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Department
Minerals and Energy
REPUBLIC OF SOUTHAFRICA

DIGEST OF SOUTH AFRICAN ENERGY STATISTICS

2006

Directorate: Energy Planning and Development

DEPARTMENT: MINERALS AND ENERGY
REPUBLIC OF SOUTH AFRICA

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DIGEST OF

SOUTH AFRICAN

ENERGY STATISTICS

2006

Issued free and obtainable form the Director: Energy Planning and Development
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ISBN: 0-9584376-4-5

FOREWORD

Basic energy information is vital to provide a reliable picture of the energy situation in South Africa especially with the liberalisation and transformation of our minerals and energy sectors in South Africa.

As far back as 1992 the DME initiated the collection of energy statistics in order to develop an Energy Balance for South Africa. The Energy Balance presents an overview of the energy flows for a specific time period. It shows, inter alia, 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.

It gives me pleasure to introduce the fourth issue of the *Digest of South African Energy Statistics, 2006*.

The digest is published by the Directorate: Energy Planning and Development, formerly known as Database and Administration. The Directorate is responsible for the collection, analysis of energy statistics and the compilation of Energy Balances.

However a number of challenges face the Department of Minerals and Energy in terms of the collection, verification and publication of energy statistics. These relate to the fact that the supply of energy data is voluntary, capacity constraints, different formats for collecting data etc. To address some of these issues the DME will be making the provision of energy data mandatory through the Energy Bill, developing a methodology manual for the collection of energy data and establishing an Energy Advisory Statistics Committee to review and verify the data.

The *Digest* is now published bi-annually instead of tri-annually, as was the case in the past. This is to ensure that readers get updated information in

time. This age, our age is referred to as the information age. This means that without reliable and updated information we are unable to make informed and accurate decisions. It is for this reason that the Department of Minerals and Energy has deemed it necessary to increase the frequency of publication.

Energy is often referred to as one of the drivers of development. Therefore investors and policy makers need information on various aspects of energy in order to plan. This publication carries such information. We have tried and I hope managed to compile statistics of our various energy resources, energy supply as well as demand. It is my belief that, this will contribute towards lowering the cost of doing business in the country, hence making South Africa an attractive destination for investment.

As a Department we seek to continually improve energy governance and provide the necessary infrastructure for the integrated energy planning. This *Digest* forms part of this effort and I hope it 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 Planning and Development for the hard and successful work that went into the compilation of this publication.

Advocate Sandile Nogxina
Director-General

Contents

Introduction

The challenges presented by data collection are legend among statisticians. This publication has faced its own challenges in this regard. It has been necessary to meld together data collected by two different organizations and by the Department of Minerals and Energy itself during the period 1992 to 2002. Although all organisations used supply side figures (i.e. sales data) to measure energy consumption, they used slightly different data collection methodologies. They also used different assumptions when deciding how to allocate energy consumption to different sectors. This last is a problem particularly associated with using supply side data to measure energy consumption. The result is that for example certain of the time series might not be as smooth as expected. In particular, estimates for the use of biomass as a source of primary energy, can vary greatly, depending on assumptions made. These factors should be taken into account when interpreting the data in this publication.

Section 1

Overview

South Africa has a well-developed energy supply and production system. The country is well endowed with large resources of coal. Natural gas and crude oil production is very limited and consequently the bulk of our crude oil is imported. Uranium reserves are large. Renewable energy plays a limited but plays a significant role, particularly large hydroelectric power generation. However the country generally has a low rainfall, which limits the exploitation of this form of energy. South Africa's abundant sunshine is only beginning to be tapped in more remote areas for electricity generation for domestic and institutional application. Wind energy is a potential source of commercial energy in some parts, but like other renewable energy technologies it struggles to match the lower costs basis of conventional energy, in particular our cheap coal. With the setting of renewable energy targets and with carbon trading under the Kyoto protocol, the role of renewable energy is expected to expand.

Primary Energy Supply

The South African energy sector is dominated by coal (see the graph below), 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 35% 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.

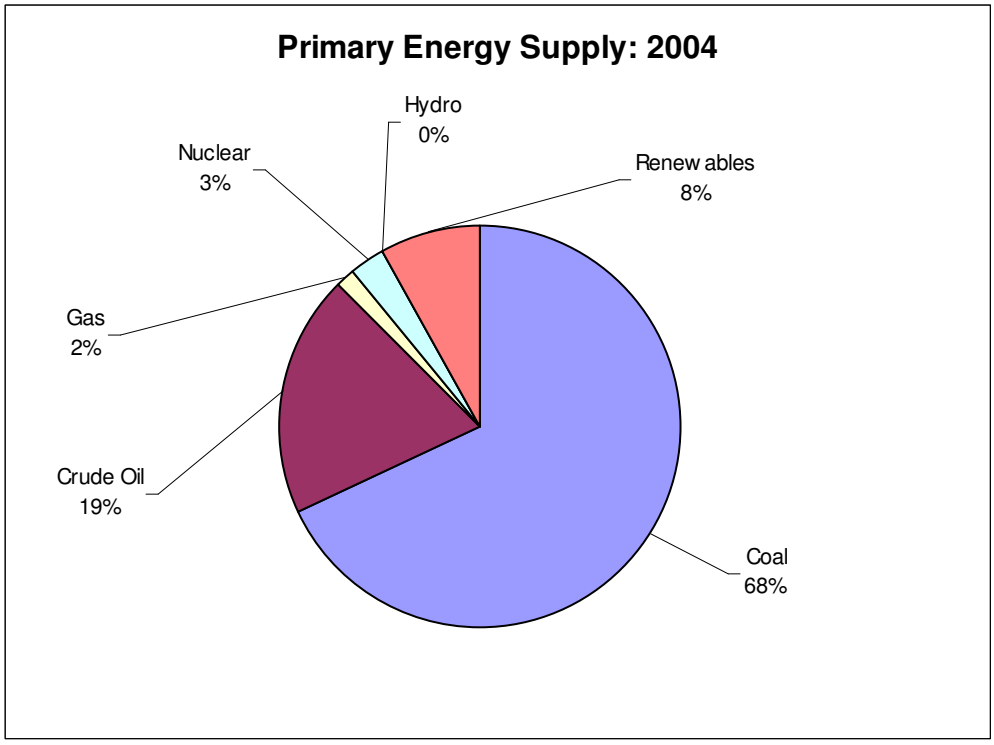
Renewable energy comprises biomass and natural processes that are replenished and can be used as an energy source. Biomass is used

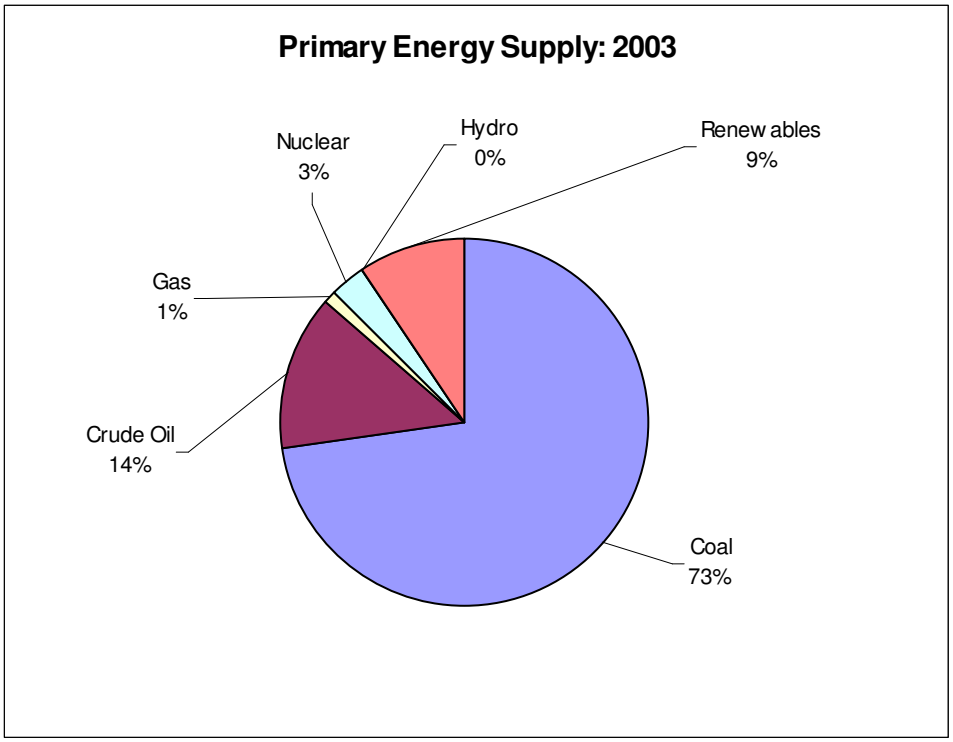
commercially in the pulp and paper mills and sugar refineries by burning bulk from logs, black liquor and bagasse to produce process heat. The energy produced is used by the industries concerned to meet their needs. In future, some of this energy could be sold to the national grid (depending on electricity prices and environmental regulations). However, given the limited potential for agricultural expansion (lack of water and arable land), it is unlikely that this would be a major contribution.

In households, biomass is used for cooking and heating. It is very difficult to get an estimate of the total biomass reserves. Biomass is estimated to comprise 8% of South Africa's primary energy supply.

Total Primary Energy Supply - TJ

	2003	%	2004	%
Coal	3,277,600	72.7%	3,573,343	68.2%
Crude Oil	615,689	13.7%	1,016,664	19.4%
Gas	50,218	1.1%	84,152	20.1%
Nuclear	138,142	3.1%	145,801	2.8%
Hydro	2,890	0.1%	2,890	0.1%
Renewables	422,979	9.4%	418,058	8.0%
TOTAL	**4,507,518**		**5,240,908**	





Total Primary Energy Supply - TJ

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Coal	2,990,691	3,028,745	3,117,230	3,243,737	3,299,787	3,370,254	3,268,198	3,413,499	3,425,725	3,065,619	2,961,026	3,277,600	3,573,343
Crude Oil	414,946	334,047	428,321	459,980	376,059	450,863	933,682	764,067	420,746	452,895	1,018,769	615,689	1,016,664
Gas	11,969	71,814	71,814	71,814	71,814	71,814	53,983	70,628	65,024	84,478	83,764	50,218	84,152
Nuclear	101,324	79,145	105,785	123,284	128,455	137,967	148,375	140,040	141,927	116,935	130,811	138,142	145,801
Hydro	2,707	526	3,866	1,904	4,748	7,531	5,742	2,614	4,835	7,420	8,485	2,890	2,890
Renewables	414,000	419,000	433,432	408,739	408,739	408,739	237,400	237,400	237,400	237,400	426,467	422,979	418,058
TOTAL	**3,935,637**	**3,933,277**	**4,160,448**	**4,309,458**	**4,289,602**	**4,447,168**	**4,647,379**	**4,628,248**	**4,295,657**	**3,964,746**	**4,629,322**	**4,507,518**	**5,240,908**

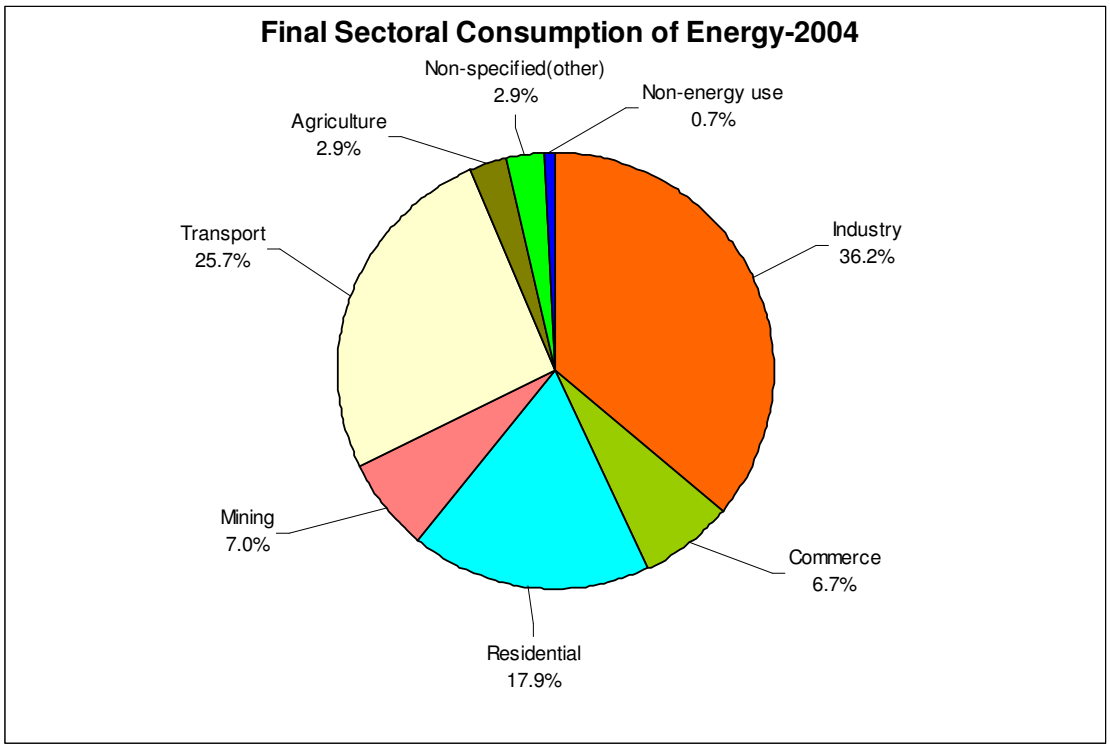
Final Sectoral Consumption

The three major energy-consuming sectors are industry, residential and transport. In 2002 they accounted together for 80,4% whilst in 2003 and 2004 they accounted for 79,4% and 79,6% respectively of final energy demand. This shows a decrease of energy consumption from these three major energy – consuming sectors combined together of 1% in 2003 and 0.6% in 2004. 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.

Final Sectoral Consumption of Energy-TJ

Sector	2003	%	2004	%
Industry	854,793	34.5%	983,167	36.2%
Commerce	162,272	6.5%	183,359	6.7%
Residential	455,733	18.4%	485,692	17.9%
Mining	180,699	7.3%	190,274	7.0%
Transport	656,520	26.5%	698,552	25.7%
Agriculture	74,998	3.0%	77,988	2.9%
Non-specified(other)	64,574	2.6%	78,830	2.9%
Non-energy use	31,000	1.2%	20,000	0.7%
Total	**2,480,589**		**2,717,860**	

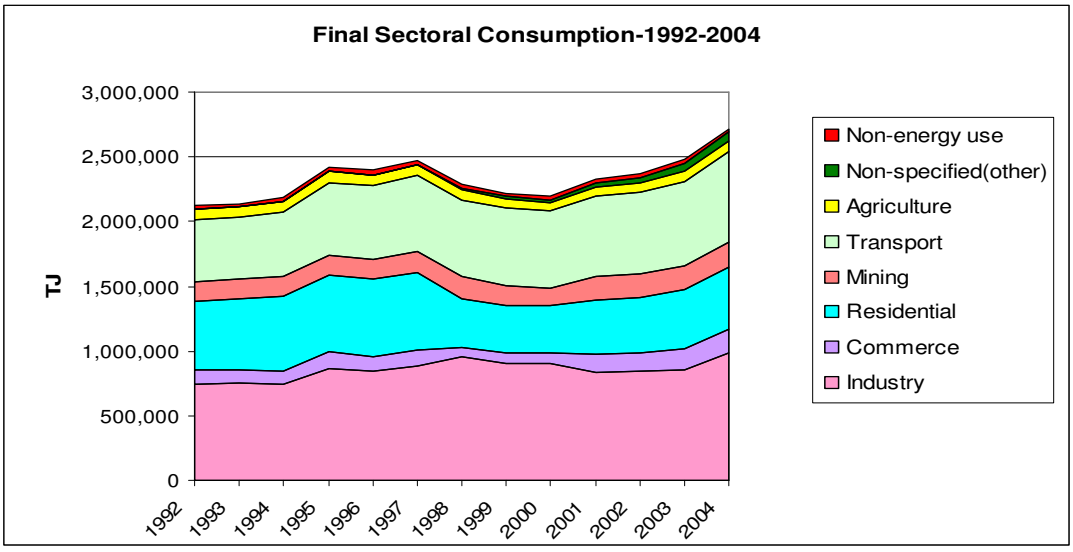
Source: National Energy Balances

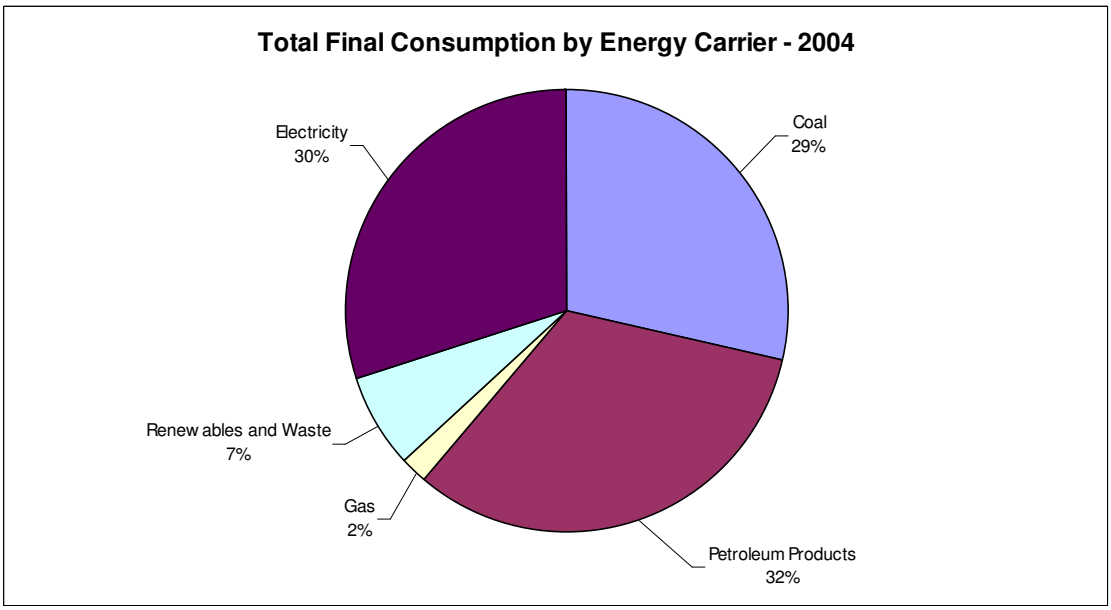


Final Sectoral Consumption of Energy-TJ

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Industry	745,401	749,869	745,633	867,356	848,516	886,831	951,810	900,717	906,785	837,675	839,654	854,793	983,167
Commerce	111,089	102,935	97,082	124,281	107,321	118,429	76,022	85,140	82,975	134,447	143,556	162,272	183,359
Residential	530,249	553,865	584,484	593,359	596,938	603,557	376,504	369,078	360,467	419,903	425,379	455,733	485,692
Mining	153,207	144,908	145,981	154,043	159,369	164,098	166,934	145,386	130,759	183,744	183,795	180,699	190,274
Transport	475,345	484,636	502,798	563,367	564,195	583,569	599,766	605,790	603,985	620,916	636,332	656,520	698,552
Agriculture	77,708	74,892	83,446	85,380	87,661	84,456	79,387	74,832	64,109	70,003	72,904	74,998	77,988
Non-specified(other)	0	0	0	0	0	0	11,979	11,111	21,911	32,033	34,583	64,574	78,830
Non-energy use	28,938	26,983	29,109	28,357	31,600	29,828	26,100	24,740	22,352	29,721	31,687	31,000	20,000
Total	**2,121,937**	**2,138,087**	**2,188,534**	**2,416,142**	**2,395,599**	**2,470,770**	**2,288,502**	**2,216,793**	**2,193,342**	**2,328,443**	**2,367,889**	**2,480,589**	**2,717,860**

