DEPARTMENT OF MINERALS AND ENERGY
REPUBLIC OF SOUTH AFRICA

DIGEST OF SOUTH AFRICAN ENERGY STATISTICS

2002

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ENERGY STATISTICS

2002

Department of Minerals and Energy

Published by:

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Pretoria
0001

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ISBN: 0-9584376-4-5

Preface

The White Paper on Energy Policy (1998) emphasises the need for good energy data: “Not only is good data required for the energy policy process but it is fundamental to the implementation of integrated energy planning.” “The data should be collected, stored and reported in accordance with international specifications and standards to facilitate easy comparison, integration and exchange.” Government is further obliged to establish structures and systems to facilitate this process, and to provide information to the public at a reasonable price to offset some of the costs involved in publication. This series is designed to meet these needs.

The first *Digest of South African Energy Statistics* was published in 1998, and this, the second in this series, adds statistics for a further three years to those published earlier, namely 1998 to 2000. The series now covers the years 1992 to 2000. It provides South Africans, the international energy community, energy institutes and researchers with data and information in a systematic format. The data covers areas such as energy supply, sectoral consumption, transformation, energy balances (in energy units as well as native or natural units), the main energy carriers, prices and some economic data.

The Department of Minerals and Energy wishes to thank all parties that contributed to making this publication a reality. The first set of data up to 1997 was collected by the Institute for Energy Studies at the Rand Afrikaans University, Johannesburg. The second set of data from 1998 to 2000 was collected by Science Consultancy Enterprises. Both conformed to the standards for data collection laid down by the International Energy Agency. This data collection was managed under the watchful eyes of a Steering Committee, consisting of representatives from the energy community, research organisations and private companies. These members of the Steering Committee gave freely of their advice and expertise to assist in the data collection and verification exercise. This publication is a high level summary of the outputs from that exercise, which also included an energy price report.

Any comments or suggestions for improvements to future editions will be welcomed.

DR ROD CROMPTON
Deputy Director-General: Hydrocarbons and Energy Planning
Department of Minerals and Energy

Contents

Section		Page
	Introduction	1
1.	Overview	1
2.	Energy Balances	7
3.	National Energy Consumption	13
4.	Coal	21
5.	Oil	29
6.	Electricity	35
7.	Gas	41
8.	Renewables	45
9.	Prices	47
10.	Economic Data	51
11.	Useful Information	53

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 during the period 1992 to 2000. Although both 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.

Since the previous publication in 1998, updates and better quality energy data became available and these have been utilised in preparing this publication. Consequently there are differences in some figures between the earlier 1998 publication and this later one. We believe the more recent data is the more accurate.

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 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.

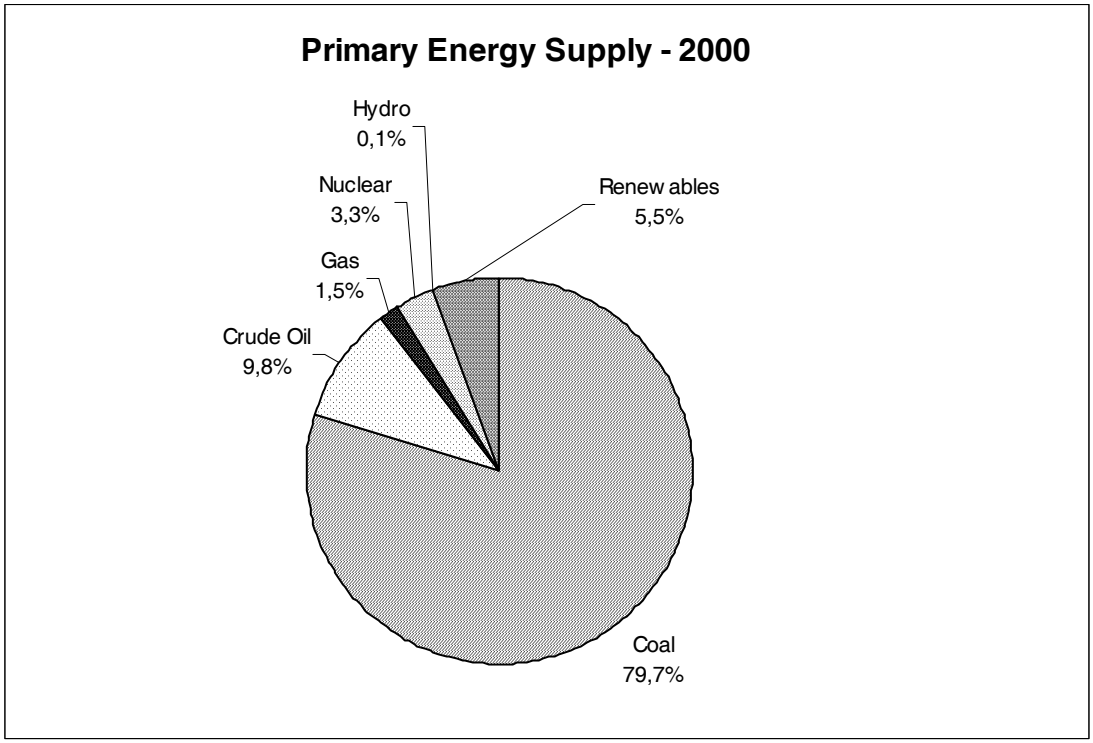
Primary Energy Supply

Electricity production costs, in South Africa based on our large coal reserves are among the cheapest in the world. This together with a natural resource based economy, resulted in the country becoming a large energy user with high energy intensity. (Very recent data, not covered in this publication, suggests that energy intensity is declining as the economy is restructuring.) The total primary energy

supply increased from 3 936PJ in 1992 to 4 296PJ in 2000, an increase of 9,1%. The contribution of coal to primary energy supply increased by 14,5% from 2 991PJ to 3 426PJ over this period. In 2000 coal constituted 79,7% of the total primary energy supply, as depicted in the graph below.

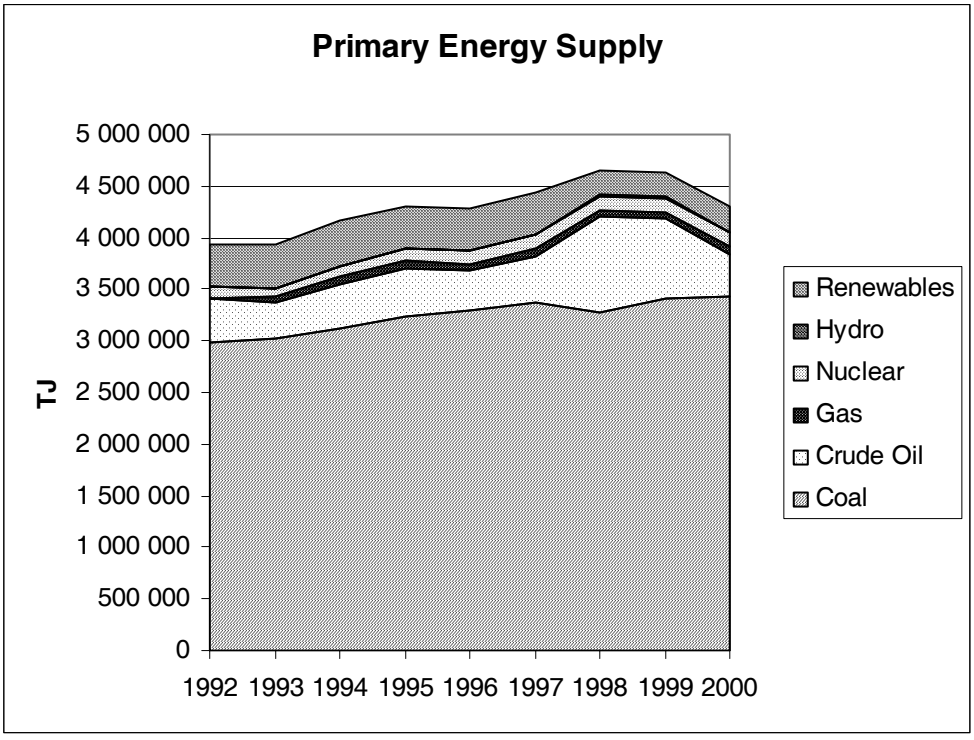
Total Primary Energy Supply - TJ

	1999	%	2000	%
Coal	3 413 499	73,8%	3 425 725	79,7%
Crude Oil	764 067	16,5%	420 746	9,8%
Gas	70 628	1,5%	65 024	1,5%
Nuclear	140 040	3,0%	141 927	3,3%
Hydro	2 614	0,1%	4 835	0,1%
Renewables	237 400	5,1%	237 400	5,5%
TOTAL	**4 628 248**		**4 295 657**	



Total Primary Energy Supply - TJ

	1992	1993	1994	1995	1996	1997	1998	1999	2000
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
Crude Oil	414 946	334 047	428 321	459 980	376 059	450 863	933 682	764 067	420 746
Gas	11 969	71 814	71 814	71 814	71 814	71 814	53 983	70 628	65 024
Nuclear	101 324	79 145	105 785	123 284	128 455	137 967	148 375	140 040	141 927
Hydro	2 707	526	3 866	1 904	4 748	7 531	5 742	2 614	4 835
Renewables	414 000	419 000	433 432	408 739	408 739	408 739	237 400	237 400	237 400
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**



