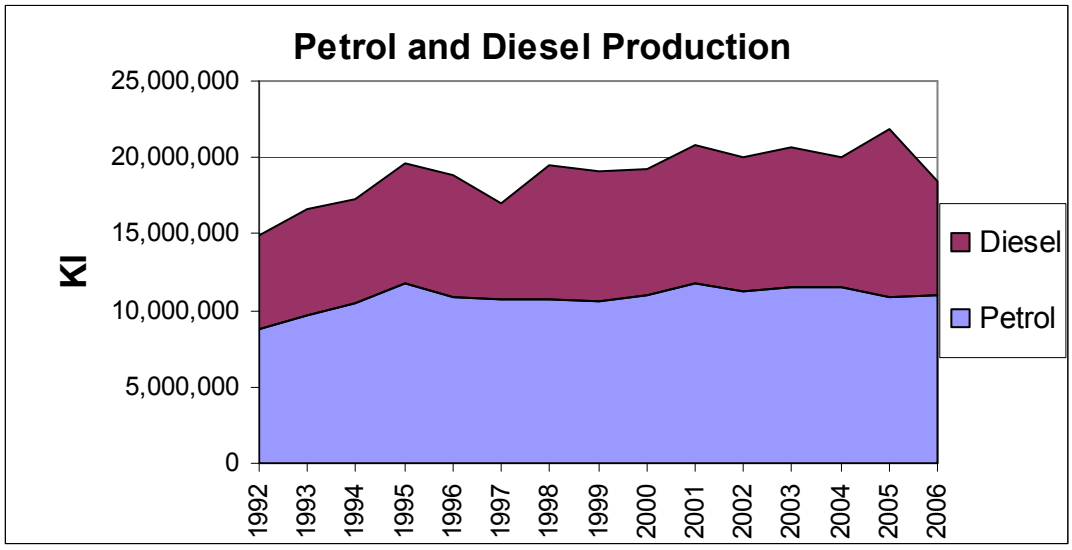
Table 5.3: Historical Production of Petroleum Products-kl: 1992-2006

Production of Petroleum Products - kl

Year	LPG	Petrol	Jet Fuel	Kerosene	Diesel
1992	461 976	8 742 512	1 077 224	833 312	6 182 916
1993	468 484	9 708 816	1 211 295	1 036 677	6 943 737
1994	494 119	10 467 381	1 192 533	1 253 296	6 839 224
1995	492 393	11 736 662	1 392 420	1 148 516	7 928 506
1996	472 645	10 844 193	1 805 984	1 136 998	7 961 507
1997	527 374	10 712 798	1 776 386	982 939	6 334 935
1998	524 159	10 744 141	1 993 629	1 178 454	8 762 426
1999	535 935	10 651 184	2 201 708	1 266 576	8 493 178
2000	569 849	11 036 056	2 224 226	1 863 738	8 265 373
2001	599 508	11 740 861	2 071 056	807 601	9 116 140
2002	585 225	11 196 257	2 067 974	794 791	8 815 388
2003	569 313	11 577 945	2 367 009	775 794	9 066 560
2004	564 172	11 554 692	2 246 365	792 202	8 526 883
2005	549 952	10 882 675	2 324 995	773 283	10 986 374
2006	517 726	10 954 815	2 141 200	743 862	7 457 922

Source: National Energy Balances

Graph 5.3: Production of diesel and Petrol in kl: 1992-2006



Graph 5.4: Production of other Petroleum Products: 1992-2006

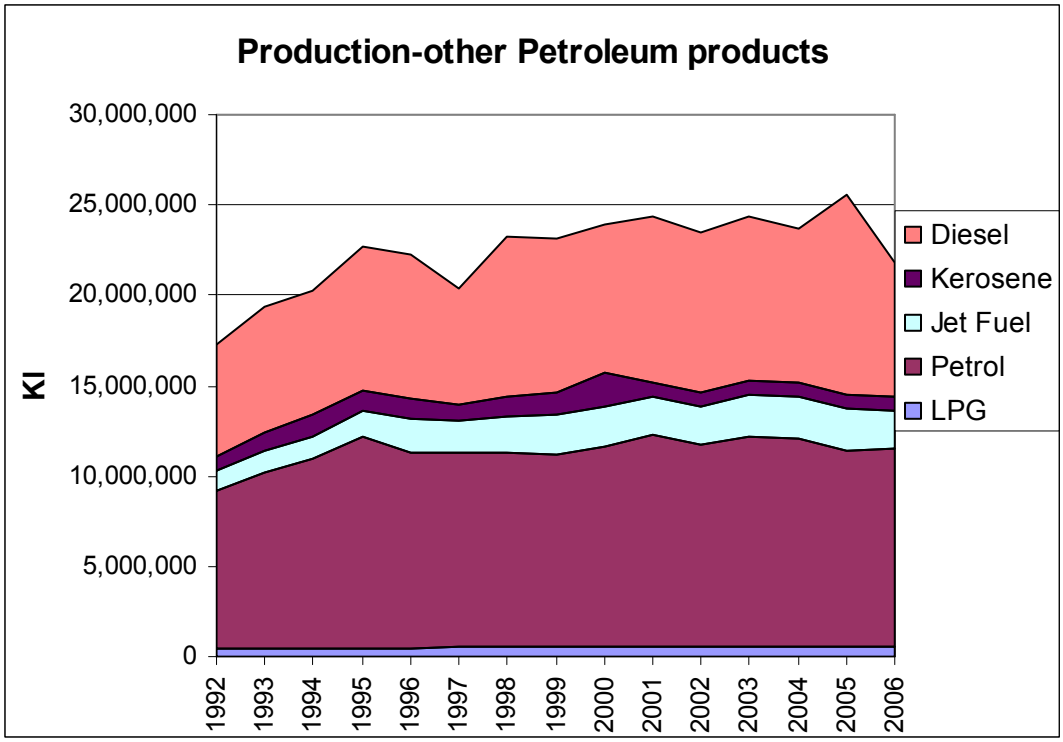


Table 5.4: Historical imports of Petroleum Products: 1992-2006

Imports of Petroleum Products -kl					
Year	**Petrol**	**Avgas**	**Kerosene**	**Diesel**	**HFO**
1992	688 804	2 024	50 717	390 711	83 249
1993	328 878	4 251	25 366	168 419	61 051
1994	191 442	18 976	31 602	51 319	40 444
1995	134 752	21 127	0	75 568	120 397
1996	630 213	18 591	37 375	267 283	93 062
1998	786 598	4 788	37 132	70 217	90 040
1999	962 332	2 833	48	12 302	315 776
2000	179 442	119	40 043	159 847	15 542
2001	354 669	0	0	781 413	18 042
2002	283 843	3	16	567 643	83 670
2003	369 634	7	1	311	107 524
2004	751 389	23 358	12 704	554 264	127 028
2005	1045 235	11 467	54	873 509	98 777
2006	438 209	41 130	50	1964 411	101 115