Source: National Energy balances



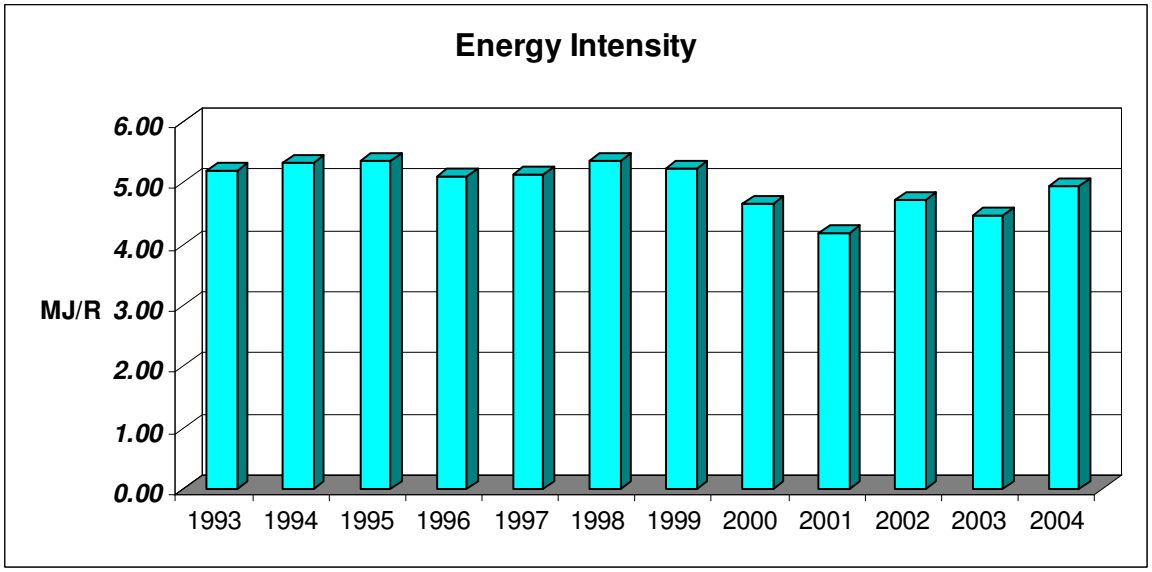


Energy Intensity

South Africa's economic growth as measured by the growth in Gross Domestic Product (GDP) was 39,9% for the period 1993 to 2004. The Total Primary Energy Supply for these years increased from 3 933PJ in 1993 to 5 241PJ in 2004, an increase of 33,6%. This resulted in the energy intensity for the individual years depicted in the following table and graph.

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	922,151	4,298,220	4.66
2001	947,373	3,972,681	4.19
2002	982,327	4,637,437	4.72
2003	1,011,556	4,507,518	4.46
2004	1,056,771	5,240,908	4.96

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



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). Energy balances in this format for 2003 and 2004 for South Africa using the terajoule (TJ) as accounting unit are presented on the following pages.

Interested readers are referred to the IEA for details on the methodologies and conventions used in balance format (Internet site at: http://www.iea.org).

RSA 2003 (Version 2)

(TJ)	Coal	Crude Oil	Petroleum Products	Gas	Nuclear
Indigenous Production	5,282,380.82	191,521.20	-	50,217.88	138,141.82
Import	49,170.90	732,329.61	41,398.03	-	-
Export	-2,004,605.75	-18.72	-237,987.34	-	-
Intl. Marine Bunkers	-	-	-111,553.57	-	-
Stock Changes	-49,345.55	-	-	-	-
Total Primary Energy Supply	**3,277,600.42**	**923,832.10**	**-308,142.87**	**50,217.88**	**138,141.82**
Transfers	-	-	-	-	-
Statistical Differences	514,436.97	-186,377.16	31,000.40	-0.00	-
Public Electricity Plant	-2,132,681.65	-	-	-	-138,141.82
Autoproducer Electricity Plant	-82,036.05	-	-	-	-
Public CHP Plant	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-
Public Heat Plant	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-
Heat pumps	-	-	-	-	-
Electric boilers	-	-	-	-	-
Gas Works	-	-	-	48,844.39	-
Oil Refineries	-	-737,454.93	1,127,950.32	-	-
Coal Transformation	-11,524.03	-	-	-	-
Liquefaction	-862,100.47	-	-	-50,217.88	-
Non-specified (Transformation)	-	-	-	-	-
Own Use	-	-	-	-	-
Distribution Losses	-	-	-	-	-
Total Final Consumption	**703,695.19**	**-**	**850,807.85**	**48,844.39**	**-**
Industry Sector	545,087.53	-	47,133.60	48,749.09	-
Iron and Steel	185,466.05	-	-	26,146.99	-
Chemical and Petrochemical	136,842.56	-	-	7,701.16	-
Memo: Feedst.Use In Petchem.Ind.	*136,058.51*	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-
Non-Metallic Minerals	46,072.96	-	-	4,740.41	-
Transport Equipment	-	-	-	-	-
Machinery	-	-	-	2,184.17	-
Mining and Quarrying	36,834.87	-	30,673.42	2,333.91	-
Food and Tobacco	-	-	-	1,115.94	-
Paper Pulp and Print	-	-	-	2,511.11	-
Wood and Wood Products	-	-	-	-	-
Construction	-	-	16,460.18	-	-
Textile and Leather	-	-	-	-	-
Non-specified (Industry)	139,871.09	-	-	2,015.39	-
Transport Sector	-	-	636,485.90	-	-
International Civil Aviation	-	-	36,883.85	-	-
Domestic Air Transport	-	-	35,400.04	-	-
Road	-	-	555,291.75	-	-
Rail	-	-	8,910.26	-	-
Pipeline Transport	-	-	-	-	-
Internal Navigation	-	-	-	-	-
Non-specified (Transport)	-	-	-		
Other Sectors	158,607.66	-	136,187.95	95.30	-
Agriculture	3,321.83	-	53,161.58	-	-
Commerce and Public Services	52,258.60	-	34,061.57	95.30	-
Residential	103,027.23	-	39,637.20	-	-
Non-specified (Other)	-	-	9,327.60	-	-
Non-Energy Use	-	-	31,000.40	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	31,000.40	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-
Elect.Output in GWh	202,464	-	-	4	12,663
Elect.Output-public elec. plant	194,046	-	-	0	12,663
Elect.Output-autoprod. elec. plant	8,418	-	-	4	-
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	-	-	-	-	-

RSA 2003 (Version 2)

(TJ)	Hydro	Geothermal Solar etc	Renewables & Waste	Electricity	Heat	Total
Indigenous Production	2,889.67	2,031.22	428,396.00	-	-	6,095,578.62
Import	-	-	-	29,498.40	-	852,396.94
Export	-	-	-	-36,946.80	-	-2,279,558.60
Intl. Marine Bunkers	-	-	-	-	-	-111,553.57
Stock Changes	-	-	-	-	-	-49,345.55
Total Primary Energy Supply	**2,889.67**	**2,031.22**	**428,396.00**	**-7,448.40**	**-**	**4,507,517.84**
Transfers	-	-	-	-	-	-
Statistical Differences	-	-	-	4,551.95	-	363,612.14
Public Electricity Plant	-1,813.10	-2,031.22	-	747,999.71	-	-1,526,668.08
Autoproducer Electricity Plant	-1,076.58	-	-	31,394.10	-	-51,718.52
Public CHP Plant	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-237,996.00	933.54	-	-237,062.46
Public Heat Plant	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-
Electric boilers	-	-	-	-	-	-
Gas Works	-	-	-	-	-	48,844.39
Oil Refineries	-	-	-	-25,153.32	-	365,342.07
Coal Transformation	-	-	-	-	-	-11,524.03
Liquefaction	-	-	-	-	-	-912,318.35
Non-specified (Transformation)	-	-	-	-	-	-
Own Use	-	-	-	-14,460.02	-	-14,460.02
						-
Distribution Losses	-	-	-	-50,976.00	-	-50,976.00
Total Final Consumption	**-**	**-**	**190,400.00**	**686,841.56**	**-**	**2,480,588.98**
Industry Sector	-	-	-	394,521.36	-	1,035,491.58
Iron and Steel	-	-	-	80,392.22	-	292,005.26
Chemical and Petrochemical	-	-	-	33,980.12	-	178,523.85
Memo: Feedst.Use In Petchem.Ind.	-	-	-	-	-	*136,058.51*
Non-Ferrous Metals	-	-	-	58,529.78	-	58,529.78
Non-Metallic Minerals	-	-	-	8,205.74	-	59,019.10
Transport Equipment	-	-	-	342.91	-	342.91
Machinery	-	-	-	152.54	-	2,336.71
Mining and Quarrying	-	-	-	110,856.52	-	180,698.72
Food and Tobacco	-	-	-	2,572.26	-	3,688.19
Paper Pulp and Print	-	-	-	5,265.39	-	7,776.51
Wood and Wood Products	-	-	-	974.49	-	974.49
Construction	-	-	-	479.02	-	16,939.20
Textile and Leather	-	-	-	1,879.62	-	1,879.62
Non-specified (Industry)	-	-	-	90,890.74	-	232,777.22
Transport Sector	-	-	-	20,034.04	-	656,519.94
International Civil Aviation	-	-	-	-	-	36,883.85
Domestic Air Transport	-	-	-	153.56	-	35,553.60
Road	-	-	-	71.50	-	555,363.25
Rail	-	-	-	11,756.88	-	20,667.14
Pipeline Transport	-	-	-	277.87	-	277.87
Internal Navigation	-	-	-	177.77	-	177.77
Non-specified (Transport)			-	7,596.47	-	7,596.47
Other Sectors	-	-	190,400.00	272,286.16	-	757,577.07
Agriculture	-	-	-	18,514.50	-	74,997.92
Commerce and Public Services	-	-	-	75,856.24	-	162,271.71
Residential	-	-	190,400.00	122,668.53	-	455,732.96
Non-specified (Other)	-	-	-	55,246.88	-	64,574.48
						-
Non-Energy Use	-	-	-	-	-	31,000.40
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	31,000.40
Memo:Non-Energy Use in Transport	-	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-	-
Elect.Output in GWh	803	564	259	-	-	216,758
Elect.Output-public elec. plant	504	564	-	-	-	207,778
Elect.Output-autoprod. elec. plant	299	-	-	-	-	8,721
Elect.Output-public CHP plant	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	259	-	-	259
		-				
Heat Output-public CHP plant	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-
Heat Output in TJ	-	3,159.68	-	-	-	-

RSA 2004 (Version 1)

(TJ)	Coal	Crude Oil	Petroleum Products	Gas	Nuclear
Indigenous Production	5,372,630.01	206,291.98	-	77,171.78	145,801.34
Import	52,105.61	1,006,340.73	82,674.73	6,980.54	-
Export	-1,905,254.08	-25.24	-178,000.87	-	-
Intl. Marine Bunkers	-	-	-100,616.85	-	-
Stock Changes	53,861.05	-	-	-	-
Total Primary Energy Supply	**3,573,342.58**	**1,212,607.47**	**-195,942.99**	**84,152.32**	**145,801.34**
Transfers	-	-	-	-	-
Statistical Differences	467,623.74	-198,047.85	20,000.10	0.00	-
Public Electricity Plant	-2,295,836.31	-	-	-	-145,801.34
Autoproducer Electricity Plant	-64,333.72	-	-	-	-
Public CHP Plant	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-
Public Heat Plant	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-
Heat pumps	-	-	-	-	-
Electric boilers	-	-	-	-	-
Gas Works	-	-	-	43,690.10	-
Oil Refineries	-	-1,014,559.62	1,058,263.49	-	-
Coal Transformation	-8,462.76	-	-	-	-
Liquefaction	-894,103.63	-	-	-77,171.78	-
Non-specified (Transformation)	-	-	-	-	-
Own Use	-	-	-	-	-
Distribution Losses	-	-	-	-	-
Total Final Consumption	**778,229.90**	**-**	**882,320.60**	**50,670.64**	**-**
Industry Sector	592,703.14	-	46,590.71	50,360.78	-
Iron and Steel	207,160.37	-	-	22,835.94	-
Chemical and Petrochemical	109,296.91	-	-	9,108.99	-
Memo: Feedst.Use In Petchem.Ind.	*109,296.91*	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-
Non-Metallic Minerals	53,297.21	-	-	6,151.16	-
Transport Equipment	-	-	-	-	-
Machinery	-	-	-	1,917.37	-
Mining and Quarrying	38,986.75	-	30,795.21	2,312.14	-
Food and Tobacco	-	-	-	924.09	-
Paper Pulp and Print	-	-	-	2,251.43	-
Wood and Wood Products	-	-	-	-	-
Construction	-	-	15,795.51	-	-
Textile and Leather	-	-	-	-	-
Non-specified (Industry)	183,961.90	-	-	4,859.66	-
Transport Sector	-	-	675,862.58	-	-
International Civil Aviation	-	-	32,419.70	-	-
Domestic Air Transport	-	-	39,567.18	-	-
Road	-	-	596,002.80	-	-
Rail	-	-	7,872.90	-	-
Pipeline Transport	-	-	-	-	-
Internal Navigation	-	-	-	-	-
Non-specified (Transport)	-	-	-		
Other Sectors	185,526.76	-	139,867.21	309.86	-
Agriculture	3,154.55	-	52,660.76	-	-
Commerce and Public Services	60,790.73	-	32,294.99	309.86	-
Residential	121,581.47	-	43,278.05	-	-
Non-specified (Other)	-	-	11,633.40	-	-
Non-Energy Use	-	-	20,000.10	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	20,000.10	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-
Elect.Output in GWh	212,406	-	-	3	13,365
Elect.Output-public elec. plant	203,565	-	-	0	13,365
Elect.Output-autoprod. elec. plant	8,841	-	-	3	-
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	-	-	-	-	-

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(TJ)	Hydro	Geothermal Solar etc	Renewables & Waste	Electricity	Heat	Total
Indigenous Production	2,889.67	2,031.22	428,396.00	-	-	6,235,212.01
Import	-	-	-	35,344.80	-	1,183,446.41
Export	-	-	-	-47,714.40	-	-2,130,994.59
Intl. Marine Bunkers	-	-	-	-	-	-100,616.85
Stock Changes	-	-	-	-	-	53,861.05
Total Primary Energy Supply	**2,889.67**	**2,031.22**	**428,396.00**	**-12,369.60**	**-**	**5,240,908.02**
Transfers	-	-	-	-	-	-
Statistical Differences	-	-	-	72,230.07	-	361,806.06
Public Electricity Plant	-2,267.24	-2,031.22	-	785,246.70	-	-1,660,689.42
Autoproducer Electricity Plant	-622.43	-	-	32,461.62	-	-32,494.53
Public CHP Plant	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-237,996.00	692.41	-	-237,303.59
Public Heat Plant	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-
Electric boilers	-	-	-	-	-	-
Gas Works	-	-	-	-	-	43,690.10
Oil Refineries	-	-	-	-27,267.77	-	16,436.10
Coal Transformation	-	-	-	-	-	-8,462.76
Liquefaction	-	-	-	-	-	-971,275.41
Non-specified (Transformation)	-	-	-	-	-	-
Own Use	-	-	-	-15,789.97	-	-15,789.97
						-
Distribution Losses	-	-	-	-18,964.80	-	-18,964.80
Total Final Consumption	**-**	**-**	**190,400.00**	**816,238.67**	**-**	**2,717,859.80**
Industry Sector	-	-	-	483,785.64	-	1,173,440.28
Iron and Steel	-	-	-	83,774.92	-	313,771.22
Chemical and Petrochemical	-	-	-	35,600.08	-	154,005.98
Memo: Feedst.Use In Petchem.Ind.	-	-	-	-	-	*109,296.91*
Non-Ferrous Metals	-	-	-	64,630.01	-	64,630.01
Non-Metallic Minerals	-	-	-	7,900.81	-	67,349.18
Transport Equipment	-	-	-	304.42	-	304.42
Machinery	-	-	-	153.18	-	2,070.55
Mining and Quarrying	-	-	-	118,179.61	-	190,273.71
Food and Tobacco	-	-	-	2,591.71	-	3,515.80
Paper Pulp and Print	-	-	-	5,445.11	-	7,696.54
Wood and Wood Products	-	-	-	1,043.82	-	1,043.82
Construction	-	-	-	186.52	-	15,982.02
Textile and Leather	-	-	-	1,890.25	-	1,890.25
Non-specified (Industry)	-	-	-	162,085.22	-	350,906.78
Transport Sector	-	-	-	22,688.97	-	698,551.55
International Civil Aviation	-	-	-	-	-	32,419.70
Domestic Air Transport	-	-	-	155.16	-	39,722.34
Road	-	-	-	72.86	-	596,075.67
Rail	-	-	-	11,853.58	-	19,726.47
Pipeline Transport	-	-	-	290.09	-	290.09
Internal Navigation	-	-	-	181.37	-	181.37
Non-specified (Transport)			-	10,135.92	-	10,135.92
Other Sectors	-	-	190,400.00	309,764.05	-	825,867.87
Agriculture	-	-	-	22,172.21	-	77,987.52
Commerce and Public Services	-	-	-	89,963.04	-	183,358.63
Residential	-	-	190,400.00	130,432.42	-	485,691.94
Non-specified (Other)	-	-	-	67,196.38	-	78,829.78
						-
Non-Energy Use	-	-	-	-	-	20,000.10
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	20,000.10
Memo:Non-Energy Use in Transport	-	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-	-
Elect.Output in GWh	803	564	192	-	-	227,334
Elect.Output-public elec. plant	630	564	-	-	-	218,124
Elect.Output-autoprod. elec. plant	173	-	-	-	-	9,017
Elect.Output-public CHP plant	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	192	-	-	192
		-				
Heat Output-public CHP plant	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-
Heat Output in TJ	-	3,159.68	-	-	-	-

Notes

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 have these in the units that the various fuels are normally measured. The following tables provide this information for 2003 and 2004.