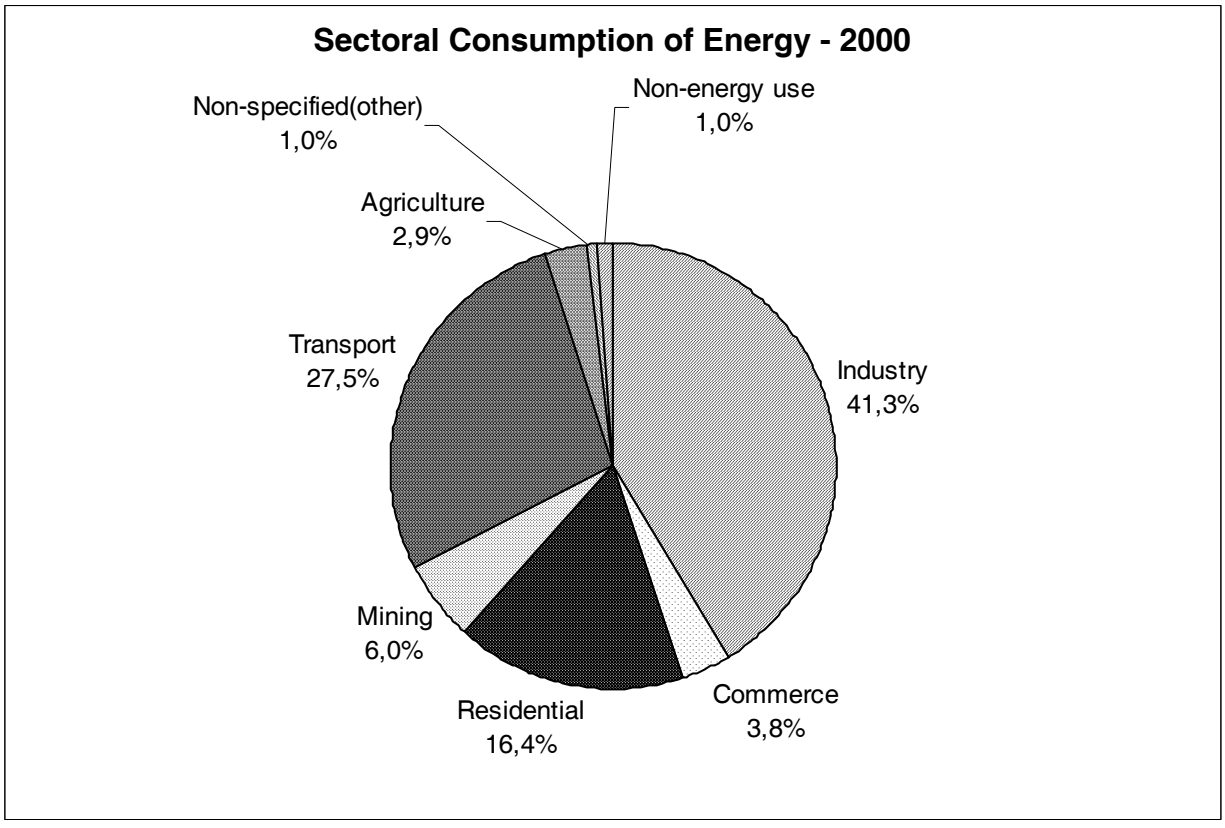
Sectoral Consumption

The three major energy consuming sectors are industry, residential and transport. In 2000 they accounted together for 85,2% of final energy demand. 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.

Sectoral Consumption of Energy - TJ

Sector	1999	%	2000	%
Industry	900 717	40,6%	906 785	41,3%
Commerce	85 140	3,8%	82 975	3,8%
Residential	369 078	16,6%	360 467	16,4%
Mining	145 386	6,6%	130 759	6,0%
Transport	605 790	27,3%	603 985	27,5%
Agriculture	74 832	3,4%	64 109	2,9%
Non-specified(other)	11 111	0,5%	21 911	1,0%
Non-energy use	24 740	1,1%	22 352	1,0%
Total	**2 216 793**		**2 193 342**	

Source: National Energy Balances

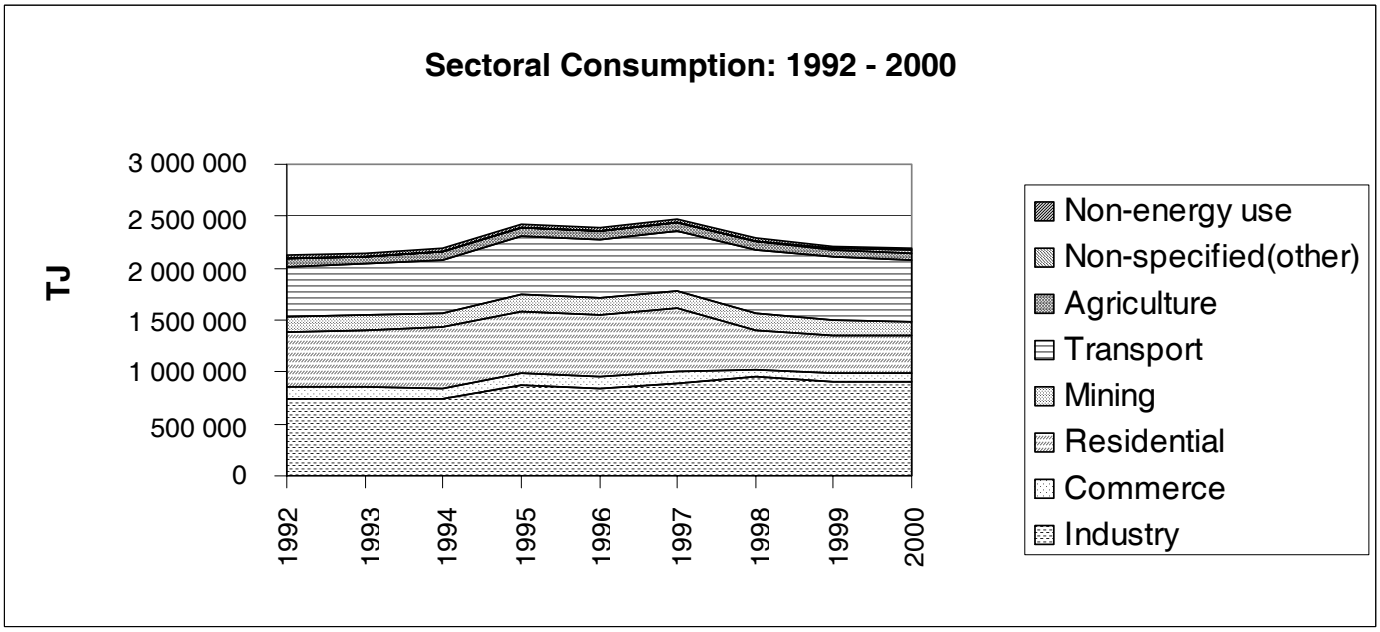


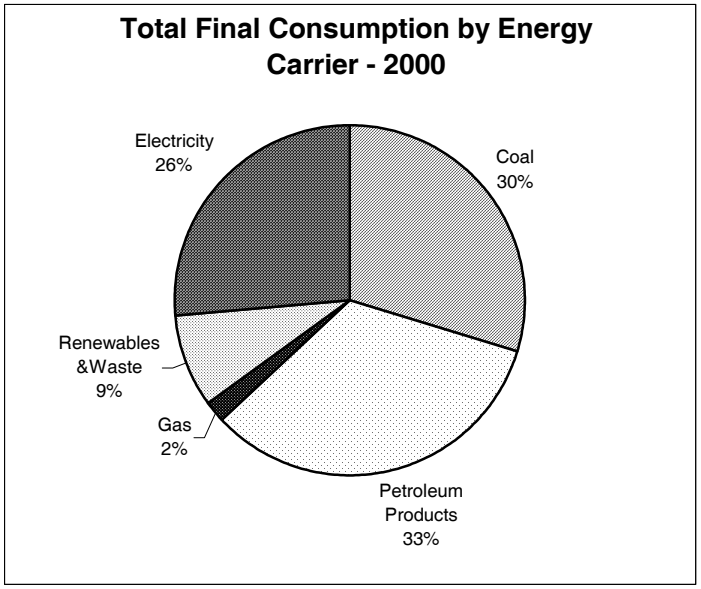
Sectoral Consumption of Energy - TJ

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Industry	745 401	749 869	745 633	867 356	848 516	886 831	951 810	900 717	906 785
Commerce	111 089	102 935	97 082	124 281	107 321	118 429	76 022	85 140	82 975
Residential	530 249	553 865	584 484	593 359	596 938	603 557	376 504	369 078	360 467
Mining	153 207	144 908	145 981	154 043	159 369	164 098	166 934	145 386	130 759
Transport	475 345	484 636	502 798	563 367	564 195	583 569	599 766	605 790	603 985
Agriculture	77 708	74 892	83 446	85 380	87 661	84 456	79 387	74 832	64 109
Non-specified(other)	0	0	0	0	0	0	11 979	11 111	21 911
Non-energy use	28 938	26 983	29 109	28 357	31 600	29 828	26 100	24 740	22 352
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**

Source: National Energy balances

Note: All (or the bulk) of Non-specifed (other) (which is Renewables and Waste) was included in Residential