Source: National Energy Balances
Note: No import data available for 1997

Graph 5.5: Imports of Petroleum Products: 1992-2006

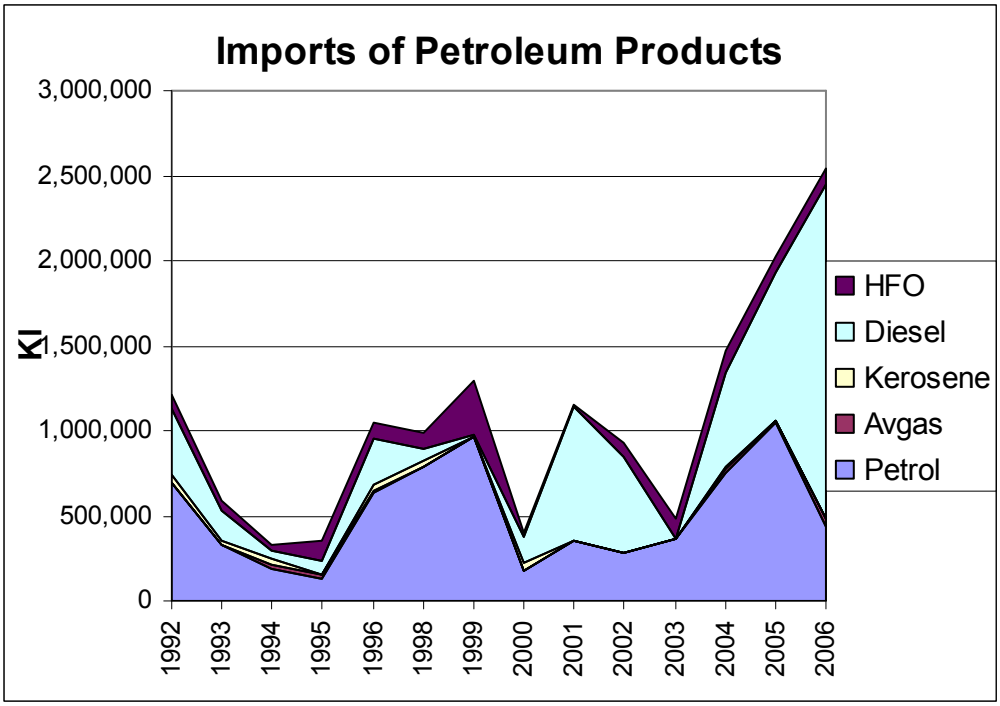


Table 5.5: Exports of Petroleum Products-kl: 1992-2006

Exports of Petroleum Products - kl					
Year	**Petrol**	**Avgas**	**Kerosene**	**Diesel**	**HFO**
1992	260,880	41,497	183,532	1,177,748	1,172,333
1993	835,627	125,712	207,950	1,780,123	338,276
1994	1,029,258	156,052	382,172	1,259,269	811,151
1995	927,061	111,221	285,306	1,998,842	331,962
1996	907,651	140,158	242,353	2,007,313	231,470
1998	647,536	44,882	154,160	2,641,754	214,853
1999	764,900	65,321	205,935	2,120,916	2,281,742
2000	828,333	40,623	1,047,957	1,847,896	2,497,699
2001	1,761,203	196,459	21,120	3,099,197	2,172,371
2002	1,144,695	184,718	48,637	2,311,307	5,390,476
2003	1,278,629	49,941	6,670	1,519,573	2,411,278
2004	1,014,328	13,325	7,431	1,167,074	1,617,496
2005	764,046	11,971	11,322	3,428,551	2,305,037
2006	103,767	6,656	5,562	754,241	1,487,677

Source: National Energy Balances
Notes : No export data available for 1997

Graph 5.6: Exports of Petroleum Products 1992-2006

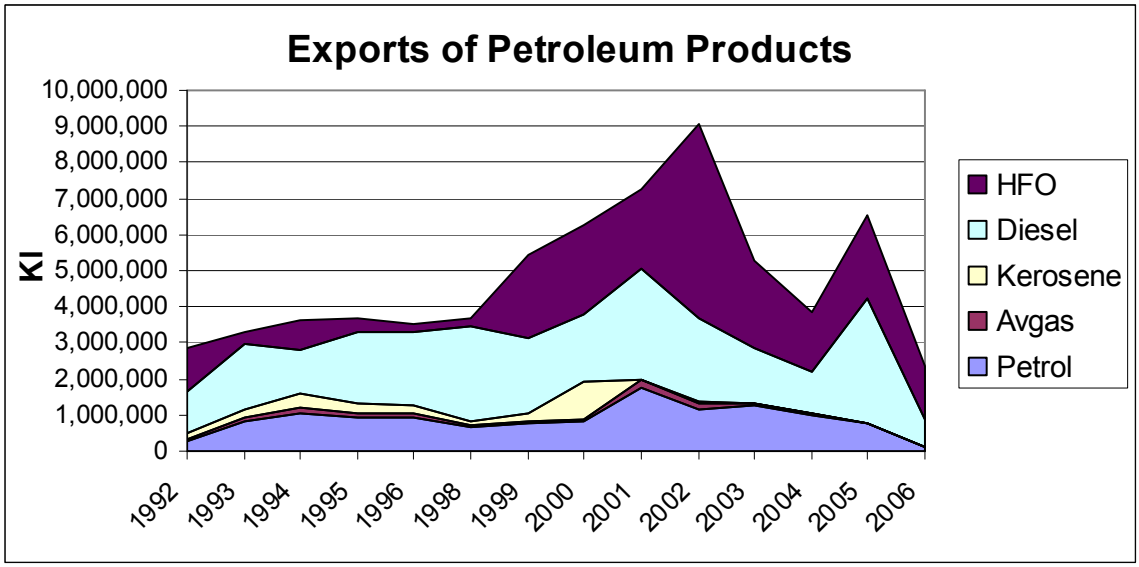


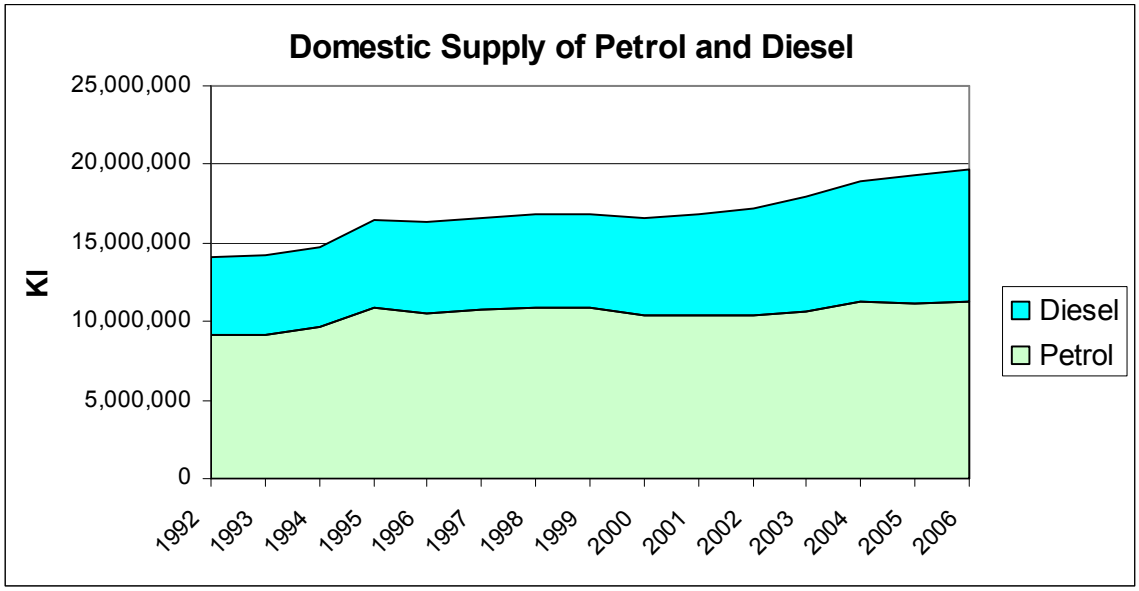
Table 5.6: Domestic Supply of Petroleum Products-kl: 1992-2006

Domestic Supply of Petroleum Products-kl

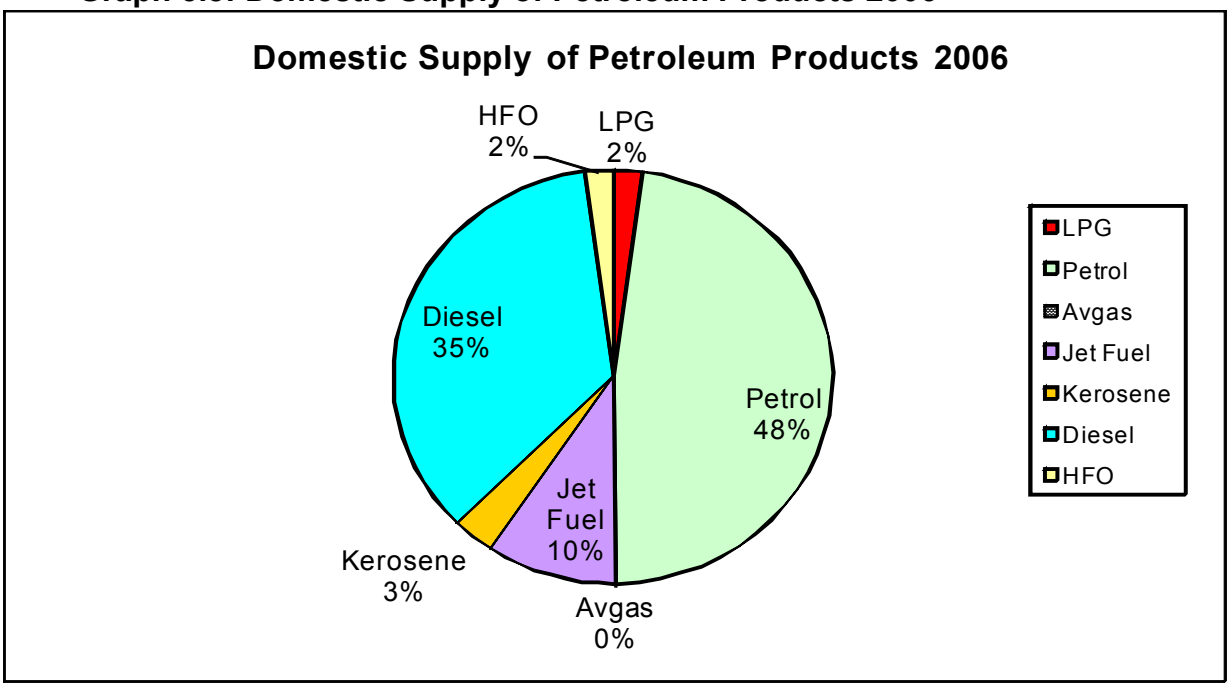
Year	LPG	Petrol	Avgas	Jet Fuel	Kerosene	Diesel	HFO
1992	461 976	9 170 436	27 264	999 950	764 887	4 985 184	560 109
1993	468 484	9 202 067	24 825	1 211 295	854 093	4 976 806	591 845
1994	494 119	9 629 565	26 393	1 192 533	902 726	5 139 875	644 561
1995	492 393	10 944 353	26 062	1 392 420	863 210	5 482 687	615 939
1996	472 645	10 566 755	25 157	1 601 006	932 020	5 809 638	719 725
1997	527 374	10 712 798	28 496	1 776 386	982 939	5 912 661	634 300
1998	524 159	10 883 203	26 486	1 876 601	1 061 426	5 959 204	615 536
1999	535 935	10 848 616	26 747	1 995 820	1 060 688	5 984 367	561 728
2000	569 849	10 387 164	24 638	1 975 064	855 824	6 230 110	24 527
2001	599 508	10 334 327	25 967	1 922 397	786 481	6 486 015	563 745
2002	585 562	10 355 404	24 854	1 967 292	746 169	6 830 544	535 664
2003	568 701	10 668 950	22 530	2 085 135	769 125	7 263 272	527 513
2004	563 601	11 291 753	22 424	2 076 580	797 474	7 682 327	568 386
2005	549 999	11 163 864	23 668	2 179 824	762 015	8 105 121	488 807
2006	501 067	11 289 256	21 969	2 272 389	738 349	8 407 678	475 987