ENERGY BALANCE - 2003 (Disaggregated, Natural Units)

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	238,751,013	1,206,105	237,544,908	1,606,781	48,844	0	31,137	428,396	50,218	114,312
From Other Sources	0	0	0	0	0	0	0	0	0	4,368,897
Import	1,586,158	1,586,158	0	0	0	0	0	0	0	17,166,658
Export	-71,530,492	-583,990	-70,946,502	0	0	0	0	0	0	-439
Intl. Marine Bunkers	0	0	0	0	0	0	0	0	0	0
Stock Changes	-2,234,853	0	-2,234,853	0	0	0	0	0	0	0
Domestic Supply	**166,571,826**	**2,208,273**	**164,363,553**	**1,606,781**	**48,844**	**0**	**31,137**	**428,396**	**50,218**	**21,649,428**
Transfers	0	0	0	0	0	0	0	0	0	0
Statistical Differences	-3,931,083	-775,158	-3,155,925	0	0	0	0	0	0	8,737,795
Transformation Sector	**145,124,232**	**2,468,376**	**142,655,856**	**393,214**	**0**	**0**	**0**	**237,996**	**50,218**	**12,911,633**
Public Electricity Plant	99,704,612	0	99,704,612	0	0	0	0	0	0	0
Autoproducer Electricity Plant	3,369,037	0	3,369,037	0	0	0	0	0	0	0
Public CHP Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer CHP Plant	0	0	0	0	0	0	0	237,996	0	0
Public Heat Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Heat Plant	0	0	0	0	0	0	0	0	0	0
Heat pumps	0	0	0	0	0	0	0	0	0	0
Electric Boilers	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	2,468,376	2,468,376	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
For Blast Furnace Gas	0	0	0	393,214	0	0	0	0	0	0
Petrochemical Industry	0	0	0	0	0	0	0	0	0	0
For BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	12,911,633
Liquefaction	39,582,207	0	39,582,207	0	0	0	0	0	50,218	0
Non-specified (Transformation)	0	0	0	0	0	0	0	0	0	0
Energy Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Coal Mines	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	0
Own use in Elec., CHP and Heat plant	0	0	0	0	0	0	0	0	0	0
Used for Pump Storage	0	0	0	0	0	0	0	0	0	0
Nuclear Industry	0	0	0	0	0	0	0	0	0	0
Non-specified (Energy)	0	0	0	0	0	0	0	0	0	0
Distribution Losses	0	0	0	0	0	0	0	0	0	0
Final Consumption	**25,378,677**	**515,055**	**24,863,622**	**1,213,567**	**48,844**	**0**	**31,137**	**190,400**	**0**	**0**
Industry Sector	**19,476,736**	**462,723**	**19,014,013**	**1,213,567**	**48,749**	**0**	**31,137**	**0**	**0**	**0**
Iron and Steel	4,325,208	250,051	4,075,157	1,213,567	26,147	0	31,137	0	0	0
Chemical and Petrochemical	7,000,188	53,631	6,946,557	0	7,701	0	0	0	0	0
Non-Ferrous Metals	0	0	0	0	0	0	0	0	0	0
Non-Metallic Minerals	1,684,918	101,499	1,583,419	0	4,740	0	0	0	0	0
Transport Equipment	0	0	0	0	0	0	0	0	0	0
Machinery	0	0	0	0	2,184	0	0	0	0	0
Mining and Quarrying	1,416,308	2,173	1,414,135	0	2,334	0	0	0	0	0
Food and Tobacco	0	0	0	0	1,116	0	0	0	0	0
Paper Pulp and Print	0	0	0	0	2,511	0	0	0	0	0
Wood and Wood Products	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0
Textile and Leather	0	0	0	0	0	0	0	0	0	0
Non-specified (Industry)	5,050,114	55,369	4,994,745	0	2,015	0	0	0	0	0
Transport Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
International Civil Aviation	0	0	0	0	0	0	0	0	0	0
Domestic Air Transport	0	0	0	0	0	0	0	0	0	0
Road	0	0	0	0	0	0	0	0	0	0
Rail	0	0	0	0	0	0	0	0	0	0
Pipeline Transport	0	0	0	0	0	0	0	0	0	0
Internal Navigation	0	0	0	0	0	0	0	0	0	0
Non-specified (Transport)	0	0	0	0	0	0	0	0	0	0
Other Sectors	**5,901,941**	**52,332**	**5,849,609**	**0**	**95**	**0**	**0**	**190,400**	**0**	**0**
Agriculture	122,306	0	122,306	0	0	0	0	0	0	0
Commerce and Public Services	1,945,056	17,444	1,927,612	0	95	0	0	0	0	0
Residential	3,834,579	34,888	3,799,691	0	0	0	0	190,400	0	0
Non-specified (Other)	0	0	0	0	0	0	0	0	0	0
Non-Energy Use	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Memo:Non-Energy Use Ind/Transf/Ener	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Transport	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Oth.Sect.	0	0	0	0	0	0	0	0	0	0
Memo:Feedst.Use in Petchem. Ind.	6,960,961	51,838	6,909,123	0	0	0	0	0	0	0
Elect.Output in GWh	**202,464**	**0**	**202,464**	**0**	**0**	**0**	**0**	**259**	**4**	**0**
Elect.Output-public elec. plant	194,046	0	194,046	0	0	0	0	0	0	0
Elect.Output-autoprod. elec. plant	8,418	0	8,418	0	0	0	0	0	4	0
Elect.Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. CHP plant	0	0	0	0	0	0	0	259	0	0
Heat Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoproducer CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public heat plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoprod. heat plant	0	0	0	0	0	0	0	0	0	0

Data Source: Department of Minerals and Energy (Version 2)
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2003 (Disaggregated, Natural Units) - Continued

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	0	114,312	0	569,313	11,577,945	72,464	2,367,009	775,794	9,066,560	5,252,714
From Other Sources	0	0	4,368,897	0	0	0	0	0	0	0
Import	17,166,658	0	0	122	369,634	7	13,315	1	311	107,524
Export	-439	0	0	-734	-1,278,629	-49,941	-295,189	-6,670	-1,519,574	-2,411,278
Intl. Marine Bunkers	0	0	0	0	0	0	0	0	-284,026	-2,421,447
Stock Changes	0	0	0	0	0	0	0	0	0	0
Domestic Supply	**17,166,219**	**114,312**	**4,368,897**	**568,701**	**10,668,950**	**22,530**	**2,085,135**	**769,125**	**7,263,272**	**527,513**
Transfers	0	0	0	0	0	0	0	0	0	0
Statistical Differences	0	0	8,737,795	0	0	0	0	0	0	0
Transformation Sector	**17,166,219**	**114,312**	**-4,368,897**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Public Electricity Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Electricity Plant	0	0	0	0	0	0	0	0	0	0
Public CHP Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer CHP Plant	0	0	0	0	0	0	0	0	0	0
Public Heat Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Heat Plant	0	0	0	0	0	0	0	0	0	0
Heat pumps	0	0	0	0	0	0	0	0	0	0
Electric Boilers	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
For Blast Furnace Gas	0	0	0	0	0	0	0	0	0	0
Petrochemical Industry	0	0	0	0	0	0	0	0	0	0
For BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	17,166,219	114,312	-4,368,897	0	0	0	0	0	0	0
Liquefaction	0	0		0	0	0	0	0	0	0
Non-specified (Transformation)	0	0	0	0	0	0	0	0	0	0
Energy Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Coal Mines	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	0
Own use in Elec., CHP and Heat plant	0	0	0	0	0	0	0	0	0	0
Used for Pump Storage	0	0	0	0	0	0	0	0	0	0
Nuclear Industry	0	0	0	0	0	0	0	0	0	0
Non-specified (Energy)	0	0	0	0	0	0	0	0	0	0
Distribution Losses	0	0	0	0	0	0	0	0	0	0
Final Consumption	**0**	**0**	**0**	**568,701**	**10,668,950**	**22,530**	**2,085,135**	**769,125**	**7,263,272**	**527,513**
Industry Sector	**0**	**0**	**0**	**11,347**	**20,274**	**0**	**0**	**18,986**	**950,212**	**5,455**
Iron and Steel	0	0	0	0	0	0	0	0	0	0
Chemical and Petrochemical	0	0	0	0	0	0	0	0	0	0
Non-Ferrous Metals	0	0	0	0	0	0	0	0	0	0
Non-Metallic Minerals	0	0	0	0	0	0	0	0	0	0
Transport Equipment	0	0	0	0	0	0	0	0	0	0
Machinery	0	0	0	0	0	0	0	0	0	0
Mining and Quarrying	0	0	0	8,337	17,404	0	0	14,940	706,133	3,430
Food and Tobacco	0	0	0	0	0	0	0	0	0	0
Paper Pulp and Print	0	0	0	0	0	0	0	0	0	0
Wood and Wood Products	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	3,011	2,869	0	0	4,045	244,079	2,025
Textile and Leather	0	0	0	0	0	0	0	0	0	0
Non-specified (Industry)	0	0	0	0	0	0	0	0	0	0
Transport Sector	**0**	**0**	**0**	**678**	**10,445,636**	**22,530**	**2,085,135**	**7,641**	**5,093,018**	**3,357**
International Civil Aviation	0	0	0	0	0	0	1,075,331	0	0	0
Domestic Air Transport	0	0	0	0	0	22,530	1,009,804	0	0	0
Road	0	0	0	678	10,444,598	0	0	7,558	4,864,513	3,357
Rail	0	0	0	0	1,038	0	0	83	228,505	0
Pipeline Transport	0	0	0	0	0	0	0	0	0	0
Internal Navigation	0	0	0	0	0	0	0	0	0	0
Non-specified (Transport)	0	0	0	0	0	0	0	0	0	0
Other Sectors	**0**	**0**	**0**	**556,676**	**203,040**	**0**	**0**	**742,498**	**1,220,042**	**518,702**
Agriculture	0	0	0	47	148,897	0	0	85,531	1,104,751	33,721
Commerce and Public Services	0	0	0	100,918	23,534	0	0	2,876	62,205	484,195
Residential	0	0	0	455,711	30,608	0	0	654,090	53,085	785
Non-specified (Other)	0	0	0	0	0	0	0	0	0	0
Non-Energy Use	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Memo:Non-Energy Use Ind/Transf/Ener	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Transport	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Oth.Sect.	0	0	0	0	0	0	0	0	0	0
Memo:Feedst.Use in Petchem. Ind.	0	0	0	0	0	0	0	0	0	0
Elect.Output in GWh	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Elect.Output-public elec. plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. elec. plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoproducer CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public heat plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoprod. heat plant	0	0	0	0	0	0	0	0	0	0

Data Source: Department of Minerals and Energy (Version 2)
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2003 (Disaggregated, Natural Units) - Concluded

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	77,960	446,127	408,211	74,803	18,859	38,373	3,808	1,043,000	32	219,763,323
From Other Sources	0	0	0	0	0	0	0	0	0	0
Import	1,502	147,005	595	29,755	0	0	0	0	0	8,194,000
Export	-1,767	-184,420	-137,018	-91,599	0	0	0	0	0	-10,263,000
Intl. Marine Bunkers	0	0	0	0	0	0	0	0	0	0
Stock Changes	0	0	0	0	0	0	0	0	0	0
Domestic Supply	**77,695**	**408,712**	**271,788**	**12,959**	**18,859**	**38,373**	**3,808**	**1,043,000**	**32**	**217,694,323**
Transfers	0	0	0	0	0	0	0	0	0	0
Statistical Differences	0	0	0	0	0	0	0	0	0	-2,660,733
Transformation Sector	**0**	**0**	**0**	**0**	**0**	**38,373**	**3,808**	**0**	**32**	**4,399,023**
Public Electricity Plant	0	0	0	0	0	38,373	3,509	0	5	0
Autoproducer Electricity Plant	0	0	0	0	0	0	299	0	27	4,399,023
Public CHP Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer CHP Plant	0	0	0	0	0	0	0	0	0	0
Public Heat Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Heat Plant	0	0	0	0	0	0	0	0	0	0
Heat pumps	0	0	0	0	0	0	0	0	0	0
Electric Boilers	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
For Blast Furnace Gas	0	0	0	0	0	0	0	0	0	0
Petrochemical Industry	0	0	0	0	0	0	0	0	0	0
For BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	0
Liquefaction	0	0	0	0	0	0	0	0	0	0
Non-specified (Transformation)	0	0	0	0	0	0	0	0	0	0
Energy Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11,006,711**
Coal Mines	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	6,987,032
Own use in Elec., CHP and Heat plant	0	0	0	0	0	0	0	0	0	351
Used for Pump Storage	0	0	0	0	0	0	0	0	0	4,019,328
Nuclear Industry	0	0	0	0	0	0	0	0	0	0
Non-specified (Energy)	0	0	0	0	0	0	0	0	0	0
Distribution Losses	0	0	0	0	0	0	0	0	0	14,160,000
Final Consumption	**77,695**	**408,712**	**271,788**	**12,959**	**18,859**	**0**	**0**	**1,043,000**	**0**	**190,789,322**
Industry Sector	**630**	**65,091**	**157,961**	**317**	**2**	**0**	**0**	**0**	**0**	**109,589,267**
Iron and Steel	0	0	0	0	0	0	0	0	0	22,331,171
Chemical and Petrochemical	0	0	0	0	0	0	0	0	0	9,438,923
Non-Ferrous Metals	0	0	0	0	0	0	0	0	0	16,258,273
Non-Metallic Minerals	0	0	0	0	0	0	0	0	0	2,279,371
Transport Equipment	0	0	0	0	0	0	0	0	0	95,253
Machinery	0	0	0	0	0	0	0	0	0	42,373
Mining and Quarrying	569	55,329	1	232	1	0	0	0	0	30,793,477
Food and Tobacco	0	0	0	0	0	0	0	0	0	714,516
Paper Pulp and Print	0	0	0	0	0	0	0	0	0	1,462,609
Wood and Wood Products	0	0	0	0	0	0	0	0	0	270,693
Construction	61	9,762	157,960	85	1	0	0	0	0	133,061
Textile and Leather	0	0	0	0	0	0	0	0	0	522,118
Non-specified (Industry)	0	0	0	0	0	0	0	0	0	25,247,429
Transport Sector	**136**	**310,231**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**5,565,011**
International Civil Aviation	0	0	0	0	0	0	0	0	0	0
Domestic Air Transport	0	0	0	0	0	0	0	0	0	42,655
Road	100	306,146	2	0	0	0	0	0	0	19,860
Rail	36	4,085	0	0	0	0	0	0	0	3,265,800
Pipeline Transport	0	0	0	0	0	0	0	0	0	77,185
Internal Navigation	0	0	0	0	0	0	0	0	0	49,381
Non-specified (Transport)	0	0	0	0	0	0	0	0	0	2,110,130
Other Sectors	**76,929**	**33,390**	**113,825**	**12,642**	**18,856**	**0**	**0**	**1,043,000**	**0**	**75,635,044**
Agriculture	3,571	31,050	444	0	2	0	0	0	0	5,142,918
Commerce and Public Services	73,357	2,337	109,246	12,642	18,854	0	0	0	0	21,071,177
Residential	1	3	4,134	0	0	0	0	1,043,000	0	34,074,593
Non-specified (Other)	0	0	0	0	0	0	0	0	0	15,346,356
Non-Energy Use	**77,695**	**408,712**	**271,788**	**12,959**	**18,859**	**0**	**0**	**0**	**0**	**0**
Memo:Non-Energy Use Ind/Transf/Ener	77,695	408,712	271,788	12,959	18,859	0	0	0	0	0
Memo:Non-Energy Use in Transport	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Oth.Sect.	0	0	0	0	0	0	0	0	0	0
Memo:Feedst.Use in Petchem. Ind.	0	0	0	0	0	0	0	0	0	0
Elect.Output in GWh	**0**	**0**	**0**	**0**	**0**	**12,663**	**3,808**	**532**	**32**	**219,763**
Elect.Output-public elec. plant	0	0	0	0	0	12,663	3,509	532	32	210,783
Elect.Output-autoprod. elec. plant	0	0	0	0	0	0	299	0	0	8,721
Elect.Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. CHP plant	0	0	0	0	0	0	0	0	0	259
Heat Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoproducer CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public heat plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoprod. heat plant	0	0	0	0	0	0	0	0	0	0

Data Source: Department of Minerals and Energy (Version 2)

Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2004 (Disaggregated, Natural Units)

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	242,821,694	1,247,422	241,574,272	1,940,317	43,455	0	31,137	428,396	77,172	183,203
From Other Sources	0	0	0	0	235	0	0	0	0	4,642,472
Import	1,680,826	1,680,826	0	0	6,981	0	0	0	0	23,589,797
Export	-67,946,518	-917,192	-67,029,326	0	0	0	0	0	0	-592
Intl. Marine Bunkers	0	0	0	0	0	0	0	0	0	0
Stock Changes	2,439,359	0	2,439,359	0	0	0	0	0	0	0
Domestic Supply	**178,995,361**	**2,011,056**	**176,984,305**	**1,940,317**	**50,671**	**0**	**31,137**	**428,396**	**77,172**	**28,414,880**
Transfers	0	0	0	0	0	0	0	0	0	0
Statistical Differences	-2,043,109	-1,222,628	-820,481	0	0	0	0	0	0	9,284,944
Transformation Sector	**153,658,620**	**2,632,762**	**151,025,858**	**434,376**	**0**	**0**	**0**	**237,996**	**77,172**	**19,129,936**
Public Electricity Plant	107,332,226	0	107,332,226	0	0	0	0	0	0	0
Autoproducer Electricity Plant	2,642,042	0	2,642,042	0	0	0	0	0	0	0
Public CHP Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer CHP Plant	0	0	0	0	0	0	0	237,996	0	0
Public Heat Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Heat Plant	0	0	0	0	0	0	0	0	0	0
Heat pumps	0	0	0	0	0	0	0	0	0	0
Electric Boilers	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	2,632,762	2,632,762	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
For Blast Furnace Gas	0	0	0	434,376	0	0	0	0	0	0
Petrochemical Industry	0	0	0	0	0	0	0	0	0	0
For BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	19,129,936
Liquefaction	41,051,590	0	41,051,590	0	0	0	0	0	77,172	0
Non-specified (Transformation)	0	0	0	0	0	0	0	0	0	0
Energy Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Coal Mines	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	0
Own use in Elec., CHP and Heat plant	0	0	0	0	0	0	0	0	0	0
Used for Pump Storage	0	0	0	0	0	0	0	0	0	0
Nuclear Industry	0	0	0	0	0	0	0	0	0	0
Non-specified (Energy)	0	0	0	0	0	0	0	0	0	0
Distribution Losses	0	0	0	0	0	0	0	0	0	0
Final Consumption	**27,379,850**	**600,922**	**26,778,928**	**1,505,941**	**50,671**	**0**	**31,137**	**190,400**	**0**	**0**
Industry Sector	**20,489,267**	**453,659**	**20,035,608**	**1,505,941**	**50,361**	**0**	**31,137**	**0**	**0**	**0**
Iron and Steel	4,815,535	242,456	4,573,079	1,505,941	22,836	0	31,137	0	0	0
Chemical and Petrochemical	5,577,087	66,447	5,510,640	0	9,109	0	0	0	0	0
Non-Ferrous Metals	0	0	0	0	0	0	0	0	0	0
Non-Metallic Minerals	1,953,496	86,873	1,866,623	0	6,151	0	0	0	0	0
Transport Equipment	0	0	0	0	0	0	0	0	0	0
Machinery	0	0	0	0	1,917	0	0	0	0	0
Mining and Quarrying	1,499,007	2,514	1,496,493	0	2,312	0	0	0	0	0
Food and Tobacco	0	0	0	0	924	0	0	0	0	0
Paper Pulp and Print	0	0	0	0	2,251	0	0	0	0	0
Wood and Wood Products	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0
Textile and Leather	0	0	0	0	0	0	0	0	0	0
Non-specified (Industry)	6,644,142	55,369	6,588,773	0	4,860	0	0	0	0	0
Transport Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
International Civil Aviation	0	0	0	0	0	0	0	0	0	0
Domestic Air Transport	0	0	0	0	0	0	0	0	0	0
Road	0	0	0	0	0	0	0	0	0	0
Rail	0	0	0	0	0	0	0	0	0	0
Pipeline Transport	0	0	0	0	0	0	0	0	0	0
Internal Navigation	0	0	0	0	0	0	0	0	0	0
Non-specified (Transport)	0	0	0	0	0	0	0	0	0	0
Other Sectors	**6,890,583**	**147,263**	**6,743,320**	**0**	**310**	**0**	**0**	**190,400**	**0**	**0**
Agriculture	116,147	0	116,147	0	0	0	0	0	0	0
Commerce and Public Services	2,258,145	49,088	2,209,058	0	310	0	0	0	0	0
Residential	4,516,291	98,175	4,418,115	0	0	0	0	190,400	0	0
Non-specified (Other)	0	0	0	0	0	0	0	0	0	0
Non-Energy Use	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Memo:Non-Energy Use Ind/Transf/Ener	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Transport	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Oth.Sect.	0	0	0	0	0	0	0	0	0	0
Memo:Feedst.Use in Petchem. Ind.	5,577,087	66,447	5,510,640	0	0	0	0	0	0	0
Elect.Output in GWh	**212,406**	**0**	**212,406**	**0**	**0**	**0**	**0**	**192**	**3**	**0**
Elect.Output-public elec. plant	203,565	0	203,565	0	0	0	0	0	0	0
Elect.Output-autoprod. elec. plant	8,841	0	8,841	0	0	0	0	0	3	0
Elect.Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. CHP plant	0	0	0	0	0	0	0	192	0	0
Heat Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoproducer CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public heat plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoprod. heat plant	0	0	0	0	0	0	0	0	0	0