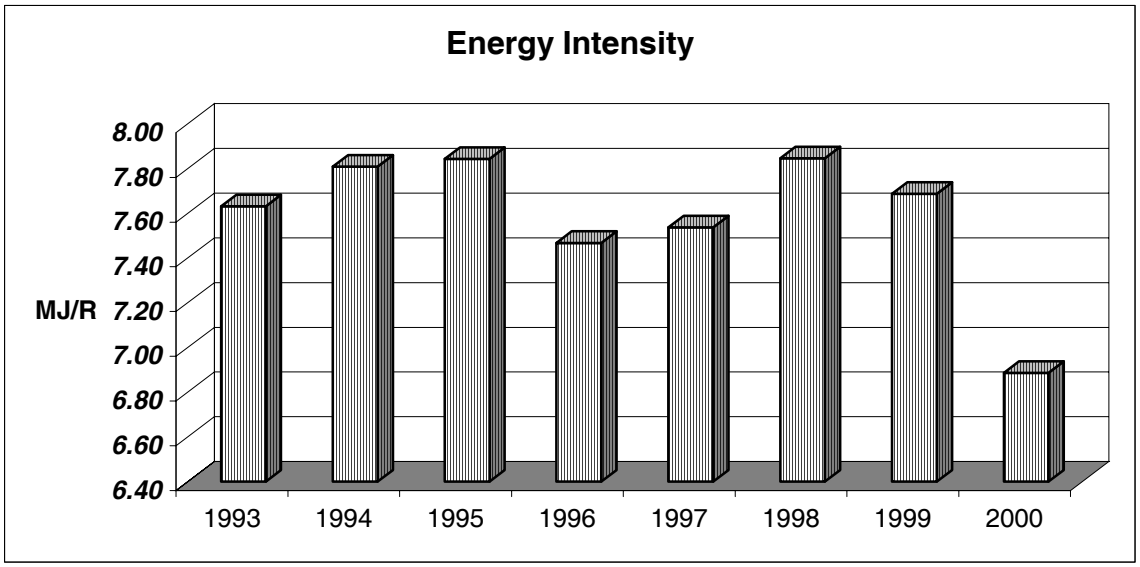


Energy Intensity

South Africa's economic growth as measured by the growth in Gross Domestic Product (GDP) was 21,2% for the period 1993 to 2000. The Primary Energy Supply for these years increased from 3 924PJ in 1993 to 4 298PJ in 2000, an increase of 9,5%. This resulted in the energy intensity for the individual years are depicted in the following table and graph.

Year	GDP at market prices	Primary Energy Supply TJ	Intensity MJ/R
1993	514 217	3 924 315	7,63
1994	531 537	4 150 999	7,81
1995	548 098	4 299 195	7,84
1996	571 706	4 269 622	7,47
1997	586 838	4 423 365	7,54
1998	591 309	4 639 614	7,85
1999	603 129	4 636 914	7,69
2000	624 129	4 298 220	6,89

Sources: National Energy Balances
Stats SA Quartely GDP by industry at constant 1995 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 1999 and 2000 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).

ENERGY BALANCE - 2000 (Aggregated)					
Supply & Consumption (terajoules)	**Coal**	**Crude Oil**	**Petroleum Products**	**Gas**	**Nuclear**
Indigenous Production	5 301 908	-	-	65 024	141 927
Import	34 390	781 529	20 291	-	-
Export	-1 957 457	-7 598	-259 997	-	-
Intl. Marine Bunkers	-	-	-113 479	-	-
Stock Changes	46 884	-	-	-	-
Total Primary Energy Supply	**3 425 725**	**773 931**	**-353 185**	**65 024**	**141 927**
Transfers	-	-	-	-	-
Statistical Differences	31 097	-	-	-	-
Public Electricity Plant	-1 886 291	-	-	-	-141 927
Autoproducer Electricity Plant	-116 046	-	-	-	-
Public CHP Plant	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-
Public Heat Plant	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-
Heat pumps	-	-	-	-	-
Electric boilers	-	-	-	-	-
Gas Works	-133 407	-	-	39 857	-
Oil Refineries	-	-1 113 150	1 084 626	-27	-
Coal Transformation	-12 159	-	-	-	-
Liquefaction	-654 328	339 219	-	-65 024	-
Non-specified (Transformation)	-	-	-	-	-
Own Use	-	-	-	-	-
Distribution Losses	-	-	-	-	-
Total Final Consumption	**654 592**	-	**731 441**	**39 830**	-
Industry Sector	590 321	-	48 761	39 532	-
Iron and Steel	178 886	-	-	10 147	-
Chemical and Petrochemical	253 147	-	-	12 349	-
Memo: Feedst.Use In Petchem.Ind.	*221 292*	-	-	-	-
Non-Ferrous Metals	-	-	-	2 256	-
Non-Metallic Minerals	33 689	-	-	5 682	-
Transport Equipment	-	-	-	368	-
Machinery	-	-	-	789	-
Mining and Quarrying	3 916	-	21 927	378	-
Food and Tobacco	-	-	-	1 251	-
Paper Pulp and Print	-	-	-	2 967	-
Wood and Wood Products	-	-	-	68	-
Construction	-	-	10 549	-	-
Textile and Leather	-	-	-	18	-
Non-specified (Industry)	120 682	-	16 285	3 257	-
Transport Sector	-	-	584 476	29	-
International Civil Aviation	-	-	40 647	-	-
Domestic Air Transport	-	-	27 933	29	-
Road	-	-	507 318	-	-
Rail	-	-	8 283	-	-
Pipeline Transport	-	-	-	-	-
Internal Navigation	-	-	-	-	-
Non-specified (Transport)	-	-	296	-	-
Other Sectors	64 271	-	75 852	269	-
Agriculture	1 864	-	48 009	-	-
Commerce and Public Services	20 802	-	151	231	-
Residential	41 604	-	25 214	-	-
Non-specified (Other)	-	-	2 477	38	-
Non-Energy Use	-	-	22 352	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	22 352	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-
Elect.Output in GWh	193 419	-	-	-	13 010
Elect.Output-public elec. plant	187 606	-	-	-	13 010
Elect.Output-autoprod. elec. plant	5 813	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-
Data Source: Science Consultancy Enterprises					
Energy Balance Format: International Energy Agency					

ENERGY BALANCE - 2000 (Aggregated)						
Supply & Consumption (terajoules)	**Hydro**	**Geothermal Solar etc**	**Renewables & Waste**	**Electricity**	**Heat**	**Total**
Indigenous Production	4 835	-	237 400	-	-	5 751 094
Import	-	-	-	16 988	-	853 199
Export	-	-	-	-14 425	-	-2 239 478
Intl. Marine Bunkers	-	-	-	-	-	-113 479
Stock Changes	-	-	-	-	-	46 884
Total Primary Energy Supply	**4 835**	-	**237 400**	**2 563**	-	**4 298 220**
Transfers	-	-	-	-	-	-
Statistical Differences	-	-	-	-63 593	-	-32 496
Public Electricity Plant	-4 835	-	-	727 052	-	-1 306 000
Autoproducer Electricity Plant	-	-	-	20 927	-	-95 119
Public CHP Plant	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-47 000	1 105	-	-45 895
Public Heat Plant	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-
Electric boilers	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-93 550
Oil Refineries	-	-	-	-47 993	-	-76 543
Coal Transformation	-	-	-	-	-	-12 159
Liquefaction	-	-	-	-	-	-380 133
Non-specified (Transformation)	-	-	-	-	-	-
Own Use	-	-	-	-1 590	-	-1 590
Distribution Losses	-	-	-	-61 392	-	-61 392
Total Final Consumption	-	-	**190 400**	**577 079**	-	**2 193 342**
Industry Sector	-	-	-	358 931	-	1 037 544
Iron and Steel	-	-	-	75 288	-	264 322
Chemical and Petrochemical	-	-	-	9 506	-	275 002
Memo: Feedst.Use In Petchem.Ind.	-	-	-	-	-	*221 292*
Non-Ferrous Metals	-	-	-	54 136	-	56 392
Non-Metallic Minerals	-	-	-	4 153	-	43 524
Transport Equipment	-	-	-	249	-	617
Machinery	-	-	-	191	-	981
Mining and Quarrying	-	-	-	104 537	-	130 759
Food and Tobacco	-	-	-	2 301	-	3 552
Paper Pulp and Print	-	-	-	5 377	-	8 344
Wood and Wood Products	-	-	-	1 485	-	1 553
Construction	-	-	-	122	-	10 671
Textile and Leather	-	-	-	1 355	-	1 373
Non-specified (Industry)	-	-	-	100 231	-	240 455
Transport Sector	-	-	-	19 480	-	603 985
International Civil Aviation	-	-	-	-	-	40 647
Domestic Air Transport	-	-	-	113	-	28 075
Road	-	-	-	121	-	507 440
Rail	-	-	-	12 359	-	20 642
Pipeline Transport	-	-	-	224	-	224
Internal Navigation	-	-	-	22	-	22
Non-specified (Transport)	-	-	-	6 640	-	6 935
Other Sectors	-	-	190 400	198 669	-	529 461
Agriculture	-	-	-	14 236	-	64 109
Commerce and Public Services	-	-	-	61 790	-	82 975
Residential	-	-	190 400	103 248	-	360 467
Non-specified (Other)	-	-	-	19 395	-	21 911
Non-Energy Use	-	-	-	-	-	22 352
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	22 352
Memo:Non-Energy Use in Transport	-	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-	-
Elect.Output in GWh	1 343	-	307	-	-	208 079
Elect.Output-public elec. plant	1 343	-	-	-	-	201 959
Elect.Output-autoprod. elec. plant	-	-	-	-	-	5 813
Elect.Output-public CHP plant	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	307	-	-	307
Data Source: Science Consultancy Enterprises						
Energy Balance Format: International Energy Agency						