Sources: National Energy Balances

Graph 5.7: Domestic Supply of Petrol and Diesel: 1992-2006



Graph 5.8: Domestic Supply of Petroleum Products 2006



Section 6

Electricity

South Africa's economy is structured around large-scale, energy-intensive mining and primary minerals industries, pushing its energy intensity to above average levels, with only 10 other countries having higher commercial primary energy intensities[7]. It is anticipated that electricity supplies will be overstretched until 2013, as plans for building additional power plants will take a number of years to be completed. The need for massive investment in generating capacity to address the power shortage, and to discourage the frivolous waste of electricity, will necessitate a significant rise in tariffs in the medium term that could dislodge South Africa from its position of having the lowest-cost power in the world.

Demand

About 45% of all electricity consumed in South Africa will continue to be used by the manufacturing sector, 20% by the mining sector, 10% by the commercial sector, 20% by the residential sector and 5% by other sectors. Meanwhile, supply to the Southern African Development Community will be reviewed—with new contracts offering significantly reduced supply and South Africa no longer being a net exporter of electricity to the Southern African Power Pool (SAPP). However, Eskom will still remain the dominant regional supplier of electricity.

Supply

Eskom is the leading company in the South African electricity market, supplying more than 95% of South Africa's electricity needs and more than 60% of the entire continent's requirements. By 2006, Eskom had connected 185 833 new households to electricity in South Africa. Eskom is contracted to supply Botswana, Lesotho, Swaziland and the aluminium smelter in Mozambique; when it has surpluses these are made available to Namibia, Swaziland, Zimbabwe, Zambia and Mozambique through the Southern African Power Pool. Around 90% of South Africa's electricity supply comes from coal-fired power stations (and proven coal reserves will last for a considerable period of time). This factor has helped to make it one of the cheapest electricity providers in the world.

Generation by fuel type
Nuclear

Nuclear power accounted for around 4.2% of South Africa's primary energy supply in 2006. Eskom, the state owned electricity entity, operates the only nuclear plant in the country, at Koeberg near Cape Town and is planning to double its electricity-generating capacity to 80,000 MW by 2025, with 20,000 MW supplied by nuclear energy.

[7] http://www.eia.doe.gov/cabs/South_Africa/Background.html

The government is determined to reduce South Africa's reliance on coal-fired power stations. Coal currently generates almost 91.7% of the country's electricity and the government is committed to reduce this to 78% by 2012 and to 70% by 2025. At present, nuclear projects are planning to continue using the current pressurised-water-system technology, but South Africa is a leader in developing a new technology that makes use of pebble-bed modular reactors (PBMRs), which are safer to run and have more applications than other nuclear technologies. Eskom currently owns 55% of a local firm, PBMR, which was established in 2000 by two state owned entities, Eskom and the Industrial Development Corporation (IDC), and two foreign investors, British Nuclear Fuels and US-owned Exelon. The building of the prototype PBMR is currently put on hold due to financial constraints, but the government remains committed to nuclear power in the long term, to supplement the existing Koeberg reactor.

Hydroelectricity

Hydroelectricity accounted for 2.4% of the total electricity generation in 2006. Eskom could buy more hydropower from Cahora Bassa in Mozambique and the Inga 2 and 3 hydroelectric projects in the Democratic Republic of Congo (DRC). South Africa is one of five Southern African countries to have bought an equal stake in the planned Inga power project, which will produce 3,500 MW of power by 2011. A fourth phase of the project is currently undergoing feasibility studies for the "Grand Inga" project, which envisages a series of 52 generators of 750 MW each, producing a total of 39,000 MW. However, the Grand Inga project faces numerous challenges which have to be addressed to ensure its success. The low level of rainfall in South Africa limits the potential for domestic hydroelectricity production.

Developments in the Electricity sector

Towards the end of 2007, the country experienced difficulties as electricity supply was unable to meet the demand. Heavy duty maintenance work, together with temporary bottlenecks in coal supply, meant that generating capacity was reduced to 30,800 MW against peak power of 32,000 MW. The state owned electricity entity (Eskom) had to develop ways on how to handle the situation. To address this situation, Eskom embarked on a programme to decrease electricity usage by its major consumers, increased their focus on demand side management (DSM) and energy efficiency programme. The country had been operating with reserve margins of about 8% compared with the internationally recommended minimum of 15%.

Eskom announced plans to build new power plants over the next five years (2009-2013). To help fund the projects of building these power plants, the government has offered the electricity entity a loan spread over three financial years starting in 2008/2009. Also the government included in their 2009 budget funds for upgrading infrastructure, including building new coal fired power plants and refurbishing those that had been mothballed.

Eskom's intermediate plans involve the de-mothballing of three coal-fired plants, known as the Simunye projects (3,600 MW). Of these, Camden (1,600 MW) became fully operational during 2008; Grootvlei (1,600 MW) is expected on line during 2009; and Komati (1,000 MW) is expected in 2011. Following the successful completion of two open-cycle gas turbines with a combined capacity of 1,050 MW in the Western Cape in 2007, Eskom has approved the expansion of these plants to double their capacity.

Plans for a number of new base-load stations that will give a more significant boost to South Africa's power supply will take a number of years to complete, with most power stations only ready by 2013. These include the following.

The Medupi coal-fired power station (Project Alpha) in Limpopo province will have a capacity of 4,800 MW, with some units coming into operation in 2013 and full capacity reached in 2015.

Project Bravo envisages another 4,500 MW coal fired power station being built in Mpumalanga, and with key contracts having been awarded for its construction, the project is on track to begin operation in 2013 and reach capacity in 2016.

Several nuclear power stations are to be built, and tendering for the contract to build the first of these is underway with the power station to be completed by 2015 with capacity of approximately 3,500 MW.

The Majuba underground coal-to-gas project is under way, and will generate 2,100 MW, with completion scheduled for 2012.

The Inga pumped storage scheme in the little Drakensberg Mountains is on track to deliver 1,332 MW when it comes into operation in 2013, a second scheme of 1,500 MW is also being considered.

However, these plans do not mean that the private sector will be crowded out, since the government has offered independent power producers (IPPs) a 30% share of the South African market.

Also, two gas-powered stations with a total generating capacity of 1,000 MW each are to be built by the US-based AES consortium and will be in operation towards the end of 2009. In separate venture, a 750 MW power station is to be built in Durban, KwaZulu-Natal, and a 330 MW plant in the Eastern Cape, at the Coega Industrial Development Zone near Port Elizabeth. Another project will guarantee an additional 1,600 MW for Coega, using liquefied natural gas. Ipsa, which is listed on the South African AltX alternative exchange, is to install gas turbines and to sell the electricity to Eskom, which will in turn guarantee 1,350 MW for Coega, with 250 MW spare.

Eskom is also planning to source future power supply from a new project in Botswana, the proposed 4,800 MW coal-fired power plant near Mmamabula. The plant would be supplied by nearby mines producing 12 MT/year, and would be based just 60 km from Eskom's Matiba station, meaning that

connection to the South African grid would be relatively straightforward and inexpensive. The phase one Mmamabula power station is expected to produce a net capacity of between 2,100 MW and 2, 460 MW and the phase two power station is likely to be of comparable size. Some 70% of the power output from the plant will be sold to Eskom, with the balance supplied to the Botswana Power Corporation, but may not be required for domestic consumption, giving Eskom the option to purchase additional electricity if required. Construction of the power plant is expected to be completed by 2012.