Data Source: Department of Minerals and Energy (Version 1)
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2004 (Disaggregated, Natural Units) - Continued

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	0	183,203	0	564,172	11,554,692	12,391	2,246,365	792,202	8,526,883	4,265,280
From Other Sources	0	0	4,642,472	0	0	0	0	0	0	0
Import	23,589,797	0	0	142	751,389	23,358	170,094	12,704	554,264	127,028
Export	-592	0	0	-712	-1,014,328	-13,325	-339,879	-7,431	-1,167,074	-1,617,496
Intl. Marine Bunkers	0	0	0	0	0	0	0	0	-231,747	-2,206,425
Stock Changes	0	0	0	0	0	0	0	0	0	0
Domestic Supply	**23,589,205**	**183,203**	**4,642,472**	**563,601**	**11,291,753**	**22,424**	**2,076,580**	**797,474**	**7,682,327**	**568,386**
Transfers	0	0	0	0	0	0	0	0	0	0
Statistical Differences	0	0	9,284,944	0	0	0	0	0	0	0
Transformation Sector	**23,589,205**	**183,203**	**-4,642,472**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Public Electricity Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Electricity Plant	0	0	0	0	0	0	0	0	0	0
Public CHP Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer CHP Plant	0	0	0	0	0	0	0	0	0	0
Public Heat Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Heat Plant	0	0	0	0	0	0	0	0	0	0
Heat pumps	0	0	0	0	0	0	0	0	0	0
Electric Boilers	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
For Blast Furnace Gas	0	0	0	0	0	0	0	0	0	0
Petrochemical Industry	0	0	0	0	0	0	0	0	0	0
For BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	23,589,205	183,203	-4,642,472	0	0	0	0	0	0	0
Liquefaction	0	0	0	0	0	0	0	0	0	0
Non-specified (Transformation)	0	0	0	0	0	0	0	0	0	0
Energy Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Coal Mines	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	0
Own use in Elec., CHP and Heat plant	0	0	0	0	0	0	0	0	0	0
Used for Pump Storage	0	0	0	0	0	0	0	0	0	0
Nuclear Industry	0	0	0	0	0	0	0	0	0	0
Non-specified (Energy)	0	0	0	0	0	0	0	0	0	0
Distribution Losses	0	0	0	0	0	0	0	0	0	0
Final Consumption	**0**	**0**	**0**	**563,601**	**11,291,753**	**22,424**	**2,076,580**	**797,474**	**7,682,327**	**568,386**
Industry Sector	**0**	**0**	**0**	**7,135**	**19,700**	**0**	**0**	**17,356**	**934,484**	**8,517**
Iron and Steel	0	0	0	0	0	0	0	0	0	0
Chemical and Petrochemical	0	0	0	0	0	0	0	0	0	0
Non-Ferrous Metals	0	0	0	0	0	0	0	0	0	0
Non-Metallic Minerals	0	0	0	0	0	0	0	0	0	0
Transport Equipment	0	0	0	0	0	0	0	0	0	0
Machinery	0	0	0	0	0	0	0	0	0	0
Mining and Quarrying	0	0	0	7,059	16,921	0	0	13,927	710,696	6,693
Food and Tobacco	0	0	0	0	0	0	0	0	0	0
Paper Pulp and Print	0	0	0	0	0	0	0	0	0	0
Wood and Wood Products	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	76	2,779	0	0	3,429	223,788	1,823
Textile and Leather	0	0	0	0	0	0	0	0	0	0
Non-specified (Industry)	0	0	0	0	0	0	0	0	0	0
Transport Sector	**0**	**0**	**0**	**1**	**11,079,941**	**22,424**	**2,076,580**	**5,787**	**5,564,310**	**2,980**
International Civil Aviation	0	0	0	0	0	0	945,181	0	0	0
Domestic Air Transport	0	0	0	0	0	22,424	1,131,399	0	0	0
Road	0	0	0	1	11,079,800	0	0	5,672	5,361,503	2,980
Rail	0	0	0	0	141	0	0	115	202,807	0
Pipeline Transport	0	0	0	0	0	0	0	0	0	0
Internal Navigation	0	0	0	0	0	0	0	0	0	0
Non-specified (Transport)	0	0	0	0	0	0	0	0	0	0
Other Sectors	**0**	**0**	**0**	**556,465**	**192,112**	**0**	**0**	**774,331**	**1,183,533**	**556,889**
Agriculture	0	0	0	69	147,766	0	0	85,609	1,085,197	43,200
Commerce and Public Services	0	0	0	49	19,245	0	0	2,579	46,372	512,710
Residential	0	0	0	556,347	25,101	0	0	686,144	51,964	979
Non-specified (Other)	0	0	0	0	0	0	0	0	0	0
Non-Energy Use	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Memo:Non-Energy Use Ind/Transf/Ener	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Transport	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Oth.Sect.	0	0	0	0	0	0	0	0	0	0
Memo:Feedst.Use in Petchem. Ind.	0	0	0	0	0	0	0	0	0	0
Elect.Output in GWh	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Elect.Output-public elec. plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. elec. plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoproducer CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public heat plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoprod. heat plant	0	0	0	0	0	0	0	0	0	0

Data Source: Department of Minerals and Energy (Version 1)
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2004 (Disaggregated, Natural Units) - Concluded

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	94,267	376,140	411,997	86,192	17,855	40,500	4,625	1,043,000	32	231,155,789
From Other Sources	0	0	0	0	0	0	0	0	0	0
Import	1,279	120,347	115	25,530	0	0	0	0	0	9,818,000
Export	-3,372	-91,146	-135,131	-99,509	0	0	0	0	0	-13,254,000
Intl. Marine Bunkers	0	0	0	0	0	0	0	0	0	0
Stock Changes	0	0	0	0	0	0	0	0	0	0
Domestic Supply	**92,174**	**405,341**	**276,981**	**12,213**	**17,855**	**40,500**	**4,625**	**1,043,000**	**32**	**227,719,789**
Transfers	0	0	0	0	0	0	0	0	0	0
Statistical Differences	0	0	0	0	0	0	0	0	0	-20,960,492
Transformation Sector	**0**	**0**	**0**	**0**	**0**	**40,500**	**4,625**	**0**	**32**	**4,715,014**
Public Electricity Plant	0	0	0	0	0	40,500	4,452	0	0	0
Autoproducer Electricity Plant	0	0	0	0	0	0	173	0	32	4,715,014
Public CHP Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer CHP Plant	0	0	0	0	0	0	0	0	0	0
Public Heat Plant	0	0	0	0	0	0	0	0	0	0
Autoproducer Heat Plant	0	0	0	0	0	0	0	0	0	0
Heat pumps	0	0	0	0	0	0	0	0	0	0
Electric Boilers	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
For Blast Furnace Gas	0	0	0	0	0	0	0	0	0	0
Petrochemical Industry	0	0	0	0	0	0	0	0	0	0
For BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	0
Liquefaction	0	0	0	0	0	0	0	0	0	0
Non-specified (Transformation)	0	0	0	0	0	0	0	0	0	0
Energy Sector	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11,964,304**
Coal Mines	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	0
Patent Fuel Plants	0	0	0	0	0	0	0	0	0	0
Coke Ovens	0	0	0	0	0	0	0	0	0	0
Gas Works	0	0	0	0	0	0	0	0	0	0
BKB	0	0	0	0	0	0	0	0	0	0
Oil Refineries	0	0	0	0	0	0	0	0	0	7,574,380
Own use in Elec., CHP and Heat plant	0	0	0	0	0	0	0	0	0	351
Used for Pump Storage	0	0	0	0	0	0	0	0	0	4,389,573
Nuclear Industry	0	0	0	0	0	0	0	0	0	0
Non-specified (Energy)	0	0	0	0	0	0	0	0	0	0
Distribution Losses	0	0	0	0	0	0	0	0	0	5,268,000
Final Consumption	**92,174**	**405,341**	**276,981**	**12,213**	**17,855**	**0**	**0**	**1,043,000**	**0**	**226,732,963**
Industry Sector	**713**	**62,189**	**163,959**	**158**	**1**	**0**	**0**	**0**	**0**	**134,384,901**
Iron and Steel	0	0	0	0	0	0	0	0	0	23,270,810
Chemical and Petrochemical	0	0	0	0	0	0	0	0	0	9,888,910
Non-Ferrous Metals	0	0	0	0	0	0	0	0	0	17,952,780
Non-Metallic Minerals	0	0	0	0	0	0	0	0	0	2,194,670
Transport Equipment	0	0	0	0	0	0	0	0	0	84,560
Machinery	0	0	0	0	0	0	0	0	0	42,550
Mining and Quarrying	665	52,986	0	0	1	0	0	0	0	32,827,670
Food and Tobacco	0	0	0	0	0	0	0	0	0	719,920
Paper Pulp and Print	0	0	0	0	0	0	0	0	0	1,512,530
Wood and Wood Products	0	0	0	0	0	0	0	0	0	289,950
Construction	48	9,203	163,959	158	0	0	0	0	0	51,810
Textile and Leather	0	0	0	0	0	0	0	0	0	525,070
Non-specified (Industry)	0	0	0	0	0	0	0	0	0	45,023,671
Transport Sector	**101**	**313,415**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6,302,493**
International Civil Aviation	0	0	0	0	0	0	0	0	0	0
Domestic Air Transport	0	0	0	0	0	0	0	0	0	43,100
Road	92	310,020	0	0	0	0	0	0	0	20,240
Rail	9	3,395	0	0	0	0	0	0	0	3,292,660
Pipeline Transport	0	0	0	0	0	0	0	0	0	80,580
Internal Navigation	0	0	0	0	0	0	0	0	0	50,380
Non-specified (Transport)	0	0	0	0	0	0	0	0	0	2,815,533
Other Sectors	**91,359**	**29,737**	**113,022**	**12,055**	**17,854**	**0**	**0**	**1,043,000**	**0**	**86,045,569**
Agriculture	4,288	27,721	197	0	1	0	0	0	0	6,158,946
Commerce and Public Services	87,071	2,004	108,926	12,055	17,852	0	0	0	0	24,989,734
Residential	0	12	3,899	0	0	0	0	1,043,000	0	36,231,227
Non-specified (Other)	0	0	0	0	0	0	0	0	0	18,665,662
Non-Energy Use	**92,174**	**405,341**	**0**	**0**	**17,855**	**0**	**0**	**0**	**0**	**0**
Memo:Non-Energy Use Ind/Transf/Ener	92,174	405,341	0	0	17,855	0	0	0	0	0
Memo:Non-Energy Use in Transport	0	0	0	0	0	0	0	0	0	0
Memo:Non-Energy Use in Oth.Sect.	0	0	0	0	0	0	0	0	0	0
Memo:Feedst.Use in Petchem. Ind.	0	0	0	0	0	0	0	0	0	0
Elect.Output in GWh	**0**	**0**	**0**	**0**	**0**	**13,365**	**4,625**	**532**	**32**	**231,156**
Elect.Output-public elec. plant	0	0	0	0	0	13,365	4,452	532	32	221,946
Elect.Output-autoprod. elec. plant	0	0	0	0	0	0	173	0	0	9,017
Elect.Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Elect.Output-autoprod. CHP plant	0	0	0	0	0	0	0	0	0	192
Heat Output-public CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoproducer CHP plant	0	0	0	0	0	0	0	0	0	0
Heat Output-public heat plant	0	0	0	0	0	0	0	0	0	0
Heat Output-autoprod. heat plant	0	0	0	0	0	0	0	0	0	0

Data Source: Department of Minerals and Energy (Version 1)
Energy Balance Format: International Energy Agency

Notes

Section 4

Coal

South Africa's indigenous energy resource base is dominated by coal. Many of the deposits can be exploited at extremely favourable costs. As a result, a large coal-mining industry has developed. Coal for local electricity production is among the cheapest in the world. The country ranks as the world's fifth largest coal producer. In addition to the extensive use of coal in the domestic economy, large amounts are exported, mainly through the Richards Bay Coal Terminal. South Africa is ranked the fourth-largest exporter of steam coal.

South Africa's coal comes from collieries ranging in output from 100 000 to more than 10 million tons per year. With mergers and purchases, the number of operating collieries was 64 in 2004. The coal-mining industry is highly concentrated, with three companies – Ingwe (BHP Billiton), Anglo Coal, Sasol, Eyeziswe and Kumba – accounting for 85% of local production. A relatively small number of large-scale producers supply coal, primarily to the electricity and synthetic fuel producers.

About 51% of South African coal mining is underground and the rest is opencast. Of the coal mined underground, some 50% is produced by long walling, 5% by pillar recovery, and 35% by bord-and-pillar mining and the remainder by other methods.

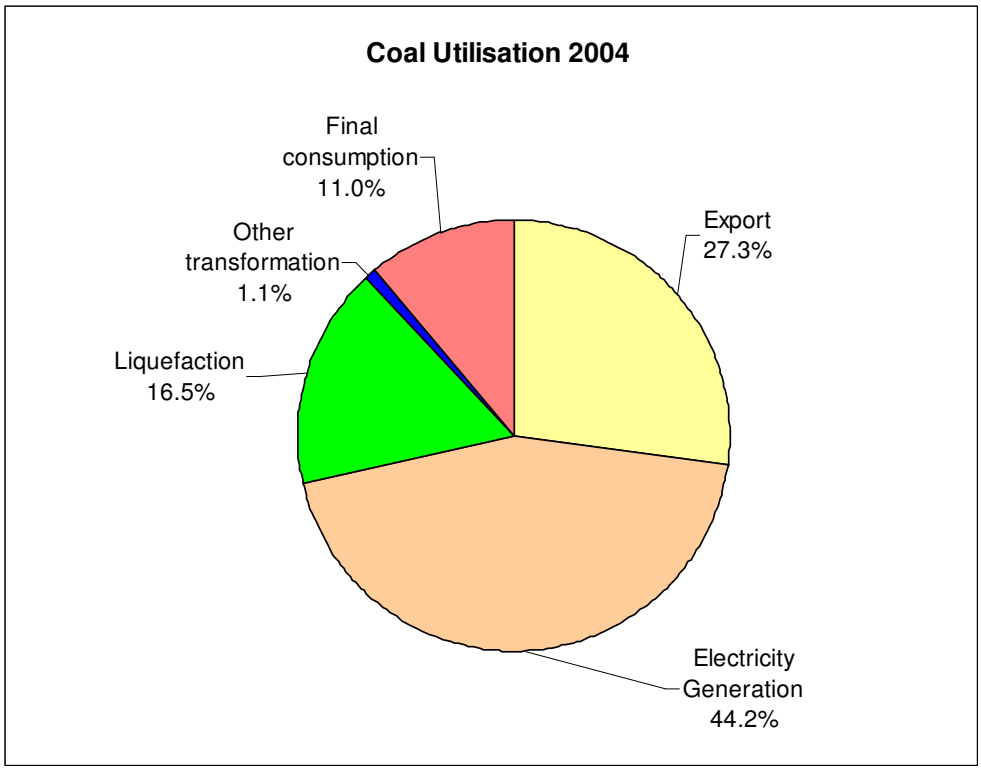
The beneficiation of coal, particularly for export, results in more than 65 Mt of coal discards being produced annually. Of the run-of-mine coal produced, 21% goes to the export market, and 21% is used for local demand (excluding power-station coal). The rest is not saleable and is therefore discarded. Total discards could reach 2 000 Mt by the year 2020. Ways to make use of these discards are therefore being investigated.

The Minerals and Petroleum Resources Development Act will regulate mining rights in future, and all mineral rights will be vested in the state. According to the Bill, the principle of 'use it and keep it' will be applicable to all existing mineral rights holders.