ENERGY BALANCE -1999 (Aggregated)					
Supply and Consumption (terajoules)	**Coal**	**Crude Oil**	**Petroleum Products**	**Gas**	**Nuclear**
Indigenous Production	5 286 674	310 492	-	70 628	140 040
Import	26 648	824 850	50 420	-	-
Export	-1 854 572	-62 799	-222 683	-	-
Intl. Marine Bunkers	-	-	-136 213	-	-
Stock Changes	-45 252	-	-	-	-
Total Primary Energy Supply	**3 413 499**	**1 072 544**	**-308 476**	**70 628**	**140 040**
Transfers	-	-	-	-	-
Statistical Differences	-68 765	-	-30	-	-
Public Electricity Plant	-1 810 155	-	-	-	-140 040
Autoproducer Electricity Plant	-113 616	-	-	-	-
Public CHP Plant	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-
Public Heat Plant	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-
Heat pumps	-	-	-	-	-
Electric boilers	-	-	-	-	-
Gas Works	-133 337	-	-	37 903	-
Oil Refineries	-	-1 072 544	1 078 559	-146	-
Coal Transformation	-15 948	-	-	-	-
Liquefaction	-625 398	-	-	-70 628	-
Non-specified (Transformation)	-	-	-	-	-
Own Use	-	-	-	-	-
Distribution Losses	-	-	-	-	-
Total Final Consumption	**646 279**	-	**770 053**	**37 757**	-
Industry Sector	580 678	-	69 134	37 466	-
Iron and Steel	174 807	-	-	8 965	-
Chemical and Petrochemical	242 299	-	-	12 929	-
Memo: Feedst.Use In Petchem.Ind.	*211 518*	-	-	-	-
Non-Ferrous Metals	-	-	-	1 886	-
Non-Metallic Minerals	35 055	-	-	5 511	-
Transport Equipment	-	-	-	357	-
Machinery	-	-	-	752	-
Mining and Quarrying	20 265	-	20 822	341	-
Food and Tobacco	-	-	-	1 212	-
Paper Pulp and Print	-	-	-	2 715	-
Wood and Wood Products	-	-	-	63	-
Construction	-	-	10 676	-	-
Textile and Leather	-	-	-	17	-
Non-specified (Industry)	108 252	-	37 636	2 719	-
Transport Sector	-	-	589 823	25	-
International Civil Aviation	-	-	41 074	-	-
Domestic Air Transport	-	-	28 289	25	-
Road	-	-	511 130	-	-
Rail	-	-	8 885	-	-
Pipeline Transport	-	-	-	-	-
Internal Navigation	-	-	-	-	-
Non-specified (Transport)	-	-	444	-	-
Other Sectors	65 601	-	86 356	266	-
Agriculture	2 702	-	51 413	-	-
Commerce and Public Services	20 966	-	206	216	-
Residential	41 932	-	30 506	-	-
Non-specified (Other)	-	-	4 231	50	-
Non-Energy Use	-	-	24 740	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	24 740	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-
Elect.Output in GWh	186 859	-	-	-	12 837
Elect.Output-public elec. plant	181 104	-	-	-	12 837
Elect.Output-autoprod. elec. plant	5 755	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-
Data Source: Science Consultancy Enterprises					
Energy Balance Format: International Energy Agency					

ENERGY BALANCE -1999 (Aggregated)

Supply and Consumption (terajoules)	Hydro	Geothermal Solar etc	Renewables & Waste	Electricity	Heat	Total
Indigenous Production	2 614	-	237 400	-	-	6 047 848
Import	-	-	-	24 023	-	925 941
Export	-	-	-	-15 358	-	-2 155 411
Intl. Marine Bunkers	-	-	-	-	-	-136 213
Stock Changes	-	-	-	-	-	-45 252
Total Primary Energy Supply	**2 614**	-	**237 400**	**8 665**	-	**4 636 914**
Transfers	-	-	-	-	-	-
Statistical Differences	-	-	-	-47 910	-	-116 705
Public Electricity Plant	-2 614	-	-	700 801	-	-1 252 007
Autoproducer Electricity Plant	-	-	-	20 718	-	-92 898
Public CHP Plant	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-47 000	-	-	-47 000
Public Heat Plant	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-
Electric boilers	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-95 434
Oil Refineries	-	-	-	-47 818	-	-41 949
Coal Transformation	-	-	-	-	-	-15 948
Liquefaction	-	-	-	-	-	-696 027
Non-specified (Transformation)	-	-	-	-	-	-
Own Use	-	-	-	-1 627	-	-1 627
						-
Distribution Losses	-	-	-	-60 524	-	-60 524
Total Final Consumption	-	-	**190 400**	**572 305**	-	**2 216 793**
Industry Sector	-	-	-	358 824	-	1 046 103
Iron and Steel	-	-	-	70 299	-	254 071
Chemical and Petrochemical	-	-	-	8 998	-	264 226
Memo: Feedst.Use In Petchem.Ind.	-	-	-	-	-	*211 518*
Non-Ferrous Metals	-	-	-	53 666	-	55 552
Non-Metallic Minerals	-	-	-	4 030	-	44 596
Transport Equipment	-	-	-	54	-	411
Machinery	-	-	-	150	-	902
Mining and Quarrying	-	-	-	103 959	-	145 386
Food and Tobacco	-	-	-	2 091	-	3 303
Paper Pulp and Print	-	-	-	3 920	-	6 636
Wood and Wood Products	-	-	-	2 132	-	2 195
Construction	-	-	-	126	-	10 802
Textile and Leather	-	-	-	1 491	-	1 508
Non-specified (Industry)	-	-	-	107 908	-	256 515
Transport Sector	-	-	-	15 943	-	605 790
International Civil Aviation	-	-	-	-	-	41 074
Domestic Air Transport	-	-	-	95	-	28 409
Road	-	-	-	99	-	511 229
Rail	-	-	-	12 010	-	20 895
Pipeline Transport	-	-	-	209	-	209
Internal Navigation	-	-	-	22	-	22
Non-specified (Transport)	-	-	-	3 508	-	3 952
Other Sectors	-	-	190 400	197 538	-	540 161
Agriculture	-	-	-	20 717	-	74 832
Commerce and Public Services	-	-	-	63 752	-	85 140
Residential	-	-	190 400	106 240	-	369 078
Non-specified (Other)	-	-	-	6 830	-	11 111
						-
Non-Energy Use	-	-	-	-	-	24 740
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	24 740
Memo:Non-Energy Use in Transport	-	-	-	-	-	-
Memo:Non-Energy Use in Oth. Sect	-	-	-	-	-	-
Elect.Output in GWh	726	-	-	-	-	200 422
Elect.Output-public elec. plant	726	-	-	-	-	194 667
Elect.Output-autoprod. elec. plant	-	-	-	-	-	5 755
Elect.Output-public CHP plant	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises

Energy Balance Format: International Energy Agency

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 1999 and 2000.

ENERGY BALANCE - 2000 (Disaggregated, Native Units)

Supply & Consumption	Hard Coal	Coking Coal	Bituminous Coal	Coke oven coke	Gasworks Gas	Coke oven Gas	Blast Furnace Gas	Solid Biomass	Natural Gas
	tons	tons	tons	tons	TJ	TJ	TJ	TJ	TJ
Indigenous Production	224 199 281	1 460 066	222 739 215	1 886 244	39 857	14 867	18 545	237 400	65 024
From Other Sources	-	-	-	-	-	-	-	-	-
Import	1 109 362	1 109 362	-	-	-	-	-	-	-
Export	-69 909 179	-	-69 909 179	-	-	-	-	-	-
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-
Stock Changes	1 736 450	-	1 736 450	-	-	-	-	-	-
Domestic Supply	**157 135 914**	**2 569 428**	**154 566 486**	**1 886 244**	**39 857**	**14 867**	**18 545**	**237 400**	**65 024**
Transfers	-	-	-	-	-	-	-	-	-
Statistical Differences	-140 198	-	-140 198	-	-	-	-	-	-
Transformation Sector	**135 531 732**	**2 569 428**	**132 962 304**	**664 710**	**-**	**-**	**-**	**47 000**	**65 024**
Public Electricity Plant	93 845 304	-	93 845 304	-	-	-	-	-	-
Autoproducer Electricity Plant	4 298 000	-	4 298 000	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	47 000	-
Public Heat Plant	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	2 569 428	2 569 428	-	-	-	-	-	-	-
Gas Works	4 941 000	-	4 941 000	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	664 710	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-
Liquefaction	29 878 000	-	29 878 000	-	-	-	-	-	65 024
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	**27**	-	-	-	-
Coal Mines	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	27	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-
Final Consumption	**21 744 380**	-	**21 744 380**	**1 221 534**	**39 830**	**14 867**	**18 545**	**190 400**	-
Industry Sector	**19 363 968**	-	**19 363 968**	**1 221 534**	**39 532**	**14 867**	**18 545**	-	-
Iron and Steel	4 277 124	-	4 277 124	1 074 950	10 147	14 867	18 545	-	-
Chemical and Petrochemical	9 375 816	-	9 375 816	-	12 349	-	-	-	-
Non-Ferrous Metals	-	-	-	-	2 256	-	-	-	-
Non-Metallic Minerals	1 247 738	-	1 247 738	-	5 682	-	-	-	-
Transport Equipment	-	-	-	-	368	-	-	-	-
Machinery	-	-	-	-	789	-	-	-	-
Mining and Quarrying	145 041	-	145 041	-	378	-	-	-	-
Food and Tobacco	-	-	-	-	1 251	-	-	-	-
Paper Pulp and Print	-	-	-	-	2 967	-	-	-	-
Wood and Wood Products	-	-	-	-	68	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-
Textile and Leather	-	-	-	-	18	-	-	-	-
Non-specified (Industry)	4 318 249	-	4 318 249	146 584	3 257	-	-	-	-
Transport Sector	-	-	-	-	**29**	-	-	-	-
International Civil Aviation	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	29	-	-	-	-
Road	-	-	-	-	-	-	-	-	-
Rail	-	-	-	-	-	-	-	-	-
Pipeline Transport	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-	-	-	-	-
Other Sectors	**2 380 412**	-	**2 380 412**	-	**269**	-	-	**190 400**	-
Agriculture	69 053	-	69 053	-	-	-	-	-	-
Commerce and Public Services	770 453	-	770 453	-	231	-	-	-	-
Residential	1 540 906	-	1 540 906	-	-	-	-	190 400	-
Non-specified (Other)	-	-	-	-	38	-	-	-	-
Non-Energy Use	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	8 196 000	-	8 196 000	-	-	-	-	-	-
Elect.Output in GWh	**193 419**	-	**193 419**	-	-	-	-	**307**	-
Elect.Output-public elec. plant	187 606	-	187 606	-	-	-	-	-	-
Elect.Output-autoprod. elec. plant	5 813	-	5 813	-	-	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	307	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-
Heat Output in TJ	-	-	-	-	-	-	-	-	-
Pumped Hydro Production	-	-	-	-	-	-	-	-	-
Memo: Gas vented	-	-	-	-	-	-	-	-	-
Memo: Gas flared	-	-	-	-	-	-	-	-	-
Memo: Energy use for Gold Mining	-	-	-	-	-	-	-	-	-
Memo: Energy use for Other Mining	-	-	-	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2000 (Disaggregated, Native Units) - Continued