Table 6.1: Electricity Capacity and Demand: 1992-2006

Electricity Capacity and Demand

Year	Net maximum capacity MW	Peak demand MW	New connections
1992	36 846	22 640	232 555
1993	37 636	23 169	331 909
1994	35 926	24 798	435 756
1995	35 951	25 133	478 767
1996	36 563	27 967	453 995
1997	37 175	28 329	499 311
1998	37 848	27 803	427 426
1999	38 517	27 813	443 290
2000	39 186	29 188	397 019
2001	39 810	30 599	336 918
2002	39 810	31 621	338 572
2003	39 810	31 621	298 791
2004	38 436	34 195	248 451
2005	38 644	33 461	241 703
2006	39 271	34 807	185 833

Sources: Integrated National Electrification Planning Manual
Eskom Annual Reports
NER Electricity Supply Statistics

Graph 6.1: Capacity and Peak Demand: 1992-2006

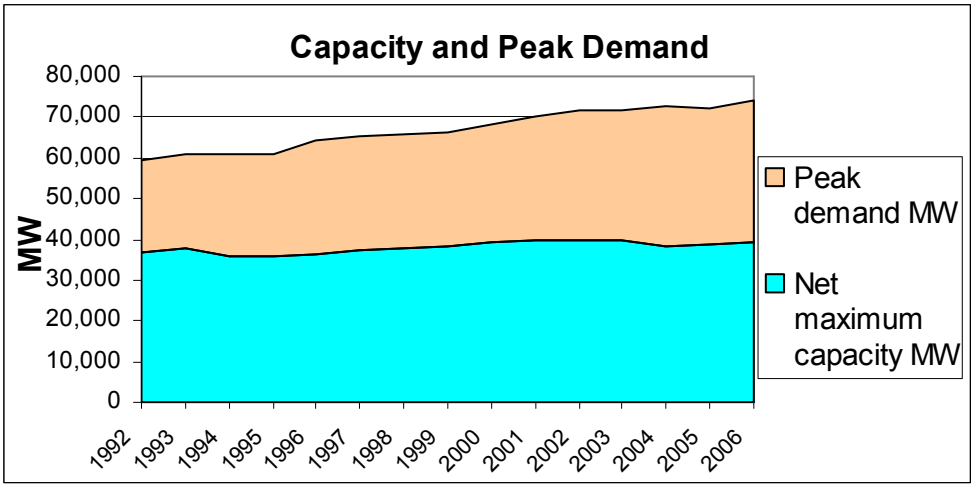


Table 6.2: Electricity generation by fuel Type GWh: 1992-2006

Electricity - Generation by Fuel Type - GWh

Year	Coal	Nuclear	Hydro	Pumped storage	Imports	Exports
1992	156 443	9 288	752	1 333	334	1 814
1993	165 835	7 255	146	1 345	100	2 589
1994	170 164	9 697	1 074	1 517	54	2 679
1995	174 721	11 301	529	1 274	149	3 000
1996	184 952	11 775	1 319	2 220	29	5 579
1997	192 705	12 647	2 092	2 608	5	6 617
1998	187 758	13 601	1 595	2 420	2 375	4 532
1999	186 859	12 837	726	2 590	6 673	4 266
2000	193 419	13 010	1 343	2 591	4 719	4 007
2001	183 541	10 719	2 061	1 587	9 200	6 996
2002	190 019	11 991	2 357	1 738	9 496	7 242
2003	202 464	12 663	3 509	3 006	8 194	10 263
2004	212 406	13 365	4 452	3 822	9 818	13 254
2005	214 533	11 293	1 166	3 032	11 079	13 422
2006	220 991	10 026	5 845	4 102	10 624	13 589

Sources: National Energy Balances Eskom and Nersa Report - 2006

Graph 6.2: Electricity Generation by Fuel Type: 2006

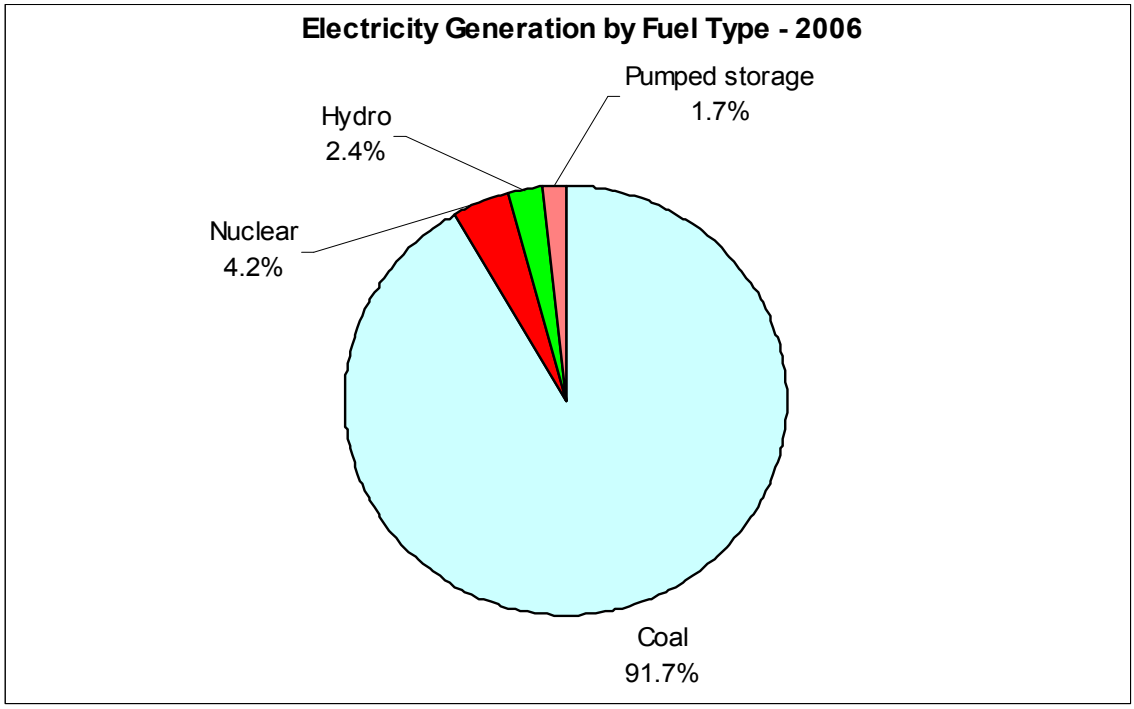


Table 6.3: Electricity Use by the Energy Sector-GWh: 1992-2006

Electricity Use by the Energy Sector - GWh

Year	Coal Mines	Oil Refineries	Pumped storage	Losses
1992	2,349	11,206	1,826	12,033
1993	2,402	12,653	1,345	12,759
1994	2,523	12,630	1,517	14,031
1995	2,566	13,232	1,274	11,532
1996	2,733	13,423	2,220	15,294
1997	2,848	12,908	2,608	16,094
1998	2,830	12,832	2,420	16,534
1999	2,773	13,283	2,590	16,812
2000	2,759	13,331	2,591	17,053
2001	2,812	11,580	2,357	16,251
2002	2,605	11,571	2,479	13,820
2003	2,690	11,386	3,005	14,160
2004	2,788	12,289	3,822	5,268
2005	2,730	12,296	3,032	7,843
2006	2,762	11999	2770	9346

Source: Eskom Annual Report
Source: National Energy Balances

Table 6.4: Final consumption of Electricity by sectors: 1992-2006

Final Consumption of Electricity - GWh

Year	Industry	Transport	Agriculture	Commerce	Residential
1992	76,084	4,629	4,038	17,484	24,253
1993	75,707	4,017	3,108	13,586	21,542
1994	75,682	4,389	4,880	14,058	22,115
1995	80,657	4,297	5,301	17,307	24,369
1996	89,904	4,274	5,103	19,768	29,552
1997	91,460	4,563	5,640	22,170	30,722
1998	101,867	4,639	5,627	13,974	30,163
1999	99,673	4,429	5,755	17,709	29,511
2000	99,703	5,411	3,954	17,164	28,680
2001	106,469	5,562	4,175	18,301	34,623
2002	115,785	6,246	4,644	18,227	30,418
2003	109,589	5,565	5,142	21,071	34,074
2004	134,384	6,302	6,158	24,990	36,231
2005	113,028	5,545	5,520	27,103	36,970
2006	116,631	3,480	5,841	28,833	39,671