Coal Utilisation- Kt

	2003	%	2004	%
Export	71,530	29.6%	67,946	27.3%
Electricity Generation	103,073	42.6%	109,974	44.2%
Liquefaction	39,582	16.4%	41,051	16.5%
Other transformation	2,468	1.0%	2,633	1.1%
Final consumption	25,378	10.5%	27,379	11.0%
Total	**242,031**		**248,983**	

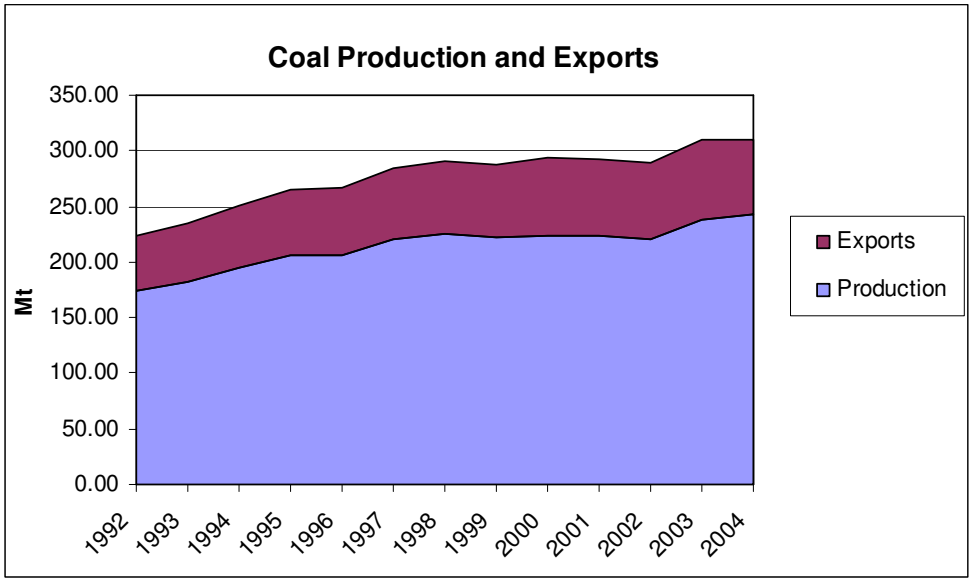
Source: National Energy Balances



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

Sources: Mineral Bureau

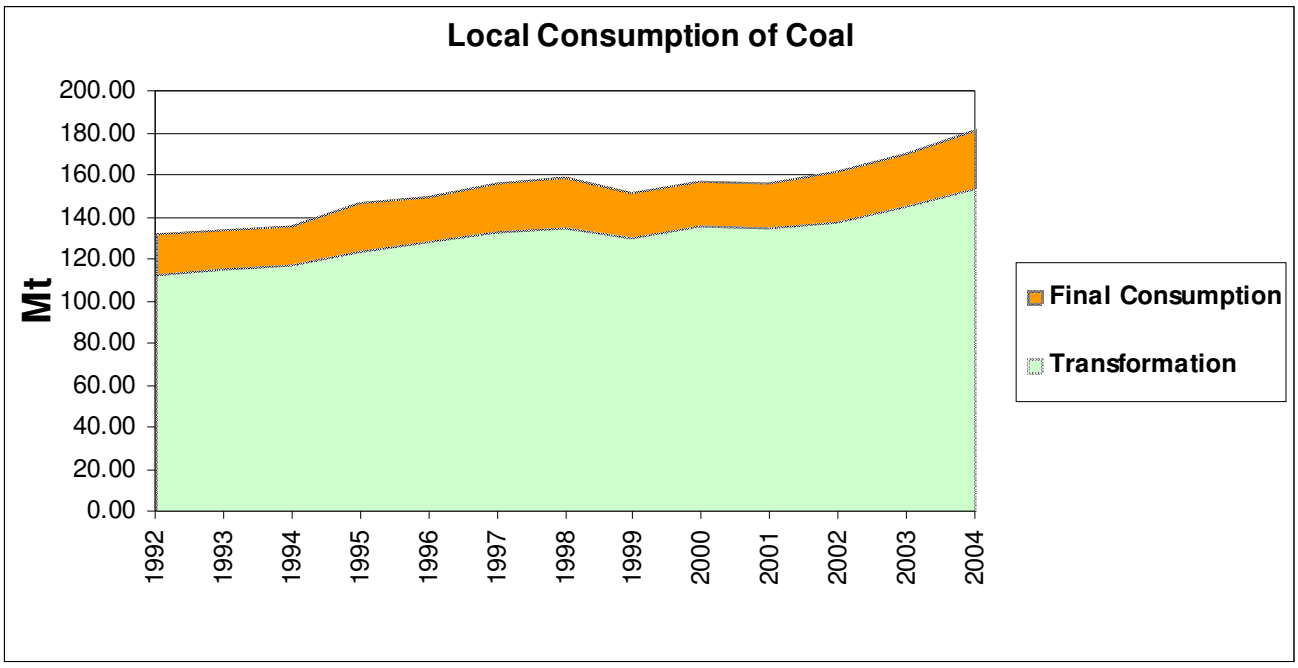


Primary Supply of Coal-Mt

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

Source: National Energy Balances

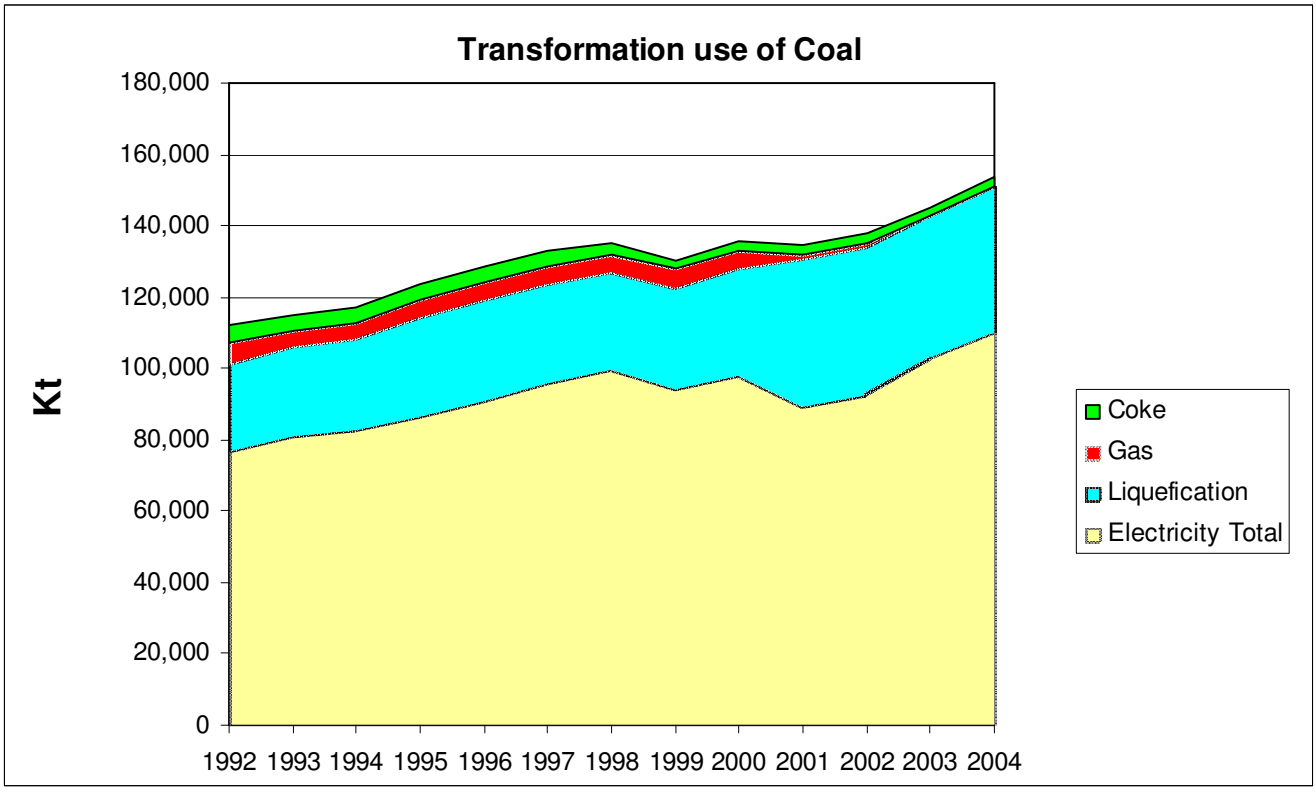
Available=final consumption + energy sector + transformation - stockpiling (stock changes) + statistical differences - imports



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	109,974	41,052	0	2,633	153,659

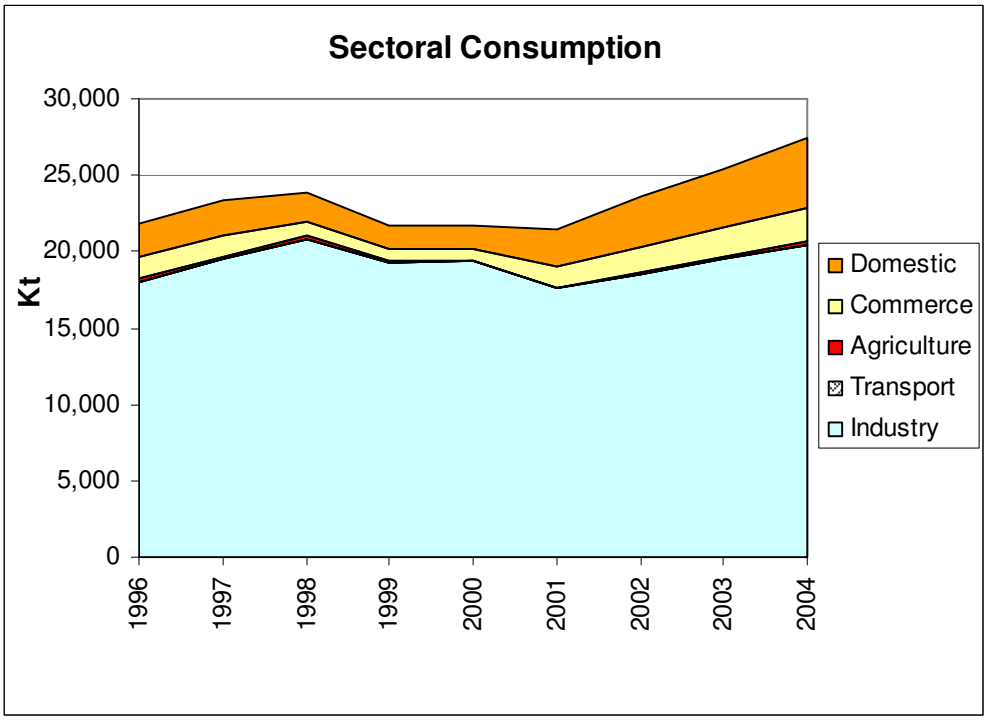
Source: National Energy Balances



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	27,430

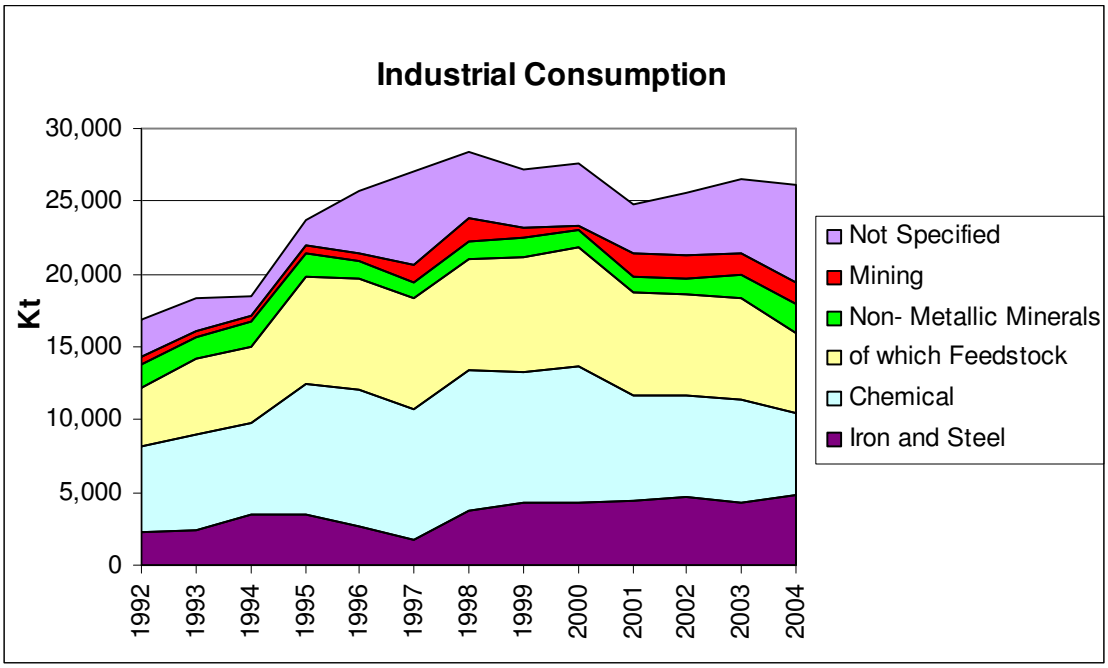
Source: National Energy Balances



Industrial Sector Use of Coal-kt

Year	Iron and Steel	Chemical	of which Feedstock	Non-Metallic Minerals	Mining	Not Specified	Total
1992	2,294	5,809	4,148	1,597	506	2,530	12,736
1993	2,433	6,540	5,165	1,470	470	2,257	13,171
1994	3,487	6,294	5,203	1,723	388	1430	13,323
1995	3,507	8,929	7,349	1,607	603	1,708	16,354
1996	2,709	9,290	7,625	1,206	555	4,280	18,039
1997	1,758	8,973	7,617	1,072	1,248	6,428	19,479
1998	3,747	9,702	7,555	1,259	1,517	4,589	20,814
1999	4,332	8,974	7,834	1,298	751	3,934	19,289
2000	4,277	9,376	8,196	1,248	145	4,318	19,364
2001	4,373	7,213	7,213	1,073	1,528	3,387	17,574
2002	4,728	6,961	6,961	1,079	1,508	4,287	18,564
2003	4,325	7,000	7,000	1,685	1,416	5,050	19,477
2004	4,816	5,577	5,577	1,953	1,499	6,644	20,489

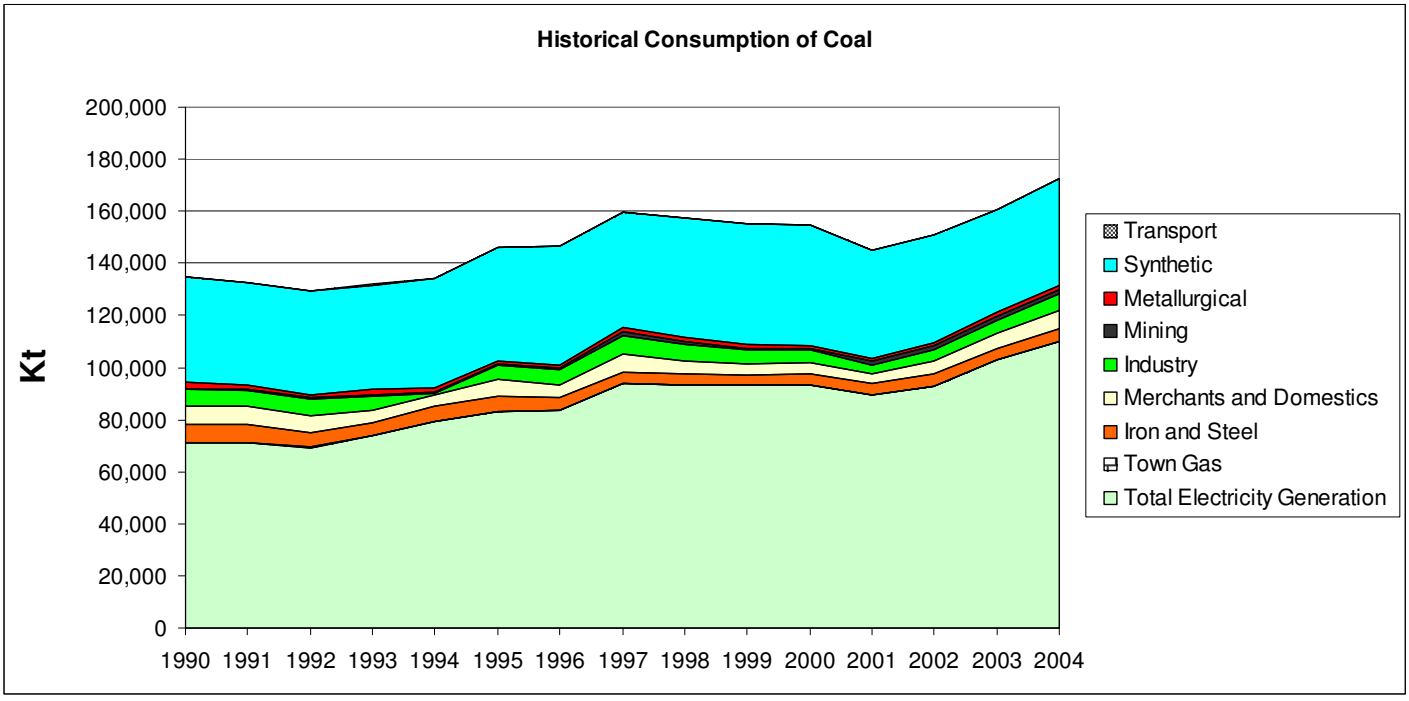
Source: National Energy Balances



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		172,712

Source: Minerals Bureau



Notes

Section 5

Oil

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, liquefied petroleum gas (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)
- Natural gas to liquid fuels (PetroSA)

The major players and capacities (measured in barrels per day) of South Africa's oil refineries are indicated below.

South African oil refineries and their capacities

Refinery	***Location***	***Owners***	***Capacity (1 000 barrels per day)***				
			1992	***1997***	***2000***	***2002***	***2004***
Sapref	Durban	BP & Shell	120	165	180	180	180
Enref	Durban	Engen	70	105	105	125	135
Calref	Cape Town	Caltex	50	100	100	100	100
Natref	Sasolburg	Sasol &Total	78	86	86	103	108
Sasol	Secunda	Sasol	*150	*150	*150	150	*150
PetroSA	Mossel Bay	State-owned	*45	*45	*45	45	*45

**Crude equivalent*
Note: *These figures reflect the expansion in capacity at conventional refineries. PetroSA came on stream in the fourth quarter of 1992.*

Source: *South African Petroleum Industry Association*

Another major role player in South Africa's liquid fuels industry is the Central Energy Fund (Pty) Ltd (CEF). It is mandated by the state to engage in the acquisition, exploration, generation, manufacture, marketing and distribution of any energy form, especially oil and gas. It also engages in research relating to the energy sector. The CEF's diversified portfolio of activities is housed in the following active subsidiaries:

- **Strategic Fuel Fund Association (SFF)**

The SFF was established to procure and store crude oil and to manage strategic crude oil stocks for South Africa. It trades and leases spare storage ullage and is involved in oil pollution control.

- **The Petroleum Oil and Gas Corporation of South Africa (Pty) Ltd (PetroSA)**

PetroSA owns and operates the world's largest gas-to-liquids plant at Mossel Bay (a harbour town 400 km east of Cape Town). PetroSA is also involved in oil and gas exploration and production and its offshore production platform supplies gas and condensate by pipeline to its onshore plant for conversion into a range of environmentally friendly transportation fuels and associated products for the domestic as well as international markets.

- **Petroleum Agency South Africa (Pasa)**

This agency promotes and markets exploration in South African territory – both offshore and onshore – for oil and gas, negotiates and monitors concessions and licenses on behalf of the government, and is the custodian of geological and geophysical data.