Supply & Consumption	Crude + NGLs + Feedstocks	Crude Oil	Natural Gas Liquids	Syncrude	LPG	Petrol	Avgas	Jet Fuel	Other Kerosene
	tons	tons	tons	tons	kl	kl	kl	kl	kl
Indigenous Production	270 748	-	270 748	-	569 849	11 036 056	65 142	2 224 226	1 863 738
From Other Sources	-	-	-	-	-	-	-	-	-
Import	18 319 949	18 319 949	-	-	-	179 442	119	-	40 043
Export	-178 111	-178 111	-	-	-	-828 333	-40 623	-249 163	-1 047 957
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-
Stock Changes	-	-	-	-	-	-	-	-	-
Domestic Supply	**18 412 586**	**18 141 838**	**270 748**	**-**	**569 849**	**10 387 164**	**24 638**	**1 975 064**	**855 824**
Transfers	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	-	-	-	-	-	-	-
Transformation Sector	**18 412 586**	**18 141 838**	**270 748**	**-**	**-**	**-**	**-**	**-**	**-**
Public Electricity Plant	-	-	-	-	-	-	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	26 364 272	18 141 838	270 748	7 951 686	-	-	-	-	-
Liquefaction	-7 951 686	-	-	-7 951 686	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	-
Coal Mines	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-
Final Consumption	-	-	-	-	**569 849**	**10 387 164**	**24 638**	**1 975 064**	**855 824**
Industry Sector	-	-	-	-	**365 337**	**4 556**	-	-	**177 499**
Iron and Steel	-	-	-	-	-	-	-	-	-
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-
Transport Equipment	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-	-
Mining and Quarrying	-	-	-	-	6 922	-	-	-	16 911
Food and Tobacco	-	-	-	-	-	-	-	-	-
Paper Pulp and Print	-	-	-	-	-	-	-	-	-
Wood and Wood Products	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	2 725	4 556	-	-	4 710
Textile and Leather	-	-	-	-	-	-	-	-	-
Non-specified (Industry)	-	-	-	-	355 691	-	-	-	155 878
Transport Sector	-	-	-	-	**2 017**	**10 299 982**	**24 638**	**1 975 064**	**6 535**
International Civil Aviation	-	-	-	-	-	-		1 185 038	-
Domestic Air Transport	-	-	-	-	-	-	24 638	790 026	-
Road	-	-	-	-	-	10 299 982	-	-	-
Rail	-	-	-	-	-	-	-	-	-
Pipeline Transport	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	2 017	-	-	-	6 535
Other Sectors	-	-	-	-	**202 494**	**82 626**	-	-	**671 790**
Agriculture	-	-	-	-	5 289	82 488	-	-	65 872
Commerce and Public Services	-	-	-	-	439	-	-	-	3 772
Residential	-	-	-	-	112 810	-	-	-	600 057
Non-specified (Other)	-	-	-	-	83 956	138	-	-	2 090
Non-Energy Use	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	-	-	-	-	-	-	-	-	-
Elect.Output-public elec. plant	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-
Heat Output in TJ	-	-	-	-	-	-	-	-	-
Pumped Hydro Production	-	-	-	-	-	-	-	-	-
Memo: Gas vented	-	-	-	-	-	-	-	-	-
Memo: Gas flared	-	-	-	-	-	-	-	-	-
Memo: Energy use for Gold Mining	-	-	-	-	-	-	-	-	-
Memo: Energy use for Other Mining	-	-	-	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 2000 (Disaggregated, Native Units) - Concluded

Supply & Consumption	Diesel	Residual Fuel	White Spirit	Lubricants	Bitumen	Paraffin Waxes	Nuclear	Hydro	Electricity
	kl	kl	kl	tons	tons	tons	GWh	GWh	MWh
Indigenous Production	8 265 373	4 916 532	2 205	387 089	222 018	12 613	-	-	210 670 000
From Other Sources	-	-	-	-	-	-	-	-	-
Import	159 847	15 542	203	147 352	-	-	-	-	4 719 000
Export	-1 847 896	-2 497 699	-688	-214 774	-	-	-	-	-4 007 000
Intl. Marine Bunkers	-347 215	-2 409 848	-	-	-	-	-	-	-
Stock Changes	-	-	-	-	-	-	-	-	-
Domestic Supply	**6 230 110**	**24 527**	**1 720**	**319 667**	**222 018**	**12 613**	**-**	**-**	**211 382 000**
Transfers	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	-	-	-	-	-	-	17 664 755
Transformation Sector	-	-	-	-	-	-	-	-	-
Public Electricity Plant	-	-	-	-	-	-	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	**16 363 996**
Coal Mines	-	-	-	-	-	-	-	-	2 760 870
Oil and Gas Extraction	-	-	-	-	-	-	-	-	590
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	1 450
Gas Works	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	13 331 376
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	269 550
Used for Pump Storage	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	160
Non-specified (Energy)	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	17 053 391
Final Consumption	**6 230 110**	**24 527**	**1 720**	**319 667**	**222 018**	**12 613**	**-**	**-**	**160 299 858**
Industry Sector	**820 539**	**24 527**	-	-	-	-	-	-	**99 702 977**
Iron and Steel	-	-	-	-	-	-	-	-	20 913 350
Chemical and Petrochemical	-	-	-	-	-	-	-	-	2 640 440
Non-Ferrous Metals	-	-	-	-	-	-	-	-	15 037 710
Non-Metallic Minerals	-	-	-	-	-	-	-	-	1 153 690
Transport Equipment	-	-	-	-	-	-	-	-	69 250
Machinery	-	-	-	-	-	-	-	-	53 170
Mining and Quarrying	554 239	-	-	-	-	-	-	-	29 038 108
Food and Tobacco	-	-	-	-	-	-	-	-	639 090
Paper Pulp and Print	-	-	-	-	-	-	-	-	1 493 630
Wood and Wood Products	-	-	-	-	-	-	-	-	412 370
Construction	266 300	-	-	-	-	-	-	-	34 010
Textile and Leather	-	-	-	-	-	-	-	-	376 340
Non-specified (Industry)	-	24 527	-	-	-	-	-	-	27 841 819
Transport Sector	**4 287 177**	-	-	-	-	-	-	-	**5 411 009**
International Civil Aviation	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	-	-	-	-	31 280
Road	4 069 786	-	-	-	-	-	-	-	33 740
Rail	217 391	-	-	-	-	-	-	-	3 433 160
Pipeline Transport	-	-	-	-	-	-	-	-	62 260
Internal Navigation	-	-	-	-	-	-	-	-	6 190
Non-specified (Transport)	-	-	-	-	-	-	-	-	1 844 379
Other Sectors	**1 122 394**	-	-	-	-	-	-	-	**55 185 872**
Agriculture	**1 118 357**	-	-	-	-	-	-	-	3 954 372
Commerce and Public Services	-	-	-	-	-	-	-	-	17 164 007
Residential	-	-	-	-	-	-	-	-	28 680 001
Non-specified (Other)	**4 037**	-	-	-	-	-	-	-	5 387 492
Non-Energy Use	-	-	**1 720**	**319 667**	**222 018**	**12 613**	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	1 720	319 667	222 018	12 613	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	-	-	-	-	-	-	**13 010**	**3 934**	**210 670**
Elect.Output-public elec. plant	-	-	-	-	-	-	13 010	3 934	204 550
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	-	-	5 813
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	307
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-
Heat Output in TJ	-	-	-	-	-	-	-	-	-
Pumped Hydro Production	-	-	-	-	-	-	-	2 591	2 591
Memo: Gas vented	-	-	-	-	-	-	-	-	-
Memo: Gas flared	-	-	-	-	-	-	-	-	-
Memo: Energy use for Gold Mining	-	-	-	-	-	-	-	-	-
Memo: Energy use for Other Mining	-	-	-	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 1999 (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
	tons	tons	tons	tons	TJ	TJ	TJ	TJ	TJ
Indigenous Production	223 514 169	1 586 473	221 927 696	1 782 712	37 903	10 143	17 295	237 400	70 628
From Other Sources	-	-	-	-	-	-	-	-	-
Import	859 614	859 614	-	-	-	-	-	-	-
Export	-66 234 705	-	-66 234 705	-	-	-	-	-	-
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-
Stock Changes	-1 675 989	-	-1 675 989	-	-	-	-	-	-
Domestic Supply	**156 463 089**	**2 446 087**	**154 017 002**	**1 782 712**	**37 903**	**10 143**	**17 295**	**237 400**	**70 628**
Transfers	-	-	-	-	-	-	-	-	-
Statistical Differences	4 537 672	-	4 537 672	-	-	-	-	-	-
Transformation Sector	**130 206 973**	**2 446 087**	**127 760 886**	**619 890**	-	-	-	**47 000**	**70 628**
Public Electricity Plant	90 057 465	-	90 057 465	-	-	-	-	-	-
Autoproducer Electricity Plant	4 208 000	-	4 208 000	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	47 000	-
Public Heat Plant	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	2 446 087	2 446 087	-	-	-	-	-	-	-
Gas Works	4 938 421	-	4 938 421	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	619 890	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-
Liquefaction	28 557 000	-	28 557 000	-	-	-	-	-	70 628
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	**146**	-	-	-	-
Coal Mines	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	146	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-
Final Consumption	**21 718 444**	-	**21 718 444**	**1 162 822**	**37 757**	**10 143**	**17 295**	**190 400**	-
Industry Sector	**19 288 783**	-	**19 288 783**	**1 162 822**	**37 466**	**10 143**	**17 295**	-	-
Iron and Steel	4 332 236	-	4 332 236	1 089 565	8 965	10 143	17 295	-	-
Chemical and Petrochemical	8 974 023	-	8 974 023	-	12 929	-	-	-	-
Non-Ferrous Metals	-	-	-	-	1 886	-	-	-	-
Non-Metallic Minerals	1 298 334	-	1 298 334	-	5 511	-	-	-	-
Transport Equipment	-	-	-	-	357	-	-	-	-
Machinery	-	-	-	-	752	-	-	-	-
Mining and Quarrying	750 554	-	750 554	-	341	-	-	-	-
Food and Tobacco	-	-	-	-	1 212	-	-	-	-
Paper Pulp and Print	-	-	-	-	2 715	-	-	-	-
Wood and Wood Products	-	-	-	-	63	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-
Textile and Leather	-	-	-	-	17	-	-	-	-
Non-specified (Industry)	3 933 636	-	3 933 636	73 257	2 719	-	-	-	-
Transport Sector	-	-	-	-	**25**	-	-	-	-
International Civil Aviation	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	25	-	-	-	-
Road	-	-	-	-	-	-	-	-	-
Rail	-	-	-	-	-	-	-	-	-
Pipeline Transport	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	-	-	-	-	-
Other Sectors	**2 429 661**	-	**2 429 661**	-	**266**	-	-	**190 400**	-
Agriculture	100 092	-	100 092	-	-	-	-	-	-
Commerce and Public Services	776 523	-	776 523	-	216	-	-	-	-
Residential	1 553 046	-	1 553 046	-	-	-	-	190 400	-
Non-specified (Other)	-	-	-	-	50	-	-	-	-
Non-Energy Use	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	7 834 000	-	7 834 000	-	-	-	-	-	-
Elect.Output in GWh	**186 859**	-	**186 859**	-	-	-	-	-	-
Elect.Output-public elec. plant	181 104	-	181 104	-	-	-	-	-	-
Elect.Output-autoprod. elec. plant	5 755	-	5 755	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-
Pumped Hydro Production	-	-	-	-	-	-	-	-	-
Memo: Gas vented	-	-	-	-	-	-	-	-	-
Memo: Gas flared	-	-	-	-	-	-	-	-	-
Memo: Energy use for Gold Mining	-	-	-	-	-	-	-	-	-
Memo: Energy use for Other Mining	-	-	-	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 1999 (Disaggregated, Natural Units) - Continued