Source: National Energy Balance

Graph 6.3: Sectoral Consumption of Electricity: 1992-2006

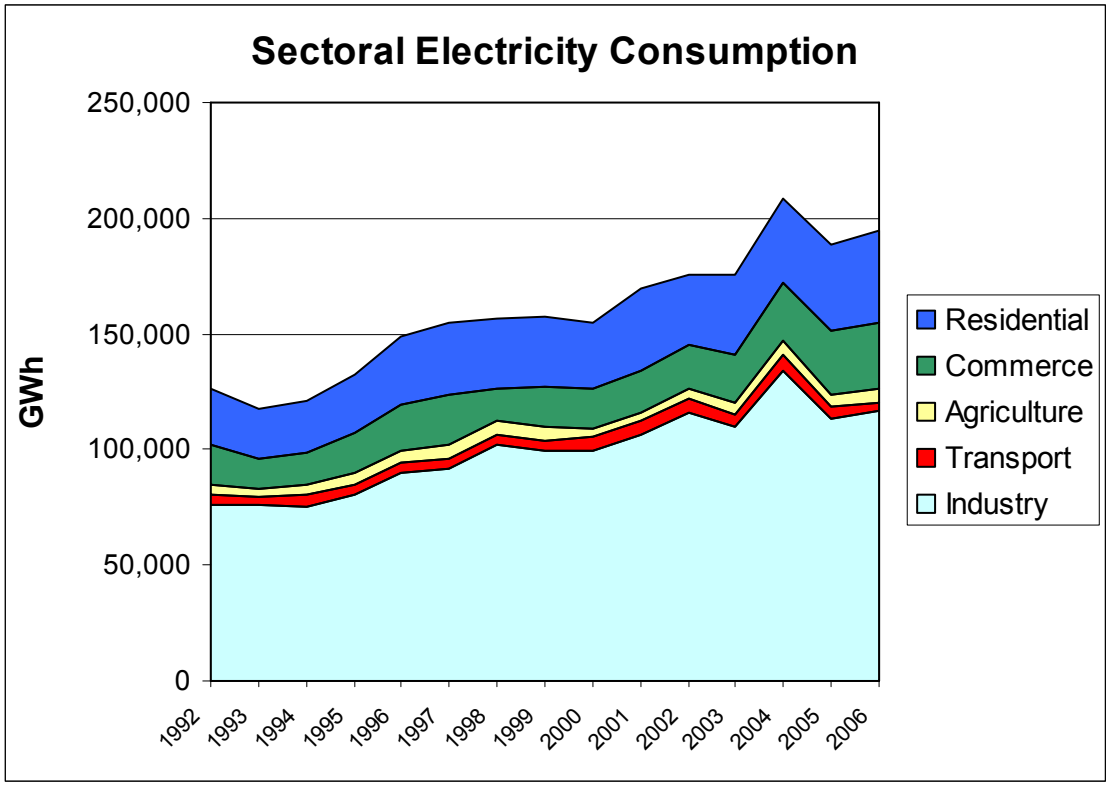


Table 6.5 (a): Industrial consumption of electricity: 1992-2006

Electricity - Industrial Consumption - GWh

Year	Iron and steel	Chemicals	Non-ferrous metals	Non-metallic minerals	Transport equipment	Machinery
1992	11,402	3,179	6,147	986	4	95
1993	12,606	3,017	6,234	963	4	109
1994	14,604	3,150	5,945	1,051	6	100
1995	16,251	3,603	6,956	1,190	9	104
1996	15,630	2,524	13,046	1,143	9	115
1997	17,875	2,432	14,584	1,188	11	127
1998	18,865	2,630	14,769	1,155	15	37
1999	19,527	2,500	14,907	1,119	15	42
2000	20,913	2,640	15,038	1,154	69	53
2001	18,554	9,405	15,172	2,039	83	52
2002	20,331	9,744	15,441	2,277	88	44
2003	22,331	9,439	16,258	2,279	95	42
2004	23,271	9,889	17,953	2,195	85	43
2005	21,342	10,081	18,640	2,605	92	42
2006	21,342	10,081	18,640	2,606	91	42

Source: National Energy Balance

Table 6.5 (b): Electricity- Industrial Consumption: 1992-2006

Electricity - Industrial Consumption - GWh

Year	Mining	Food & Tobacco	Paper & Pulp	Wood & wood products	Construction	Textiles	Industry not specified
1992	33 962	375	939	491	20	372	18 113
1993	32 026	369	870	486	11	389	18 622
1994	32 668	411	843	505	15	414	15 969
1995	33 176	454	975	534	14	475	16 916
1996	34 831	503	969	590	16	491	20 037
1997	30 390	539	1 029	596	17	514	22 158
1998	29 204	578	1 039	623	20	373	32 588
1999	28 877	581	1 089	592	35	414	29 975
2000	29 038	639	1 494	412	34	376	27 842
2001	31 691	672	1 594	261	32	488	26 426
2002	32 204	673	1 557	289	115	523	32 499
2003	30 793	715	1 463	271	133	522	25 247
2004	32 828	720	1 513	290	52	525	45 024
2005	31 507	760	1 754	297	52	519	25 337
2006	31 503	761	1 756	297	54	519	28 938

Source: National Energy Balances

Section 7

Natural Gas

Limited natural gas reserves exist around the South African west coast. PetroSA exploits the reserves off the coast of Mossel Bay, where it is converted at the PetroSA plant into liquid fuels.

Sasol

The South Africa gas infrastructure consists of an 865 km, 26-inch, high-pressure steel pipeline from Mozambique Temane Pande gasfields to Sasol's Secunda site where it links to the Sasol Gas network. (Industrial and commercial clients)

Sasol Gas, a wholly owned subsidiary of Sasol, has developed a 1 500 km pipeline network in South Africa. The network delivers gas to more than 600 customers. Sasol supplies Egoli Gas, a reticulator supplying piped gas in the Greater Johannesburg metropolitan area.

PetroSA's Gas to Liquid facility

The natural gas production in South Africa is from the F-A field in the Bredasdorp basin located 93 km offshore of Mossel Bay. Gas is dried and refrigerated at the platform and transported to the PetroSA synfuel facility through an 18-inch pipeline. Condensate is transported through an 8-inch pipeline after separation offshore. The whole output of this operation is dedicated to the government-owned PetroSA Gas to Liquid (GTL) plant.

iGas

iGas acts as the official agent of the state for the development of the hydrocarbon gas industry in South Africa. iGas is a 100% subsidiary of CEF (Pty) Ltd. Its mandate is to develop gas infrastructure in South Africa. iGas has entered into a Mozambique/South Africa joint venture for gas transmission pipelines.

Even though gas consumption has increased in recent years, the importance of gas in the South African energy economy is still low compared with other countries. Figure below shows consumption of gas by sectors. There was a total consumption of 105 684 TJ in 2006 compared to 86 912 TJ in 2005. This is an increase of about 21.6%. Industry is by far the largest consumer of gas, consuming about 99% of the total gas. The two largest consumers in the industrial sector are Chemical and Iron and Steel.

Table 7.1: Consumption of gas by sectors: 1992-2006

Gas-Sectoral Consumption-TJ

Year	Industry	Transport	Residential	Non-Specified (other)	Commerce	Total
1992	21 010	5	0	0	2 521	23 536
1993	21 955	4	0	0	2 509	24 468
1994	23 318	0	518	0	1 048	24 884
1995	25 223	8	466	0	832	26 530
1996	28 588	14	470	0	839	29 912
1997	28 468	12	512	0	902	29 895
1998	31 071	13	0	0	107	31 191
1999	37 466	25	0	50	216	37 757
2000	39 532	29	0	38	231	39 830
2001	41 241	30	0	40	241	41 552
2002	43 048	31	0	42	251	43 372
2003	48 749	0	0	0	95	48 844
2004	50 361	0	0	0	310	50 671
2005	86 586	0	0	0	326	86 912
2006	104 820	0	0	0	864	105 684