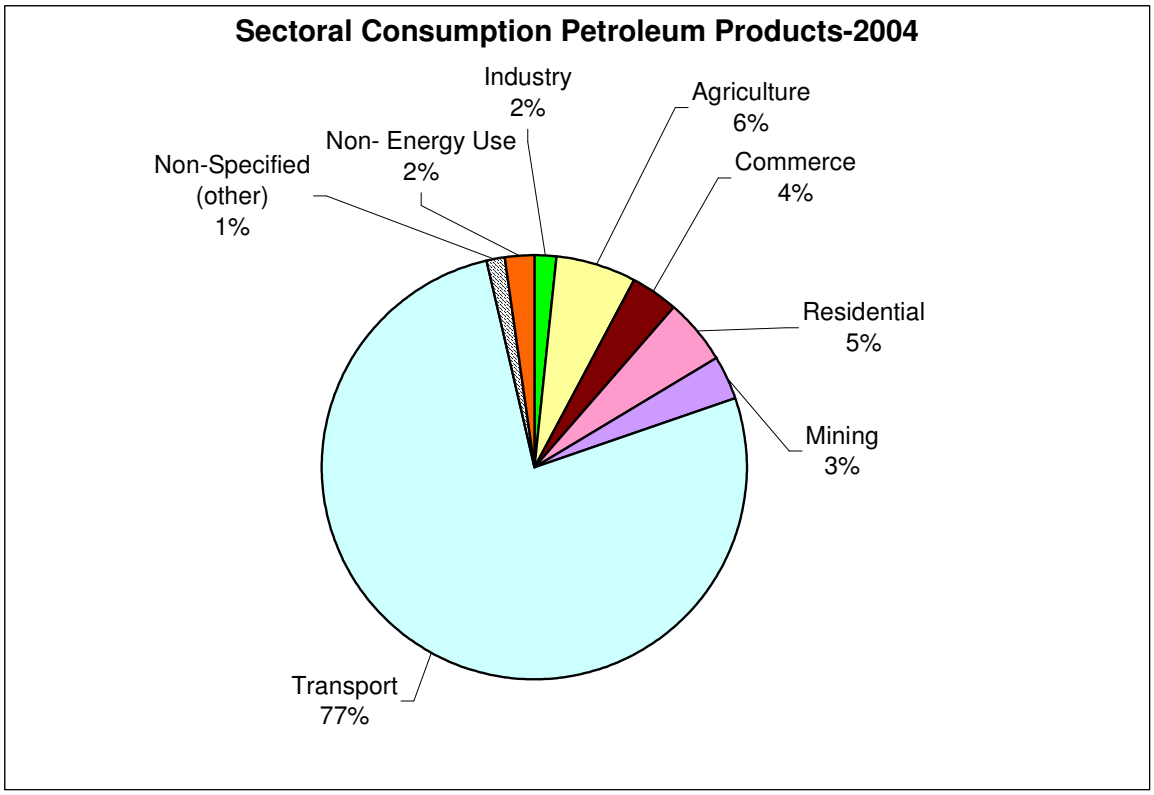
- **iGas**

iGas is a state owned entity for the development of gas infrastructure in South Africa. iGas has partnered Sasol and ENH of Mozambique in the natural gas pipeline from Mozambique to South Africa. The Mozambique/South Africa gas transmission pipeline was brought into official operation on 26 March 2004.

The wholesale and retail markets for petroleum products in South Africa are subject to a set of government controls. The government regulates wholesale margins and controls the retail price of petrol. The industry has entered into product exchange agreements to serve different markets. Together, these controls provide for access to fuel throughout the county and protect consumers, while providing a reasonable return on investment to the oil industry and enhancing opportunities for employment.

The refiners and wholesale marketers move product from the refineries by coastal barge, rail, truck and pipeline to roughly 200 depots. From these, approximately 4 600 service stations and 100 000 direct consumers (mostly farmers) are served.

Refineries and Sasol produce LPG and illuminating paraffin (kerosene). Most LPG is consumed in the country and the rest is used in refineries as fuel and/or exported to neighbouring countries. Kerosene and LPG are distributed via a very long chain, with many middlemen between the producer and the end-user. Kerosene is often purchased by end-users in self-owned used plastic or glass containers.

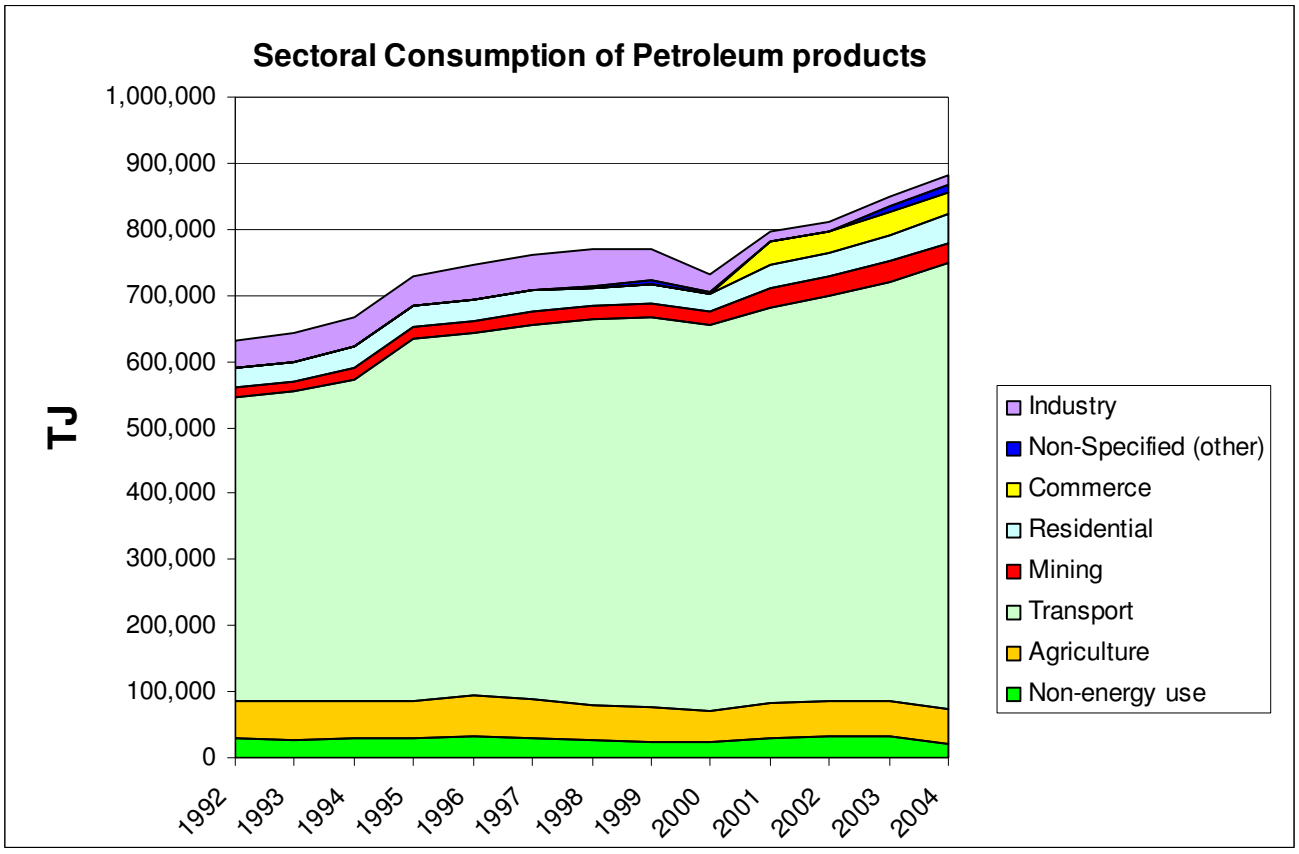


Source:National Energy Balances

Sectoral Consumption of Petroleum Products-TJ

Year	Non-energy use	Agriculture	Transport	Mining	Residential	Commerce	Non-Specified (other)	Industry
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

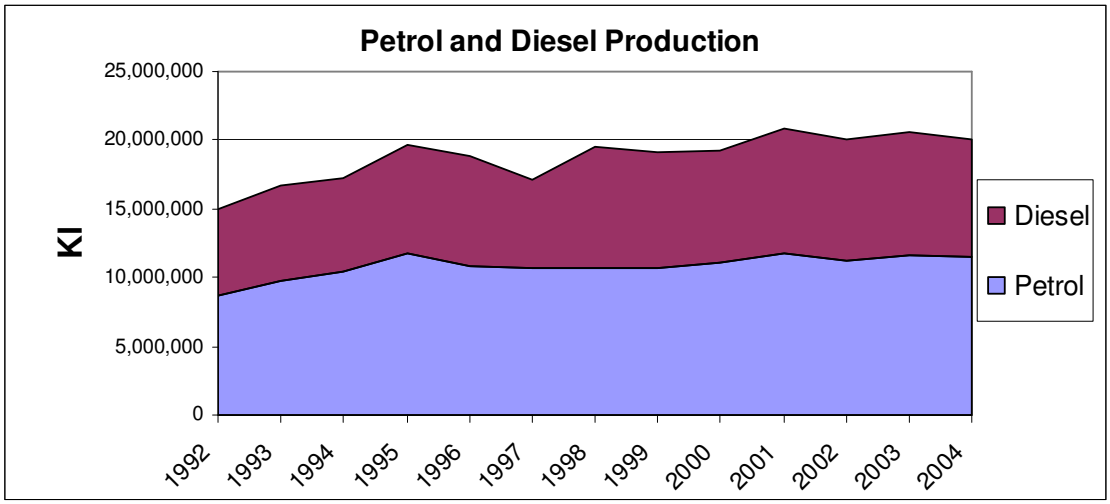
Source: National Energy Balances

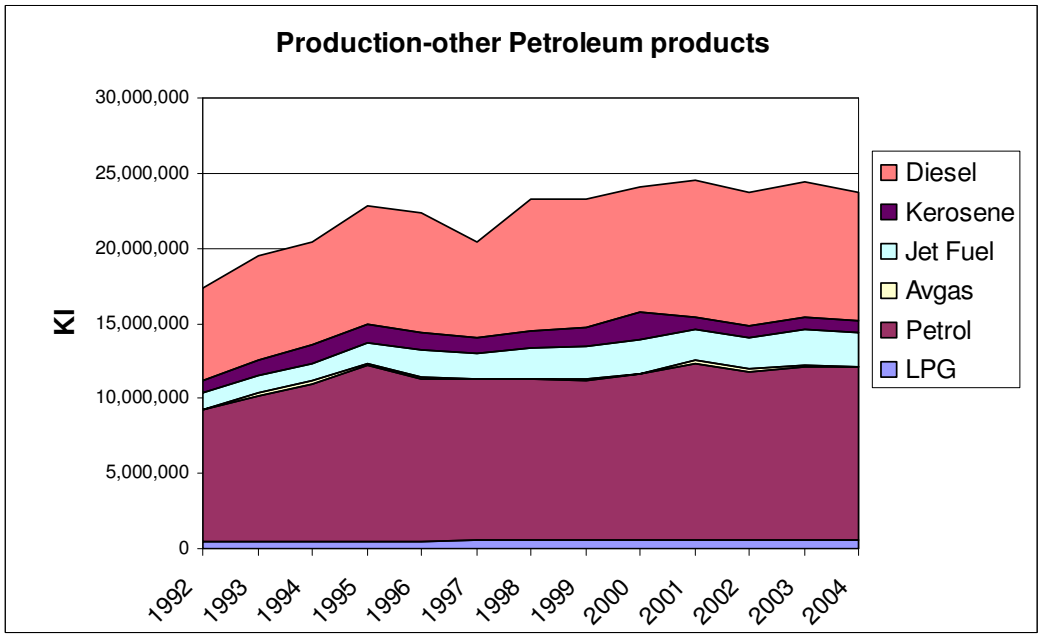


Production of Petroleum Products - kl

Year	LPG	Petrol	Avgas	Jet Fuel	Kerosene	Diesel
1992	461,976	8,742,512	66,737	1,077,224	833,312	6,182,916
1993	468,484	9,708,816	146,286	1,211,295	1,036,677	6,943,737
1994	494,119	10,467,381	163,469	1,192,533	1,253,296	6,839,224
1995	492,393	11,736,662	116,155	1,392,420	1,148,516	7,928,506
1996	472,645	10,844,193	146,724	1,805,984	1,136,998	7,961,507
1997	527,374	10,712,798	28,496	1,776,386	982,939	6,334,935
1998	524,159	10,744,141	66,580	1,993,629	1,178,454	8,762,426
1999	535,935	10,651,184	89,235	2,201,708	1,266,576	8,493,178
2000	569,849	11,036,056	65,142	2,224,226	1,863,738	8,265,373
2001	599,508	11,740,861	222,426	2,071,056	807,601	9,116,140
2002	585,225	11,196,257	209,569	2,067,974	794,791	8,815,388
2003	569,313	11,577,945	72,464	2,367,009	775,794	9,066,560
2004	564,172	11,554,692	12,391	2,246,365	792,202	8,526,883

Source: National Energy Balances



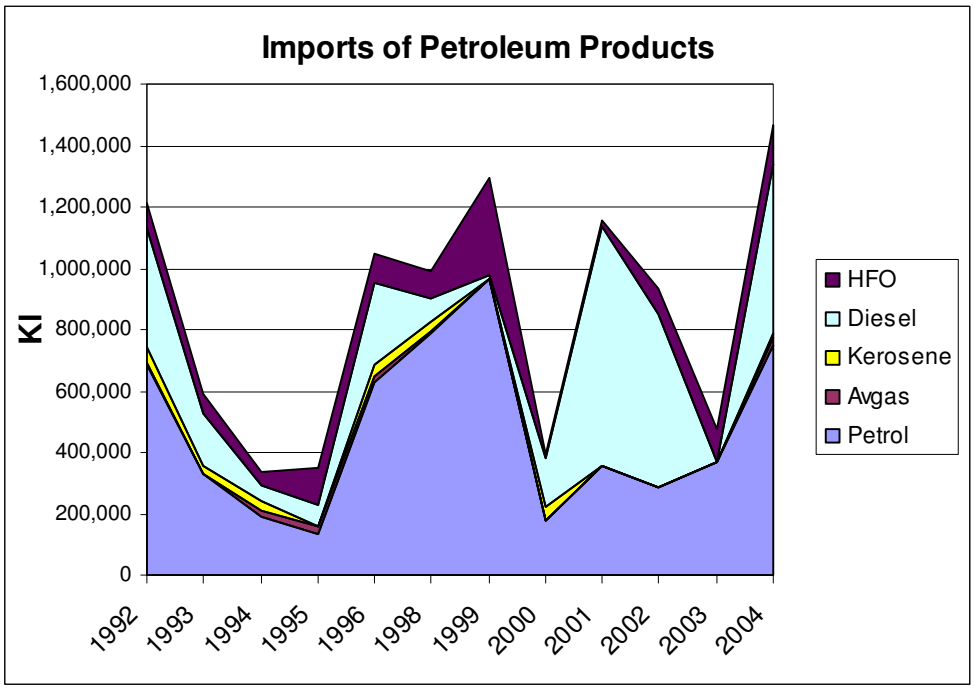


Imports of Petroleum Products -kl

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

Source: National Energy Balances

Note: No import data available for 1997

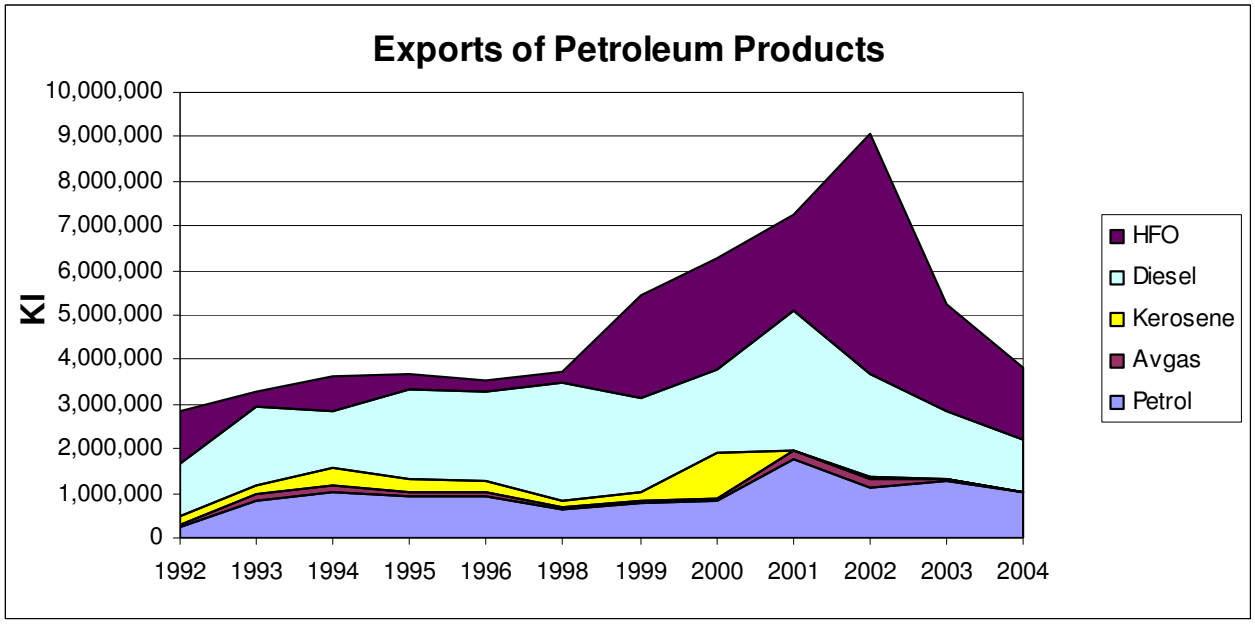


Exports of Petroleum Products - kl

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

Source: National Energy Balances

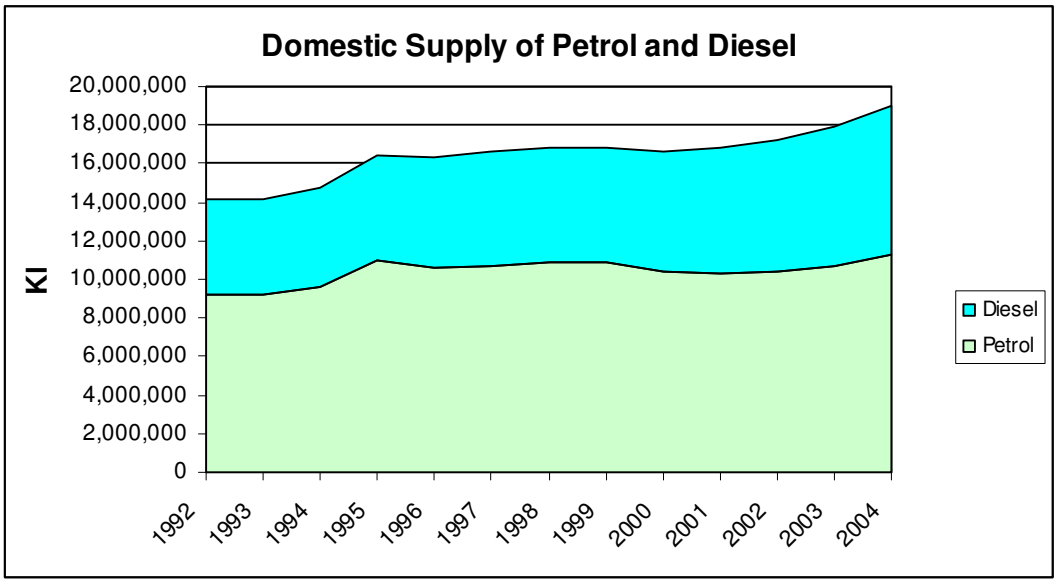
Notes : No export data available for 1997