Supply & Consumption	Crude + NGLs + Feedstocks	Crude Oil	Natural Gas Liquids	Non-Conventional Crude	LPG	Petrol	Avgas	Jet Fuel	Other Kerosene
	tons	tons	tons	tons	kl	kl	kl	kl	kl
Indigenous Production	7 619 358	-	341 063	7 278 295	535 935	10 651 184	89 235	2 201 708	1 266 576
From Other Sources	-	-	-	-	-	-	-	-	-
Import	19 335 451	19 335 451	-	-	-	962 332	2 833	48	48
Export	-1 472 070	-1 472 070	-	-	-	-764 900	-65 321	-205 935	-205 935
Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-
Stock Changes	-	-	-	-	-	-	-	-	-
Domestic Supply	**25 482 738**	**17 863 380**	**341 063**	**7 278 295**	**535 935**	**10 848 616**	**26 747**	**1 995 820**	**1 060 688**
Transfers	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	-	-	-	-	-	-	-
Transformation Sector	**25 482 738**	**17 863 380**	**341 063**	**7 278 295**	-	-	-	-	-
Public Electricity Plant	-	-	-	-	-	-	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	25 482 738	17 863 380	341 063	7 278 295	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	-
Coal Mines	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-
Used for Pump Storage	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-
Non-specified (Energy)	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-
Final Consumption	-	-	-	-	**535 935**	**10 848 616**	**26 747**	**1 995 820**	**1 060 688**
Industry Sector	-	-	-	-	**258 472**	**4 749**	-	-	**230 505**
Iron and Steel	-	-	-	-	-	-	-	-	-
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-
Transport Equipment	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-	-
Mining and Quarrying	-	-	-	-	5 392	-	-	-	21 134
Food and Tobacco	-	-	-	-	-	-	-	-	-
Paper Pulp and Print	-	-	-	-	-	-	-	-	-
Wood and Wood Products	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	2 488	4 749	-	-	4 568
Textile and Leather	-	-	-	-	-	-	-	-	-
Non-specified (Industry)	-	-	-	-	250 593	-	-	-	204 803
Transport Sector	-	-	-	-	**462**	**10 756 839**	**26 747**	**1 995 820**	**11 669**
International Civil Aviation	-	-	-	-	-	-	-	1 197 492	-
Domestic Air Transport	-	-	-	-	-	-	26 747	798 328	-
Road	-	-	-	-	-	10 756 839	-	-	-
Rail	-	-	-	-	-	-	-	-	-
Pipeline Transport	-	-	-	-	-	-	-	-	-
Internal Navigation	-	-	-	-	-	-	-	-	-
Non-specified (Transport)	-	-	-	-	462	-	-	-	11 669
Other Sectors	-	-	-	-	**277 001**	**87 029**	-	-	**818 514**
Agriculture	-	-	-	-	6 563	82 844	-	-	74 172
Commerce and Public Services	-	-	-	-	769	-	-	-	5 012
Residential	-	-	-	-	118 738	-	-	-	738 802
Non-specified (Other)	-	-	-	-	150 932	4 185	-	-	527
Non-Energy Use	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	-	-	-	-	-	-	-	-	-
Elect.Output-public elec. plant	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	-	-	-
Elect.Output-public CHP plant	-	-	-	-	-	-	-	-	-
Elect.Output-autoprod. CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-public CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-autoproducer CHP plant	-	-	-	-	-	-	-	-	-
Heat Output-public heat plant	-	-	-	-	-	-	-	-	-
Heat Output-autoprod. heat plant	-	-	-	-	-	-	-	-	-
Heat Output in TJ	-	-	-	-	-	-	-	-	-
Pumped Hydro Production	-	-	-	-	-	-	-	-	-
Memo: Gas vented	-	-	-	-	-	-	-	-	-
Memo: Gas flared	-	-	-	-	-	-	-	-	-
Memo: Energy use for Gold Mining	-	-	-	-	-	-	-	-	-
Memo: Energy use for Other Mining	-	-	-	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises
Energy Balance Format: International Energy Agency