Source: National Energy Balances

Graph 7.1: Consumption of gas by sectors in 2006

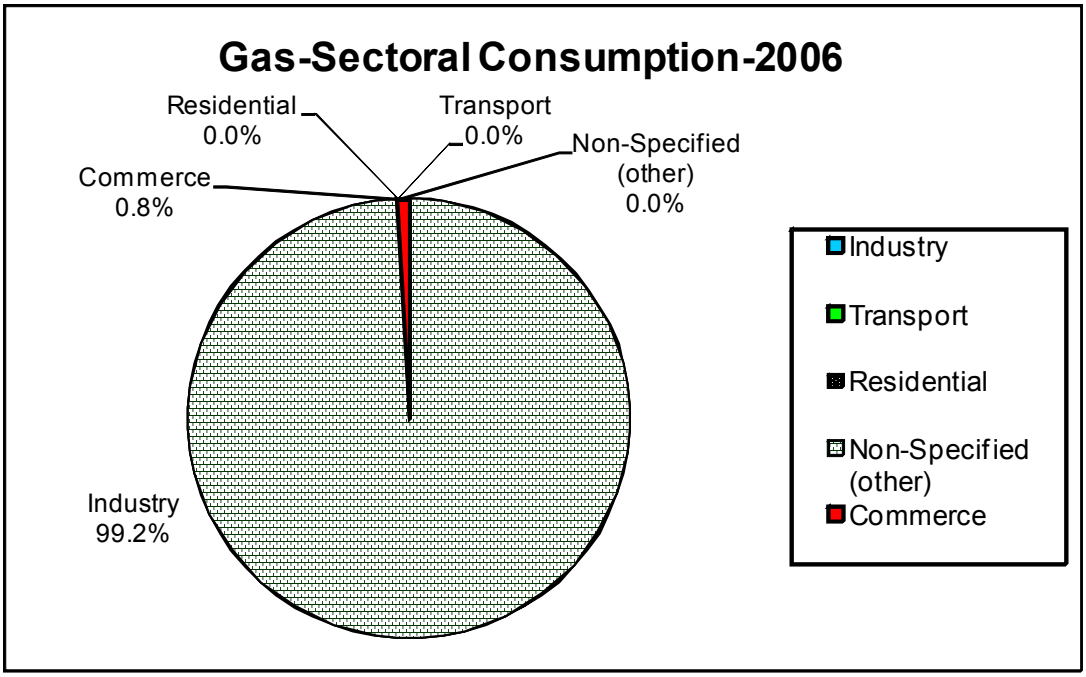


Table 7.2: Historical Consumption of gas by industries: 1992-2006

Gas-Industrial Consumption TJ

Year	Iron and Steel	Chemical	Non-Ferrous Metals	Non-Metallic Minerals	Transport Equipment	Machinery
1992	6 474	2 508	951	4 865	155	4 054
1993	7 092	2 455	1 002	5 077	154	4 153
1994	6 830	2 523	862	5 300	142	4 327
1995	7 960	2 642	805	5 861	168	4 573
1996	10 748	2 866	972	5 740	201	4 734
1997	8 372	2 948	1 230	5 918	174	5 414
1998	15 329	3 051	957	6 314	106	604
1999	8 965	12 929	1 886	5 511	357	752
2000	10 147	12 349	2 256	5 682	368	789
2001	10 586	12 883	2 354	5 927	384	824
2002	11 050	13 448	2 457	6 187	401	860
2003	26 147	7 701	0	4 740	0	2 184
2004	22 836	9 109	0	6 151	0	1 917
2005	21 838	44 430	0	0	0	2 127
2006	21 976	59 122	0	0	0	2 329

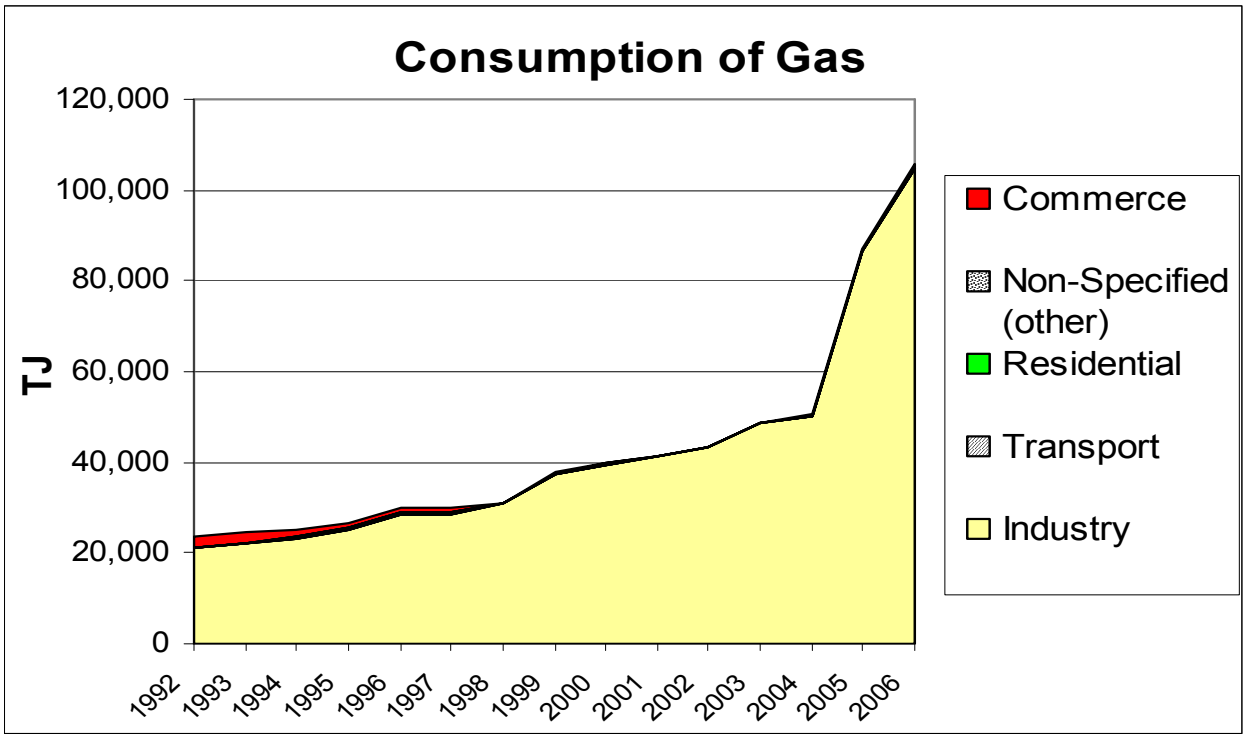
Source:National Energy Balances

Gas-Industry Consumption-TJ

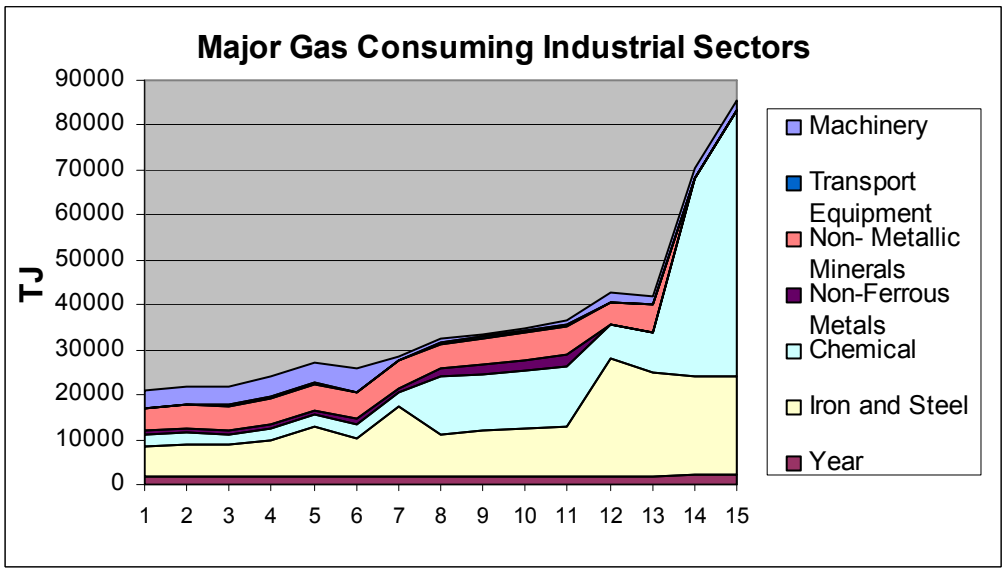
Year	Mining	Food	Paper	Wood	Textiles	Industries not Specified
1992	461	785	335	264	15	143
1993	466	774	372	237	18	154
1994	430	840	399	248	19	1 397
1995	478	806	368	280	20	1 263
1996	325	949	388	271	101	1 293
1997	549	1 181	393	879	20	1 391
1998	498	1 154	371	170	18	2 501
1999	341	1 212	2 715	63	17	2 719
2000	378	1 251	2 967	68	18	3 257
2001	395	1 305	3 096	71	19	3 398
2002	412	1 362	3 231	75	20	3 547
2003	2 334	1 116	2 511	0	0	2 015
2004	2 312	924	2 251	0	0	4 860
2005	2 557	1 046	2 322	0	0	5 137
2006	2 900	1 397	3 121	0	0	6 108

Source:National Energy Balances

Graph 7.2: Historical Consumption of Gas by sectors: 1992-2006



Graph 7.3: Major Gas consuming Industrial sectors



Section 8

Renewables

Renewable energy contributed approximately 8% of South Africa's primary energy supply in 2006.

South Africa's over-reliance on coal has led to high levels of air pollution. Environmental issues are therefore on the government's priority list. New technologies of coal combustion, known as clean coal technologies, have been developed to reduce solid, liquid and gaseous emissions, and are in the early stages of being introduced at new mines and power stations. South Africa has signed the Nuclear Test Ban, the Ozone Layer Protection, and Endangered Species agreements, and the Kyoto Protocol. However South Africa does not have obligations under the Kyoto Protocol and it is classified as a non-annex one party. All non-annex one parties have no obligations or commitment during the period 2008 -2012 of the protocol. In addition, all non-annex one parties are allowed to participate in the Clean Development Mechanism (CDM) projects, and they are expected to achieve sustainable development benefits from the investments that flow from this mechanism. Also, the Clean Fuels Programme (CFP) came into operation in 2006. One of the first initiatives of the CFP was to end sales of leaded petrol as of January 2006. Domestic refineries have spent millions of rand on upgrading their operations to accommodate this shift away from leaded fuels.

A number of companies have been gearing up to produce biofuels in South Africa. One of these, Ethanol Africa, has been planning to build eight plants to convert maize to ethanol, which can then be blended with petrol. However, government strategy is vital to the success of this, as biofuels are expensive to produce and incentives such as tax exemptions may be necessary. The government was originally eager to promote biofuels, including biodiesel made from maize. However, fears about the impact of biofuels on food security had a major impact on the final strategy that was announced in December 2007, and maize is to be excluded from biofuel production. Moreover, only a 2% mix with petrol or diesel is to be targeted over the next five years, down from the 4.5% originally envisaged. Incentives will include a 40-50% exemption from taxes on biodiesel and a 100% exemption from taxes on ethanol.