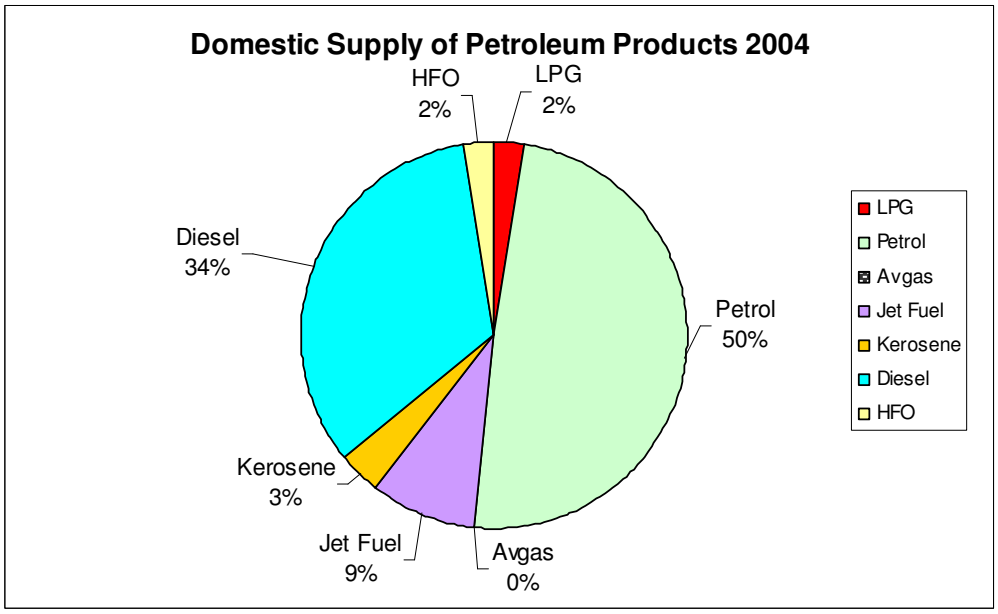


Domestic Supply of Petroleum Products-kl

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

Sources: National Energy Balances





Section 6

Electricity

Eskom is the public electricity utility and supplies more than 95% of the country's electricity requirements. This amounts to more that half of the electricity generated in Africa. With 24 power stations at a capacity of 39 810 MW, Eskom is among the top seven utilities in the world in terms of generation capacity and among the top nine in terms of sales. It is also one of the four cheapest electricity producers worldwide and currently has surplus generation capacity. This surplus will no longer exist in 2007.

Although Eskom is still a parastatal, the government has plans to restructure part of the company in line with the envisage Electricity Supply Industry model. The table below shows the current generation capacity by energy source. The nominal generation capacity of Eskom is not being met because some power stations have been mothballed and some are running below capacity because the capacity is not needed.

Analysis of South African licensed electricity capacity by fuel

Energy source	***Capacity (MW)***
Coal	38 209
Nuclear	1 800
Bagasse	105
Hydro	668
Gas turbines	660
Pumped storage	1 580
Total	**43 022**

Source: *National Electricity Regulator, 2004*

Eskom owns thirteen coal-fired power stations, 11 located in Mpumalanga and one each in the Free State and Limpopo. Three of the older stations in Mpumalanga have been mothballed owing to surplus capacity. Camdem (1 600 MW), Grootvlei (1 200 MW) and Komati (1 000 MW) are in working order and will be brought on stream as more capacity is needed. There are currently plans to build new coal-fired, gas and pumped storage power stations to meet electricity growth demand projected at 1 500MW per annum.

Most thermal stations are located in Mpumalanga, close to the coalfields, because their coal requirements are immense. This means that electricity has to be transmitted long distances to the rest of the country and throughout Africa.
Eskom owns a nuclear power station, Koeberg, located approximately 25 km northwest of Cape Town. It uses a standard pressurised water reactor and supplies electricity to the Western Cape. The fuel used is enriched uranium. Low-

and medium-level waste is transported by road in steel and concrete containers to a disposal site 600 km away at Vaalputs in the Kalahari Desert. The spent high-level waste fuel is stored on site, in special pools equipped with high density racking.

The government has granted Eskom permission to do a feasibility study on developing a new nuclear technology, the Pebble Bed Modular Reactor (PBMR). A demonstration model will be built to allow assessment of the techno-economic viability of the project.

South Africa is a dry country with few suitable rivers for hydro-electricity production. Most of their small capacity has been used. There are two stations on dams in the Orange River. There are three pumped storage schemes, Drakensberg and Palmiet (Eskom) and Steenbras (municipal), with a combined capacity of 1 580 MW.

Two gas turbines with 171 MW in capacity each are only used during peak demand and for stand-by power. They are simple single-cycle stations, with low capacity costs, but are very expensive to run. If South Africa decides to use gas for large-scale power generation, combined cycle gas turbines will be used. This technology is efficient, with low capital costs and emission factors.
Electricity is generated from bark and black liquor in the pulp and paper industry and bagasse in sugar refineries. This is not quantified as it is all used by the industries for their own needs and none is fed into the national grid. The lack of arable land for increasing forests and sugar cane plantations means there is little prospect of substantially increasing this generation. Government is looking at increasing the co-generation level, due to (i) energy efficiency opportunity (ii) potential for renewable energy generation and (iii) the possible improvement of security of supply due to the distributed generation. Co-generation involves harnessing the energy that would otherwise have been dissipated as waste heat and to use that heat to generate electricity.

Eskom has 26 461 km of transmission lines, which span the country and carry power to neighbouring countries. These very long distances lead to transmission losses, and other problems such as supply quality.

The net electricity output by Eskom totalled 220 152 GWh of electricity in 2004. There are special Eskom divisions to streamline supply to different types of end-users and about 63,8% of electricity sales are direct to the consumer. The remaining approximately 36,2% is sold to local authorities. These authorities own and service their own distribution networks and resell the power to end-users.

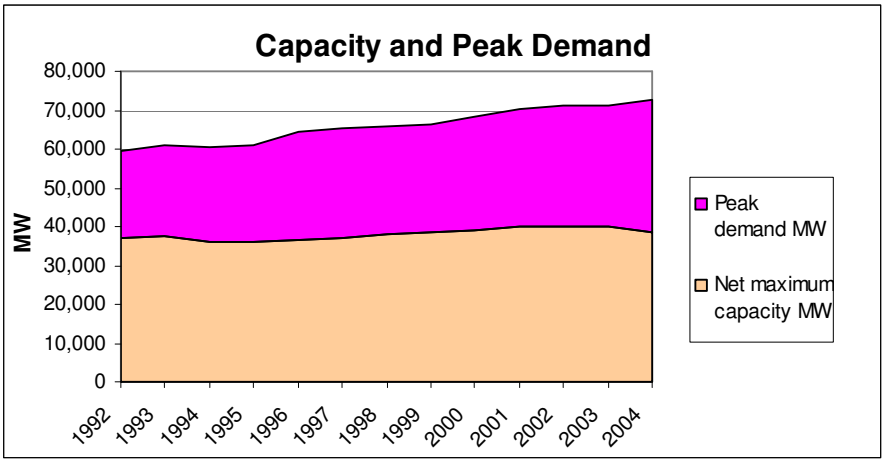
By the end of 2006 the national grid reached 73% of the population. The biggest challenge is the electrification of the huge formal and informal urban settlements. Some of the rural areas are difficult to electrify via the grid because of cost

limitations relating to sparse settlements and distance from existing infrastructure. Between 1994 and 2000, Eskom committed itself to connect 2,5 million houses. That commitment was exceeded by 750 homes, one year ahead of target.

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

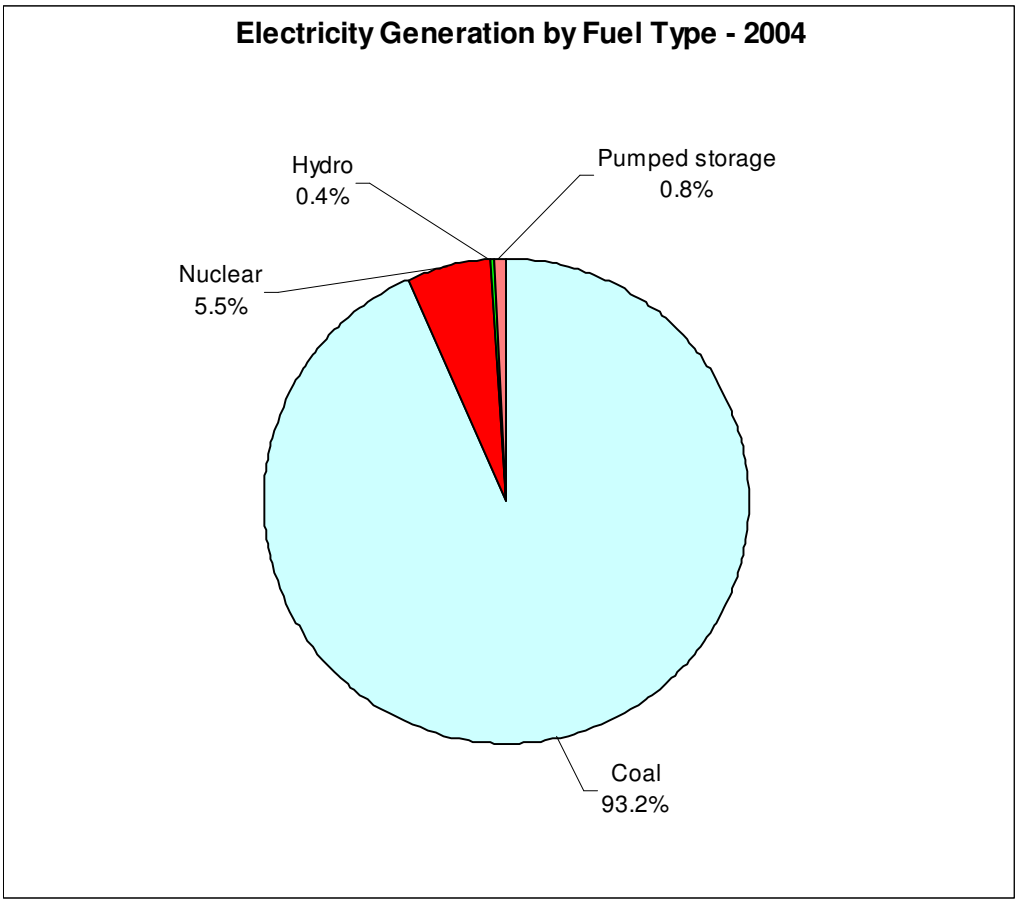
Sources: Integrated National Electrification Planning Manual
Eskom Annual Reports (2004)
NER Electricityupply Statistics 2003 & 2004



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

Sources: National Energy Balances and Eskom Annual Report - 2004

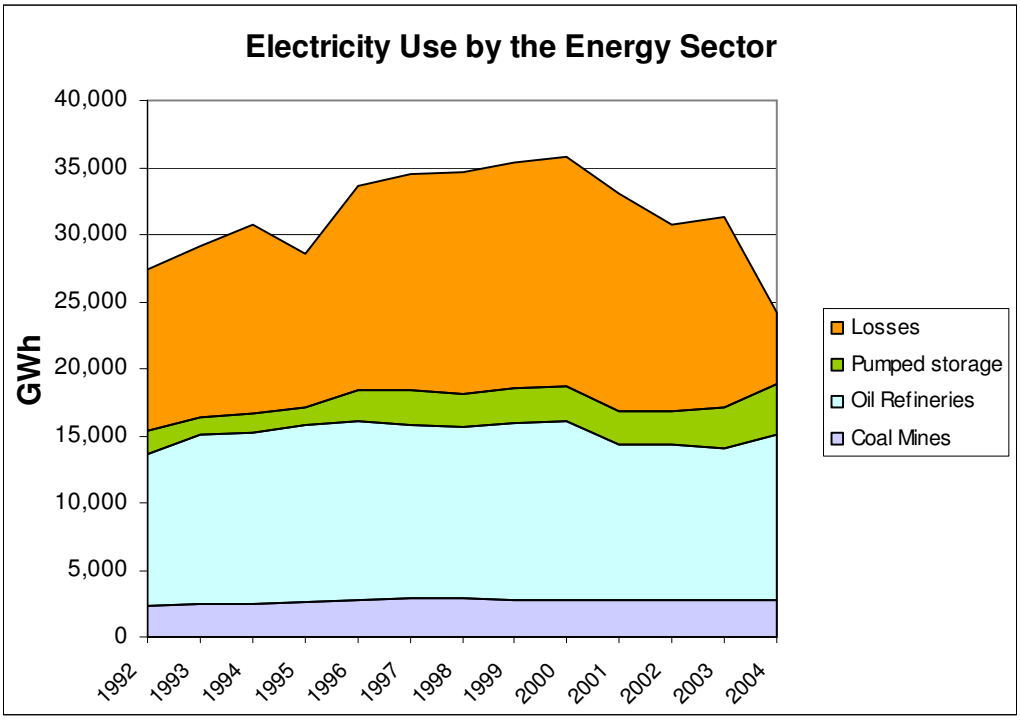


Electricity Use by the Energy Sector - GWh

Year	Coal Mines	Oil Refineries	Pumped storage	Losses
1992	2,349	11,206	1,826	12,033
1993	2,414	12,653	1,345	12,759
1994	2,526	12,630	1,517	14,031
1995	2,566	13,232	1,274	11,532
1996	2,732	13,423	2,220	15,294
1997	2,848	12,908	2,608	16,094
1998	2,836	12,832	2,420	16,534
1999	2,725	13,283	2,590	16,812
2000	2,761	13,331	2,591	17,053
2001	2,803	11,580	2,357	16,251
2002	2,815	11,571	2,479	13,820
2003	2,690	11,386	3,005	14,160
2004	2,788	12,289	3,822	5,268

Source: Eskom Annual Report 2004

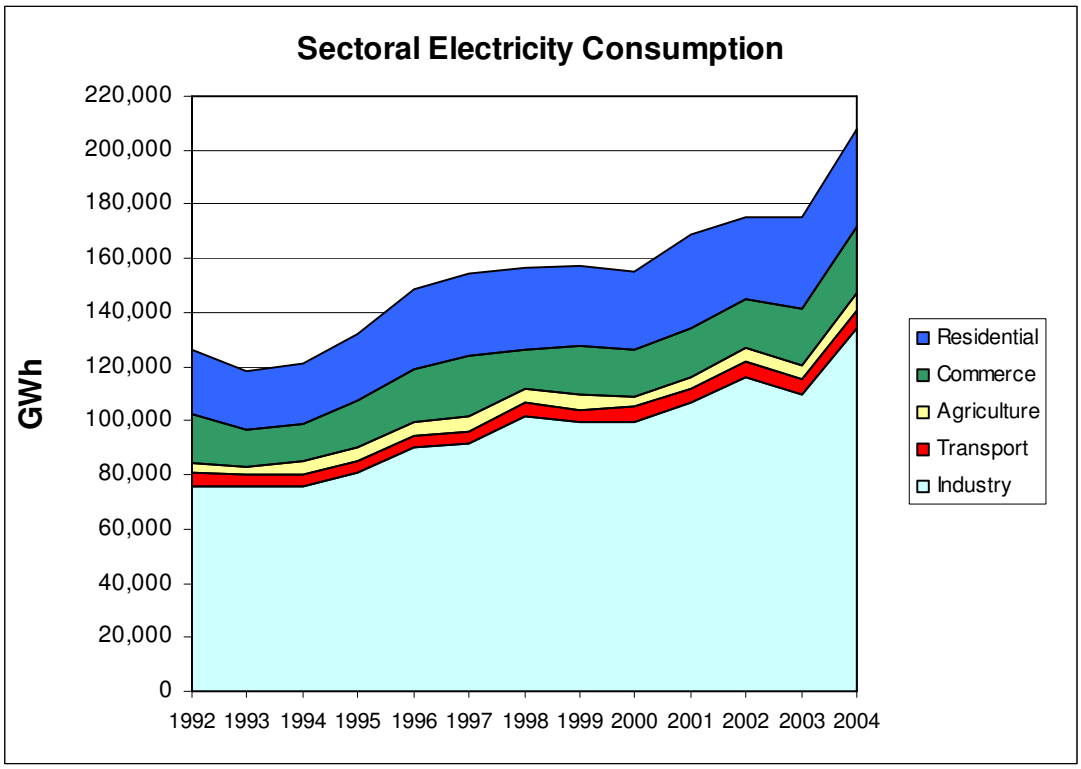
Source: National Energy Balances



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

Source: National Energy Balance



Electricity - Industrial Consumption - GWh

Year	Iron and steel	Chemicals	Non-ferrous metals	Non-metallic minerals	Transport equipment	Machinery
1992	11,402.0	3,179.0	6,147.0	986.0	4.0	95.0
1993	12,606.0	3,017.0	6,234.0	963.0	4.0	109.0
1994	14,604.0	3,150.0	5,945.0	1,051.0	6.0	100.0
1995	16,251.0	3,603.0	6,956.0	1,190.0	9.0	104.0
1996	15,630.0	2,524.0	13,046.0	1,143.0	9.0	115.0
1997	17,875.0	2,432.0	14,584.0	1,188.0	11.0	127.0
1998	18,865.0	2,629.8	14,769.3	1,155.0	15.1	36.9
1999	19,527.4	2,499.5	14,907.2	1,119.0	15.1	41.6
2000	20,913.4	2,640.4	15,037.7	1,153.7	69.3	53.2
2001	18,554.0	9,405.0	15,172.0	2,039.0	83.0	52.0
2002	20,331.0	9,744.0	15,441.0	2,277.0	88.0	44.0
2003	22,331.0	9,439.0	16,258.0	2,279.0	95.0	42.0
2004	23,271.0	9,889.0	17,953.0	2,195.0	85.0	43.0

Source: National Energy Balance

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

Source: National Energy Balances

Notes

Section 7

Gas

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

Sasol produces gas from coal, and built a gas pipeline to import gas from Mozambique. Prospects to import gas from Namibia to South Africa are also being researched.