ENERGY BALANCE - 1999 (Disaggregated, Natural Units) - Concluded

Supply & Consumption	Diesel	Residual Fuel	White Spirit	Lubricants	Bitumen	Parrafin Wax	Other Petroleum products	Nuclear	Hydro	Electricity
	kl	kl	kl	tons	tons	tons	tons	GWh	GWh	MWh
Indigenous Production	8 493 178	5 435 515	88 931	305 685	213 731	10 176	-	-	-	203 012 000
From Other Sources	-	-	-	-	-	-	-	-	-	-
Import	12 302	315 776	-	81 937	-	-	12 685	-	-	6 673 000
Export	-2 120 916	-2 281 742	-	-85 047	-	-	-11 942	-	-	-4 266 000
Intl. Marine Bunkers	-400 198	-2 907 821	-	-	-	-	-	-	-	-
Stock Changes	-	-	-	-	-	-	-	-	-	-
Domestic Supply	**5 984 367**	**561 728**	**88 931**	**302 574**	**213 731**	**10 176**	**742**	-	-	**205 419 000**
Transfers	-	-	-	-	-	-	-	-	-	-
Statistical Differences	-	-	-	-	-	-	742	-	-	13 308 258
Transformation Sector	-	-	-	-	-	-	-	-	-	-
Public Electricity Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Electricity Plant	-	-	-	-	-	-	-	-	-	-
Public CHP Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer CHP Plant	-	-	-	-	-	-	-	-	-	-
Public Heat Plant	-	-	-	-	-	-	-	-	-	-
Autoproducer Heat Plant	-	-	-	-	-	-	-	-	-	-
Heat pumps	-	-	-	-	-	-	-	-	-	-
Electric Boilers	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	-
Gas Works	-	-	-	-	-	-	-	-	-	-
For Blast Furnace Gas	-	-	-	-	-	-	-	-	-	-
Petrochemical Industry	-	-	-	-	-	-	-	-	-	-
For BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	-
Liquefaction	-	-	-	-	-	-	-	-	-	-
Non-specified (Transformation)	-	-	-	-	-	-	-	-	-	-
Energy Sector	-	-	-	-	-	-	-	-	-	**16 324 848**
Coal Mines	-	-	-	-	-	-	-	-	-	2 725 368
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Patent Fuel Plants	-	-	-	-	-	-	-	-	-	-
Coke Ovens	-	-	-	-	-	-	-	-	-	1 404
Gas Works	-	-	-	-	-	-	-	-	-	-
BKB	-	-	-	-	-	-	-	-	-	-
Oil Refineries	-	-	-	-	-	-	-	-	-	13 282 907
Own use in Elec., CHP and Heat plant	-	-	-	-	-	-	-	-	-	314 991
Used for Pump Storage	-	-	-	-	-	-	-	-	-	-
Nuclear Industry	-	-	-	-	-	-	-	-	-	178
Non-specified (Energy)	-	-	-	-	-	-	-	-	-	-
Distribution Losses	-	-	-	-	-	-	-	-	-	16 812 306
Final Consumption	**5 984 367**	**561 728**	**88 931**	**302 574**	**213 731**	**10 176**	-	-	-	**158 973 588**
Industry Sector	**791 974**	**561 728**	-	-	-	-	-	-	-	**99 673 461**
Iron and Steel	-	-	-	-	-	-	-	-	-	19 527 385
Chemical and Petrochemical	-	-	-	-	-	-	-	-	-	2 499 524
Non-Ferrous Metals	-	-	-	-	-	-	-	-	-	14 907 169
Non-Metallic Minerals	-	-	-	-	-	-	-	-	-	1 119 469
Transport Equipment	-	-	-	-	-	-	-	-	-	15 109
Machinery	-	-	-	-	-	-	-	-	-	41 617
Mining and Quarrying	522 199	-	-	-	-	-	-	-	-	28 877 451
Food and Tobacco	-	-	-	-	-	-	-	-	-	580 772
Paper Pulp and Print	-	-	-	-	-	-	-	-	-	1 088 948
Wood and Wood Products	-	-	-	-	-	-	-	-	-	592 198
Construction	269 775	-	-	-	-	-	-	-	-	35 034
Textile and Leather	-	-	-	-	-	-	-	-	-	414 252
Non-specified (Industry)	-	561 728	-	-	-	-	-	-	-	29 974 533
Transport Sector	**3 992 958**	-	-	-	-	-	-	-	-	**4 428 545**
International Civil Aviation	-	-	-	-	-	-	-	-	-	-
Domestic Air Transport	-	-	-	-	-	-	-	-	-	26 413
Road	3 759 751	-	-	-	-	-	-	-	-	27 381
Rail	233 207	-	-	-	-	-	-	-	-	3 336 055
Pipeline Transport	-	-	-	-	-	-	-	-	-	57 999
Internal Navigation	-	-	-	-	-	-	-	-	-	6 182
Non-specified (Transport)	-	-	-	-	-	-	-	-	-	974 515
Other Sectors	**1 199 435**	-	-	-	-	-	-	-	-	**54 871 582**
Agriculture	1 198 417	-	-	-	-	-	-	-	-	5 754 677
Commerce and Public Services	-	-	-	-	-	-	-	-	-	17 708 820
Residential	-	-	-	-	-	-	-	-	-	29 510 987
Non-specified (Other)	1 018	-	-	-	-	-	-	-	-	1 897 098
Non-Energy Use	-	-	**88 931**	**302 574**	**213 731**	**10 176**	-	-	-	-
Memo:Non-Energy Use Ind/Transf/Ener	-	-	88 931	302 574	213 731	10 176	-	-	-	-
Memo:Non-Energy Use in Transport	-	-	-	-	-	-	-	-	-	-
Memo:Non-Energy Use in Oth.Sect.	-	-	-	-	-	-	-	-	-	-
Memo:Feedst.Use in Petchem. Ind.	-	-	-	-	-	-	-	-	-	-
Elect.Output in GWh	-	-	-	-	-	-	-	**12 837**	**3 316**	**203 012**
Elect.Output-public elec. plant	-	-	-	-	-	-	-	12 837	3 316	197 257
Elect.Output-autoprod. elec. plant	-	-	-	-	-	-	-	-	-	5 755
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	-	-	-	-	-	-	-	-	-	-
Pumped Hydro Production	-	-	-	-	-	-	-	-	2 590	2 590
Memo: Gas vented	-	-	-	-	-	-	-	-	-	-
Memo: Gas flared	-	-	-	-	-	-	-	-	-	-
Memo: Energy use for Gold Mining	-	-	-	-	-	-	-	-	-	-
Memo: Energy use for Other Mining	-	-	-	-	-	-	-	-	-	-

Data Source: Science Consultancy Enterprises
Energy Balance Format: International Energy Agency

Notes

Section 4

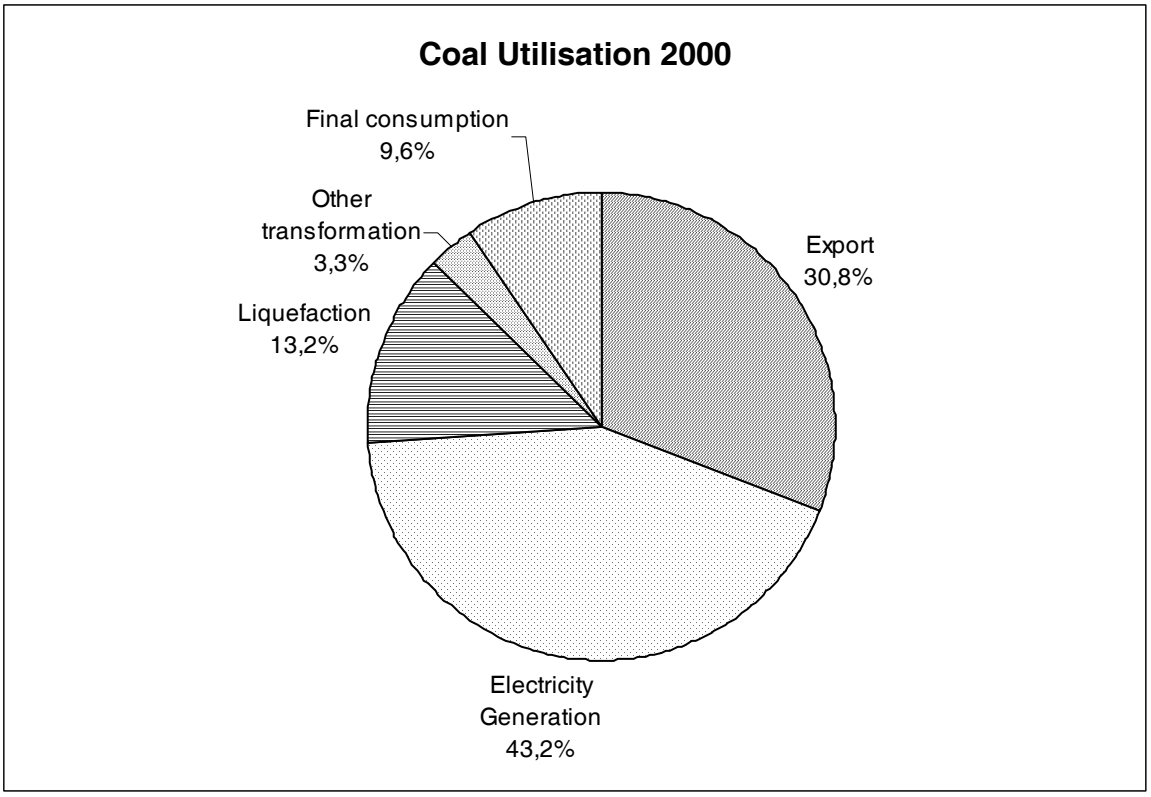
Coal

South Africa has large coal reserves, estimated to be about 55 367 Mt in 2001 (BP Statistical Review of World Energy), which is 5,6% of total world reserves. Much of the coal is mined in open cast mines and is low in sulpher (less than 1%) and high in ash (up to 40%). Most of this coal is used for the generation of electricity, and in the petrochemical industry transformed into liquid fuels. Over 90% of South Africa's electricity comes from coal fired power stations.