Section 9

Prices

The price data given here have been extracted from a far more extensive DoE Energy Price Report which can be sourced from the Department's website.

Table 9.1: Average Petrol and Diesel Prices

Average Petrol and Diesel Prices
SA c\Litre Coast Pump Price

	Petrol-93	Diesel
1992	141.75	137.00
1993	160.42	154.67
1994	167.42	154.80
1995	188.08	159.09
1996	194.42	187.67
1997	209.75	194.33
1998	250.50	181.25
1999	250.83	203.96
2000	326.00	280.40
2001	350.33	313.80
2002	399.00	347.81
2003	381.33	326.96
2004	429.92	372.58
2005	612.30	565.10
2006	585.60	770.40

Source: Petroleum Products Price Report

Graph 9.1: Coast Pump Price – Petrol and Diesel

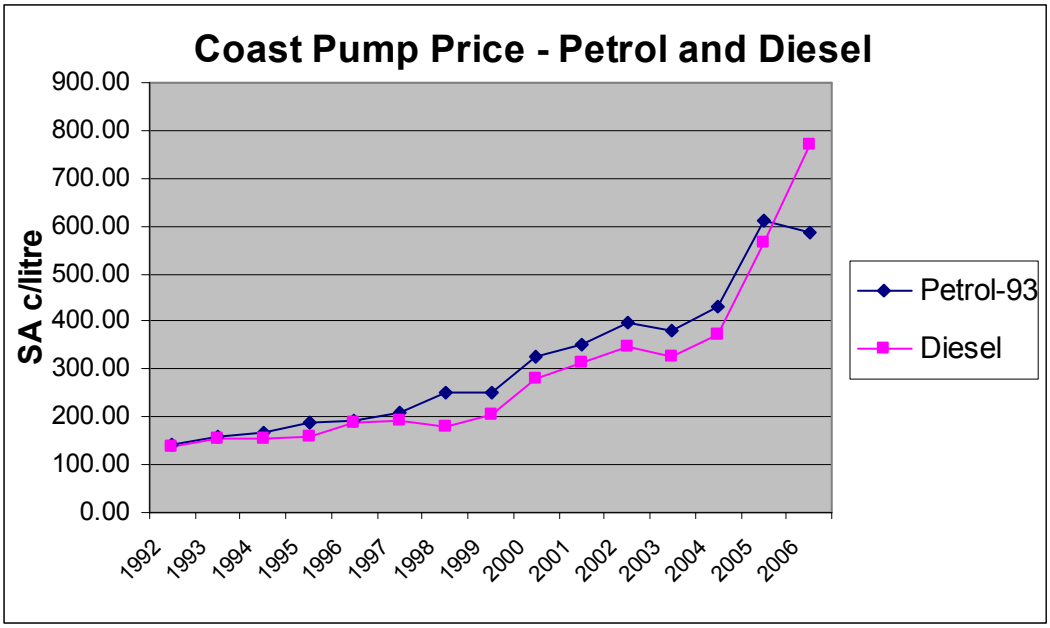


Table 9.2 Price comparison- Business Use- R/GJ

Price Comparison-Business Use- R/GJ[8]

Year	Coal	Electricity	HFO	LPG	Sasol Gas Tariff A	Sasol Gas Tariff G
1992	2.27	25.44	10.19	32.23	10.71	28.22
1993	2.21	26.64	12.03	33.60	10.89	28.22
1994	2.33	28.67	12.15	36.46	11.91	30.86
1995	2.55	30.97	14.66	38.98	12.35	31.99
1996	2.69	31.39	17.03	41.33	13.46	34.88
1997	2.49	32.92	18.83	46.11	15.01	38.90
1998	3.71	34.14	17.11	48.55	19.85	46.47
1999	3.96	34.56	20.51	54.38	25.73	54.84
2000	4.03	36.75	33.46	72.29	38.60	76.22
2001	4.89	38.22	34.70	91.12	42.84	86.82
2002	5.45	41.61	44.96	100.14	56.95	111.01
2003	6.14	44.58	42.92	103.20	46.20	87.18
2004	5.10	44.56	39.67	114.26	40.26	83.18
2005	6.14	44.56	42.92	103.20	46.20	87.18
2006	5.10	47.36	39.67	114.26	40.26	83.18

Sources: Petroleum Products Price Report
Minerals Bureau Coal Price Report (Bituminous - Industries)
Eskom Annual Reports

[8] Data on coal, HFO, LPG and Sasol Gas tariff A and G for 2005 and 2006 have been estimated due to data unavailability.

Graph 9.2: Price Comparison-Business Use

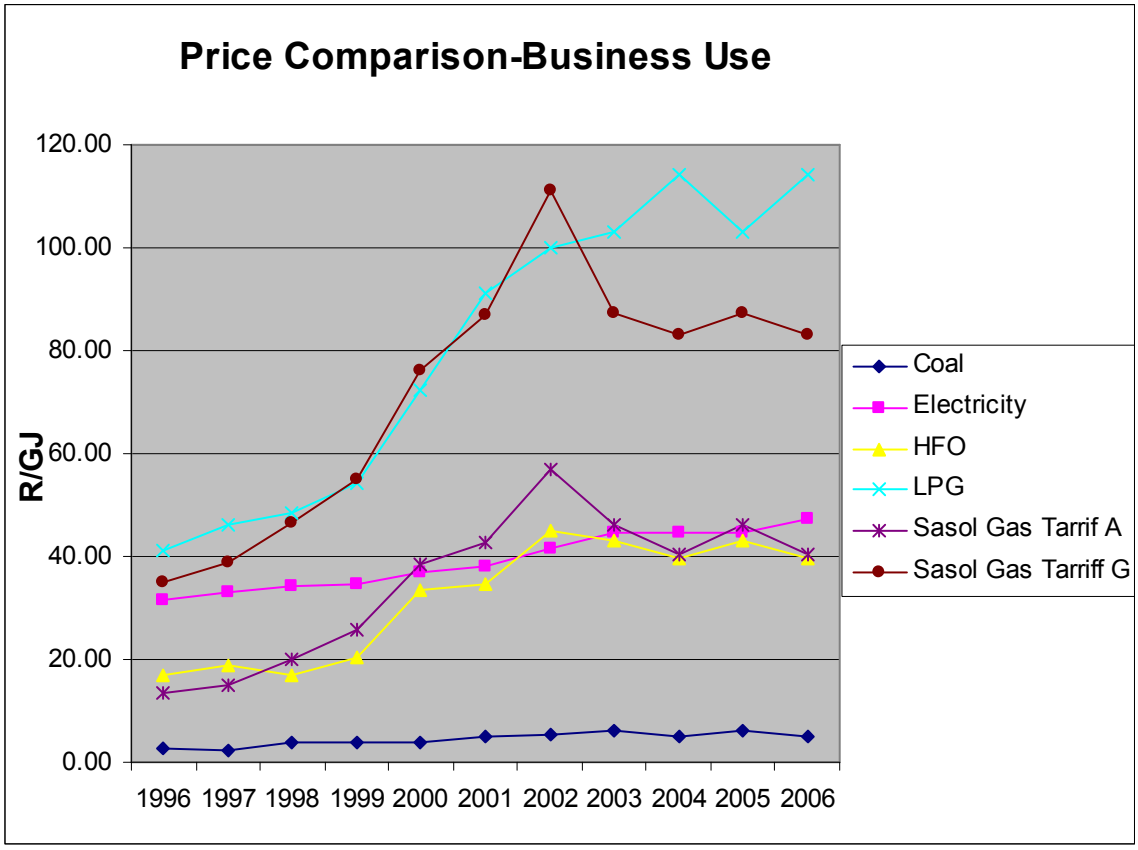
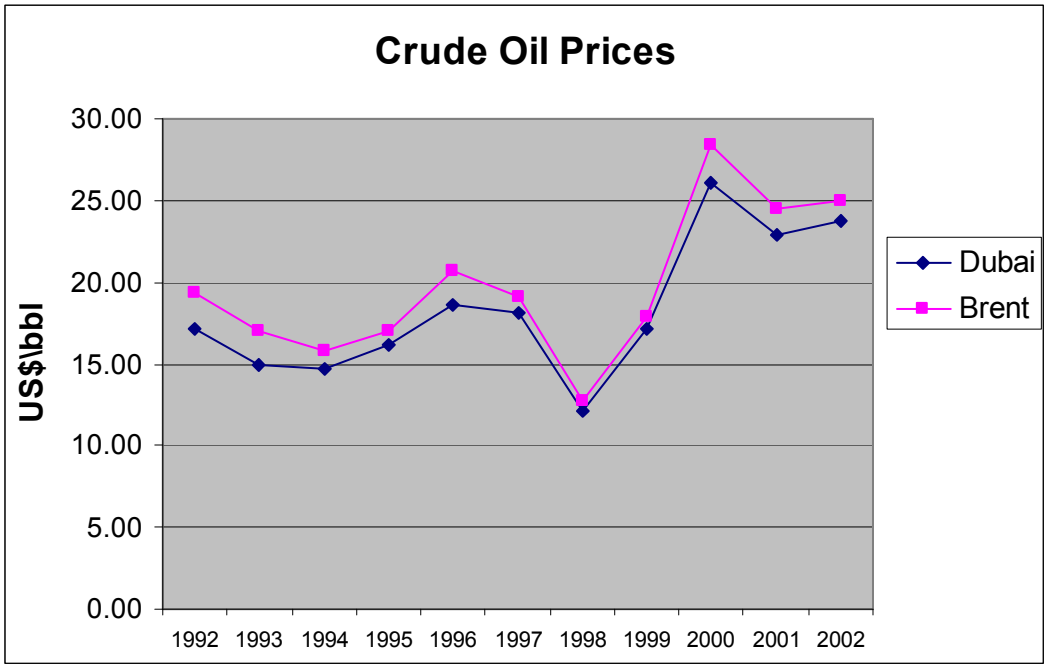