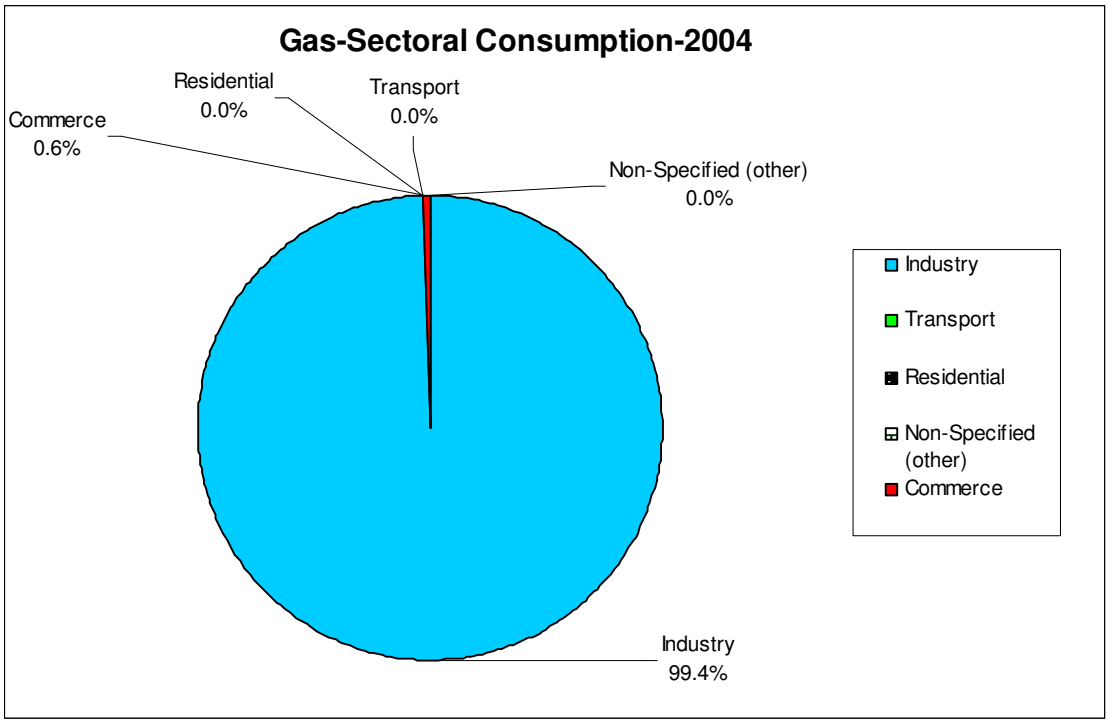
Even though the consumption of gas has increased in recent years, the importance of gas in the South African energy economy is still small compared to other countries. Industry remains the largest customer by far.

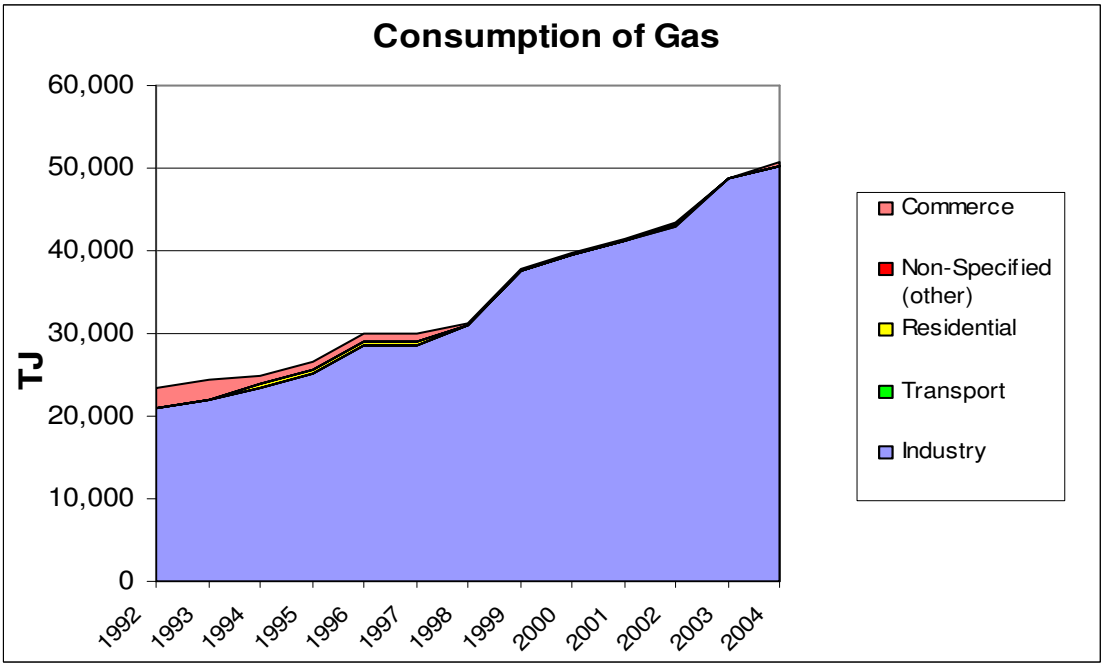
(See also notes under Section 5: Oil)

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

Source: National Energy Balances


Gas-Sectoral Consumption-2004
Residential
0.0%
Transport
0.0%
Commerce
0.6%
Non-Specified (other)
0.0%
Industry
99.4%
Industry
Transport
Residential
Non-Specified (other)
Commerce


Consumption of Gas
TJ
60,000
50,000
40,000
30,000
20,000
10,000
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Commerce
Non-Specified (other)
Residential
Transport
Industry

Gas-Industrial Consumption TJ

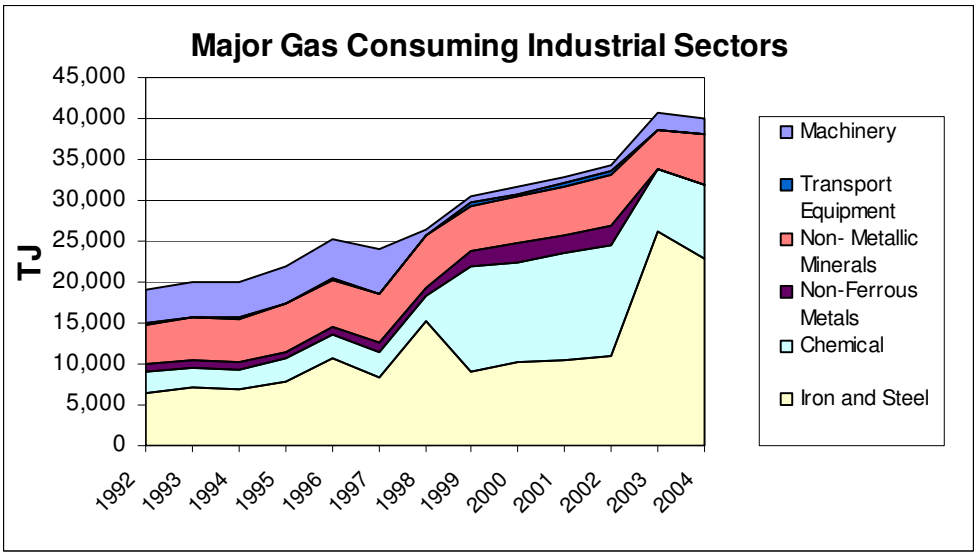
Year	Iron and Steel	Chemical	Non-Ferrous Metals	Non-Metallic Minerals	Transport Equipment	Machinery
1992	6,474	2,508	951	4,865	155	4,054
1993	7,092	2,455	1,002	5,077	154	4,153
1994	6,830	2,523	862	5,300	142	4,327
1995	7,960	2,642	805	5,861	168	4,573
1996	10,748	2,866	972	5,740	201	4,734
1997	8,372	2,948	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

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

Source:National Energy Balances



Notes

Section 8

Renewables

Photovoltaic modules are used in clinics, schools, for lighting, water pumps, television and telecommunication widely in the country. New technology such as super capacitors, fly wheels, fuel cells and chemical batteries are likely to be introduced to reduce the storage costs significantly.

A recent study indicates that the country has a high potential for renewable energy with up to 43 TWh of electricity that could be displaced by solar water heating. A study also indicates that the wind energy has a technical potential of 66 TWh to the electricity production.

South Africa has 661 MW of domestic installed hydropower. Because of the scarcity of water, which is characterising the country, some hydro is imported from neighbouring states.

Biomass is used directly for cooking and space heating mainly in the rural areas and indirectly for biological processes to produce liquid fuels and electricity generation. The data quality for some of these annual renewable energy consumptions is poor and the data presented below are estimates since the accuracy cannot always be verified.

1.	Estimated Fuelwood Consumption (households)	52 889 GWh [a]
2.	Commercially exploitable Bagasse, Wood & Sawmill Waste and Pulp:	65 010 GWh [b]
3.	Wind Energy:	32 GWh
4.	Solar Energy:	532 GWh
TOTAL ESTIMATED ANNUAL CONSUMPTION:		118 463 GWh

[a] Where estimated fuel consumption is about 11 200 000 tons (190 400 TJ)

[b] and commercially exploitable Bagasse, Wood and Sawmill Waste and Pulp comprise of 6588000 tons of Biomass Bagasse (46 139 TJ) and 23 496 tons equivalent to (187 893 TJ) of field residue, bagasse, softwood, hardwood, chips, dust, bark, black liquor and sludge.

There are other sources of energy, which are distributed either directly or indirectly all over the country such as landfill gas with a potential of 7.2 TWh of electricity generation, which is estimated, to grow to 10.8 TWh by 2040. Wave energy potential is estimated at 8 000 MW and 10 000 MW in winter and the potential yield to 70 TWh per year.

Notes

Section 9

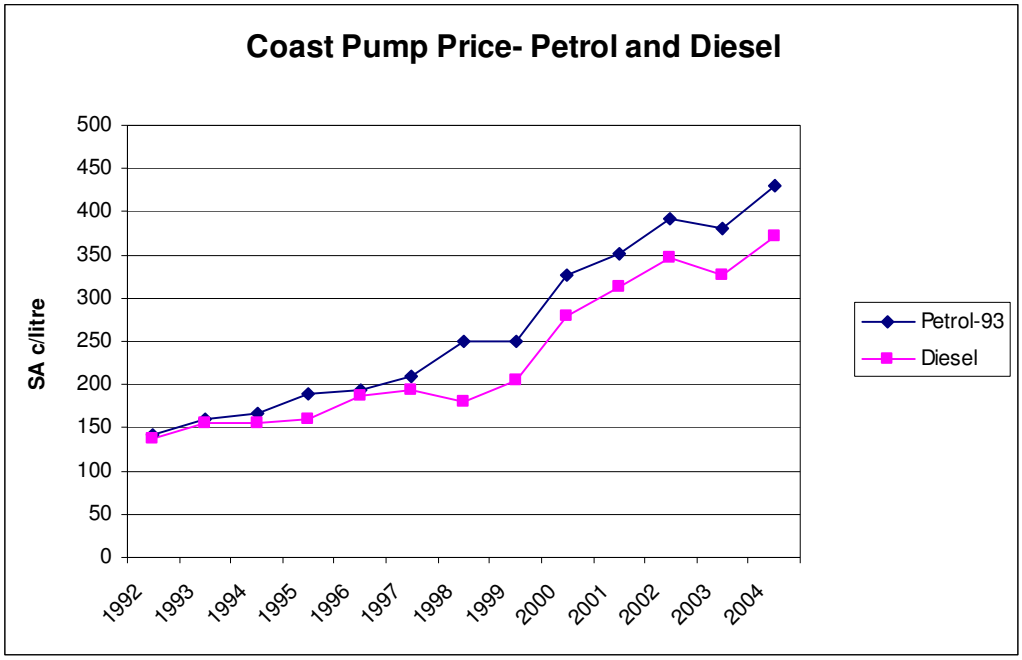
Prices

The price data given here have been extracted from a far more extensive DME price report.

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	392.00	347.51
2003	381.33	326.96
2004	429.92	372.58

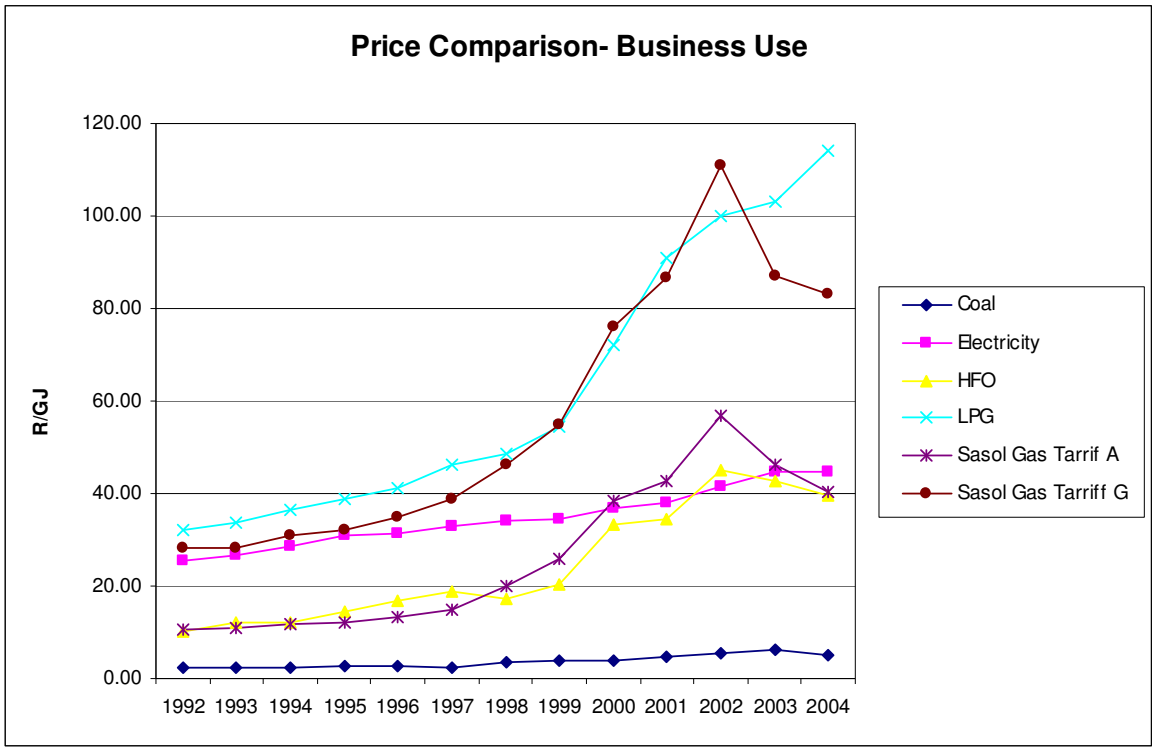
Source: Petroleum Products Price Report



Price Comparison-Business Use- R/GJ

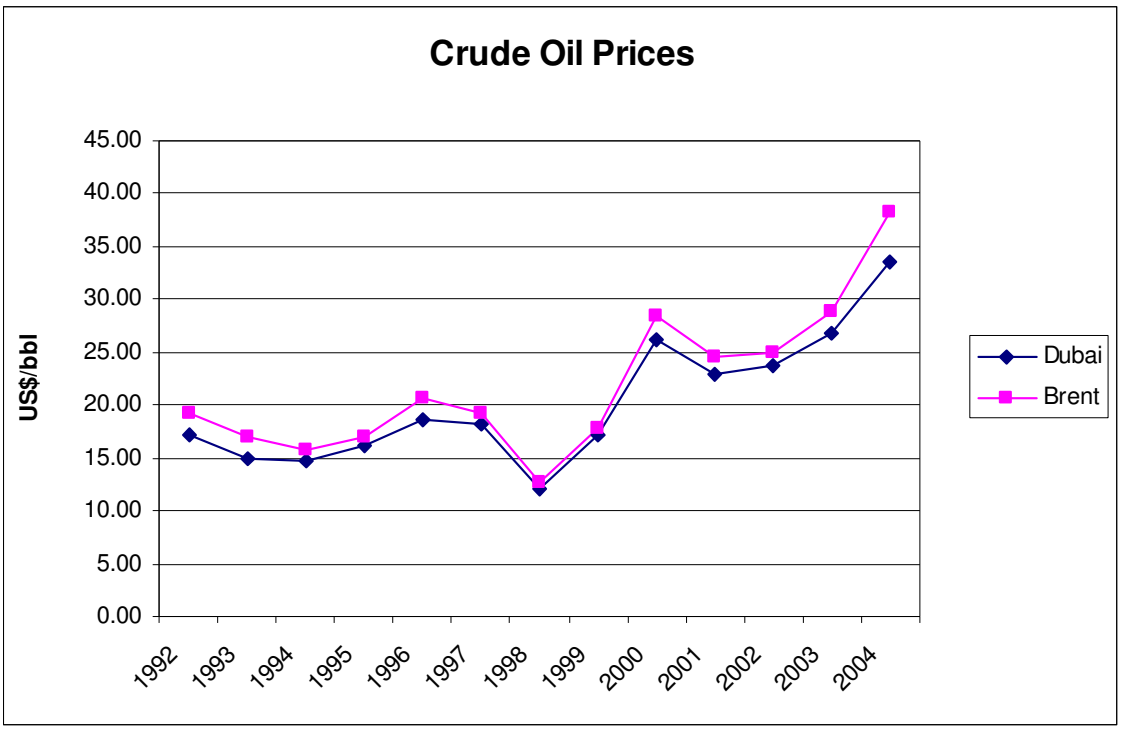
	Coal	Electricity	HFO	LPG	Sasol Gas Tarrif A	Sasol Gas Tarriff G
1992	2.27	25.44	10.19	32.23	10.71	28.22
1993	2.21	26.64	12.03	33.60	10.89	28.22
1994	2.33	28.67	12.15	36.46	11.91	30.86
1995	2.55	30.97	14.66	38.98	12.35	31.99
1996	2.69	31.39	17.03	41.33	13.46	34.88
1997	2.49	32.92	18.83	46.11	15.01	38.90
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

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



Crude Oil-US$/bbl		
	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

Source: Petroleum Products Price Report



Notes

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	1,176.73
1994	779,424	66.60	66.70	3.55	384.05	1,363.43
1995	803,710	72.40	73.00	3.63	384.17	1,393.48
1996	838,326	77.70	78.10	4.30	387.71	1,664.02
1997	860,516	84.40	83.60	4.61	331.11	1,523.48
1998	864,968	90.20	86.60	5.53	294.14	1,622.92
1999	885,365	94.90	91.60	6.11	278.92	1,702.71
2000	922,151	100.00	100.00	6.94	279.13	1,932.51
2001	947,373	105.70	108.40	8.60	271.08	2,338.18
2002	982,327	115.40	123.80	10.52	310.16	3,242.30
2003	1,011,556	122.10	125.90	7.56	363.65	2,739.97
2004	1,056,771	123.80	126.70	6.45	409.33	2,637.10

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

Notes

Section 11

Useful Addresses

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SAPIA
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Section 12

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}