Table 9.3: Crude Oil-Us$/bbl

Crude Oil-US$/bbl		
Year	Dubai	Brent
1992	17.19	19.31
1993	14.91	17.00
1994	14.74	15.80
1995	16.11	17.03
1996	18.56	20.69
1997	18.17	19.13
1998	12.16	12.73
1999	17.19	17.87
2000	26.14	28.45
2001	22.92	24.46
2002	23.80	25.00
2003	26.80	28.84
2004	33.63	38.21
2005	49.30	54.40
2006	61.50	65.10

Source: Petroleum Products Price Report

Graph 9.3: Crude oil Price

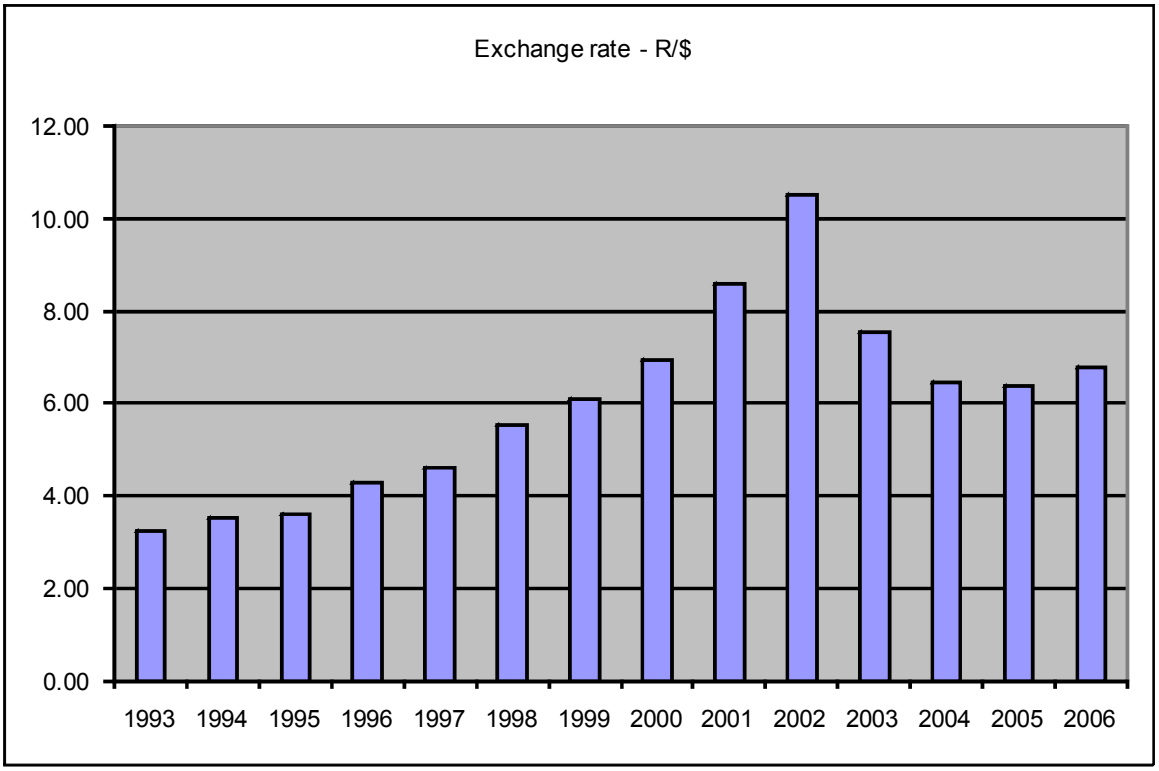


Section 10

Economic data

Year	Gross Domestic Product (at constant 2000 market prices; Rm)	Consumer Price Index (2000 = 100)	Production Price Index (2000 = 100)	Exchange rate - R/$	Gold price - US$/oz	Gold price - R/oz
1993	755 009	61.20	61.60	3.27	359.70	1 175.03
1994	779 424	66.60	66.70	3.55	384.05	1 363.26
1995	803 710	72.40	73.00	3.63	384.17	1 393.38
1996	838 326	77.70	78.10	4.30	387.71	1 665.76
1997	860 516	84.40	83.60	4.61	331.11	1 525.52
1998	864 968	90.20	86.60	5.53	294.14	1 627.06
1999	885 365	94.90	91.60	6.11	278.92	1 705.07
2000	922 148	100.00	100.00	6.94	279.13	1 935.85
2001	947 373	105.70	108.40	8.60	271.08	2 331.29
2002	981 102	115.40	123.80	10.52	310.16	3 262.88
2003	1 011 556	122.10	125.90	7.56	363.65	2 749.19
2004	1 056 771	123.80	126.70	6.45	409.33	2 640.18
2005	1 114 758	128.00	132.40	6.38	444.74	2 837.44
2006	1 174 078	134.00	142.60	6.78	603.46	4 091.46

Sources: The South African Reserve Bank website - www.resbank.co.za & Stats SA website - www.statssa.gov.za



Section 11

CALORIFIC VALUES

Fuel	Calorific Value	Units	Density
Electricity	3,6	MJ/kWh	
Natural Gas	41,0	MJ/m^3	
LPG (Liquefied Petroleum Gas)	26,7	MJ/l	0,541
Petrol	34,2	MJ/l	0,723
Avgas	33,9	MJ/l	0,730
Illuminating Paraffin	37,0	MJ/l	0,788
Power Paraffin	37,5	MJ/l	0,813
Jet Fuel	34,3	MJ/l	0,793
Diesel	38,1	MJ/l	0,839
HFO (Heavy Furnace Oil)	41,6	MJ/l	0,984
Coal (Eskom - average 1994)	20,1	MJ/kg	
Coal (General purpose)	24,3	MJ/kg	
Coal (Coking)	30,1	MJ/kg	
Coke	27,9	MJ/kg	
Coke oven gas	17,3	MJ/m^3	
Blast furnace gas	3,1	MJ/m^3	
Refinery gas (estimate)	20,0	MJ/m^3	
Bagasse (wet)	7,0	MJ/kg	
Bagasse fibre (dry)	14,0	MJ/kg	
Biomass (wood dry typical)	17,0	MJ/kg	
Coal gas (Sasol)	18,0	MJ/m^3	
Coal gas (Sasol - methane rich)	38,0	MJ/m^3	

Conversion Factors

From \ To	J	kWh	toe	Btu
1 J	1	0.278×10^{-6}	0.2388×10^{-6}	0.948×10^{-3}
1 kWh	3.6×10^{6}	1	0.86×10^{-6}	3.412×10^{3}
1 toe	42×10^{9}	11630	1	39.68×10^{6}
1 Btu	1.055×10^{3}	0.293×10^{-3}	0.252×10^{-9}	1

Note: toe = ton oil equivalent

Prefixes

Prefix	Symbol	Power
Kilo	k	10^{3}
Mega	M	10^{6}
Giga	G	10^{9}
Tera	T	10^{12}
Peta	P	10^{15}
Exa	E	10^{18}

Section 12
Useful Addresses

Department of Energy
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Acardia, 0007
Tel: (012) 444 3000

Eskom
P O Box 1091
Johannesburg, 2001
Tel: (011) 800 8111

National Electricity Regulator of South Africa (Nersa)
P O Box 40343
Arcadia, 0007
(012) 401 4600

Central Energy Fund (CEF)
P O Box 786141
Sandton, 2199
Tel: (011) 880 9727

South African Petroleum Industry Association (SAPIA)
P O Box 783482
Sandton, 2146
Tel: (011) 783 7664

PetroSA
Private Bag X1
Waterfront, 8002
Tel: (021) 938 3644

Sasol Oil
P O Box 4211
Ransburg, 2125
Tel: (011) 889 7600

Sasol Gas
P O Box 4211
Randburg, 2125
Tel: (011) 889 7600

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University of Cape Town
Private Bag X3
Rondebosch, 7701
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The Council of Scientific and Industrial Research (CSIR)

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Pretoria, 0001
(012) 841 2911

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