Coal Utilisation - Kt

	1999	%	2000	%
Export	66 235	30,4%	69 909	30,8%
Electricity Generation	94 265	43,2%	98 143	43,2%
Liquefaction	28 557	13,1%	29 878	13,2%
Other transformation	7 384	3,4%	7 510	3,3%
Final consumption	21 718	10,0%	21 744	9,6%
Total	**218 160**		**227 185**	

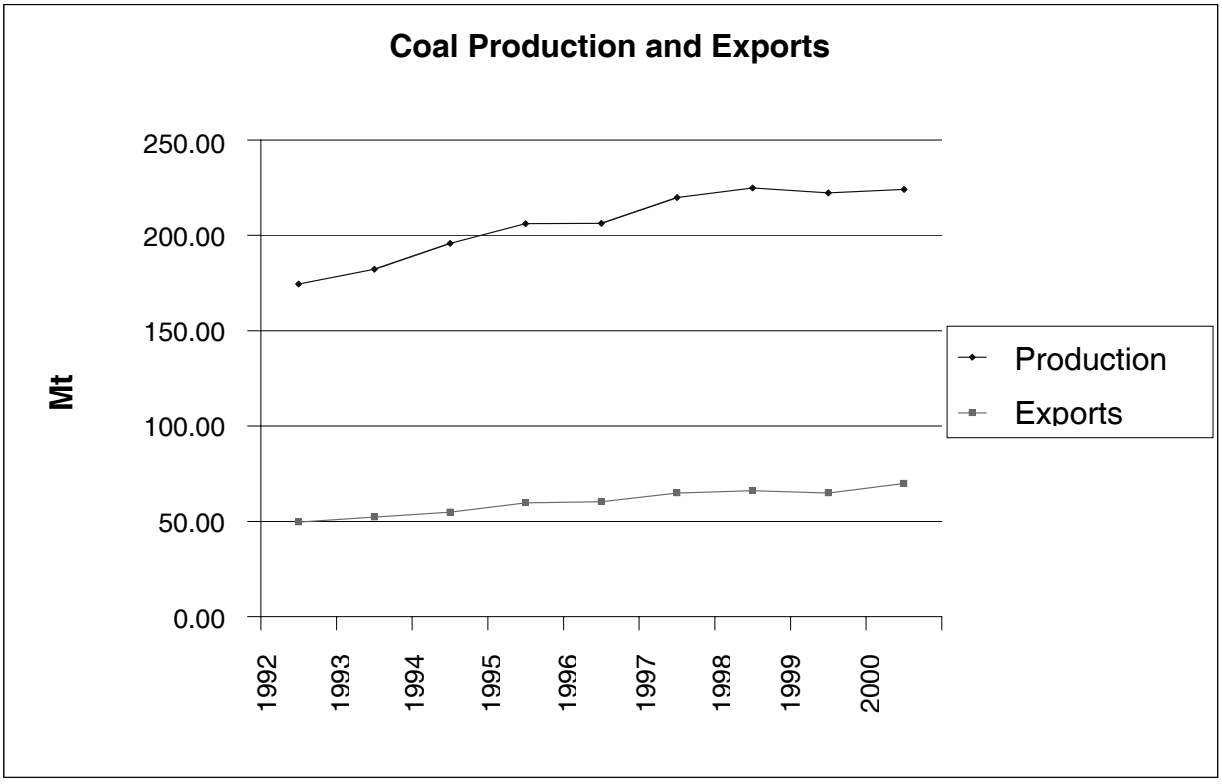
Source: National Energy Balances



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

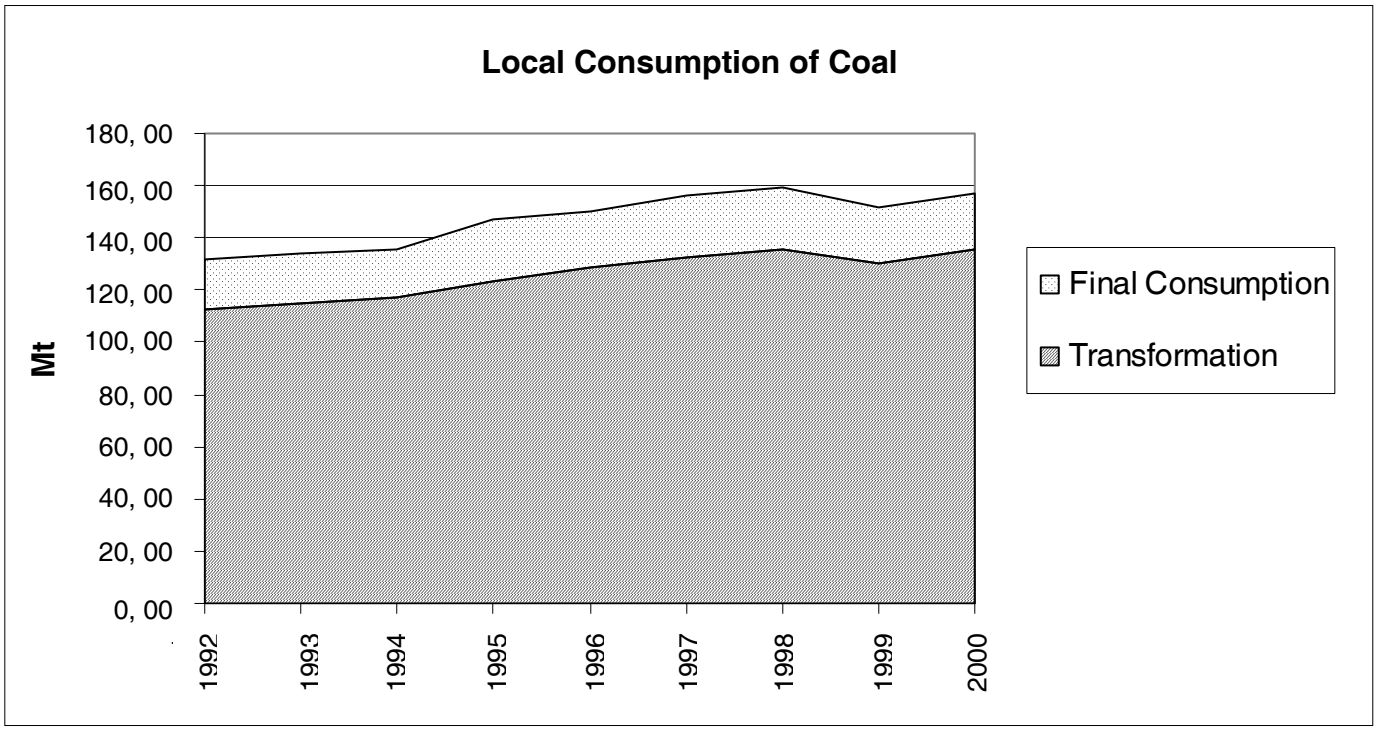
Sources: National Energy Balances; Minerals Bureau - Anthracite figures



Primary Supply of Coal - Mt

Year	Available	Imports	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

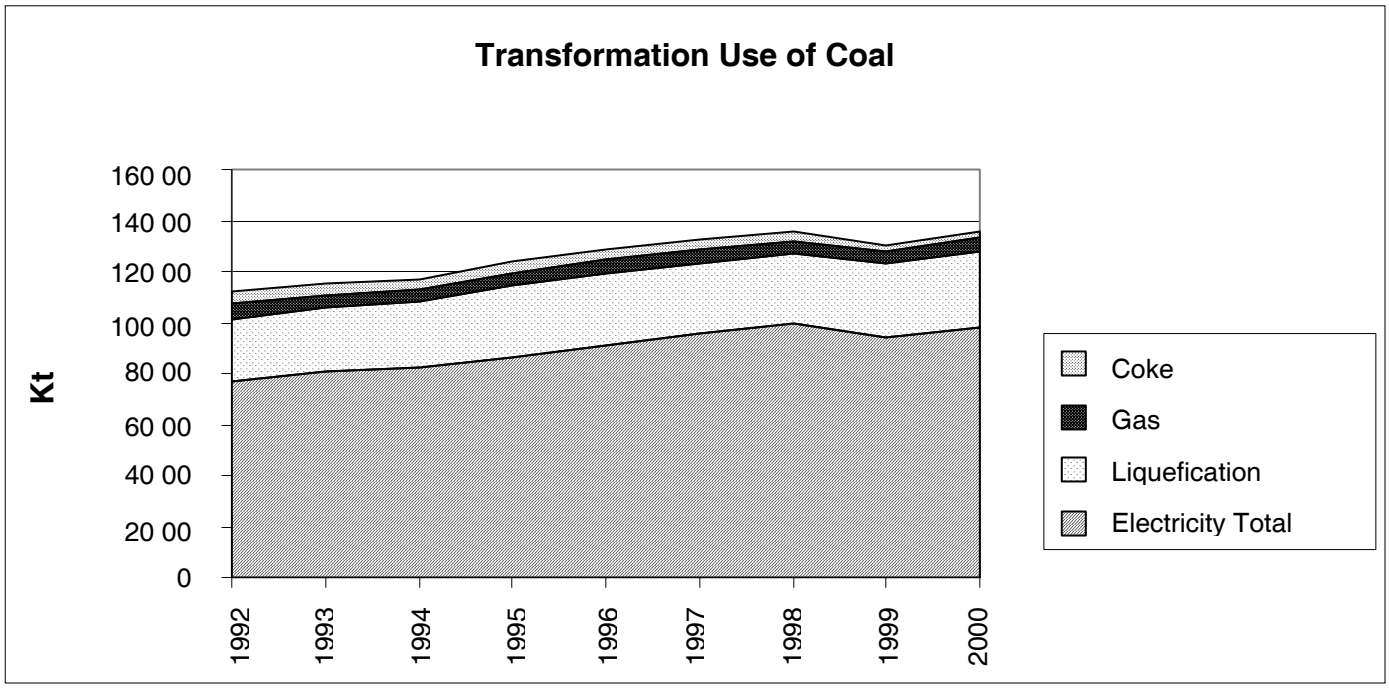
Source: National Energy Balances
Available = final consumption + energy sector + transformation - stockpiling (stock changes) + stastitical diffences - imports



Transformation Sector Coal Use - Kt

Year	Electricity			Liquefication	Gas	Coke	Total
	Eskom	Other electricity	Electricity 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

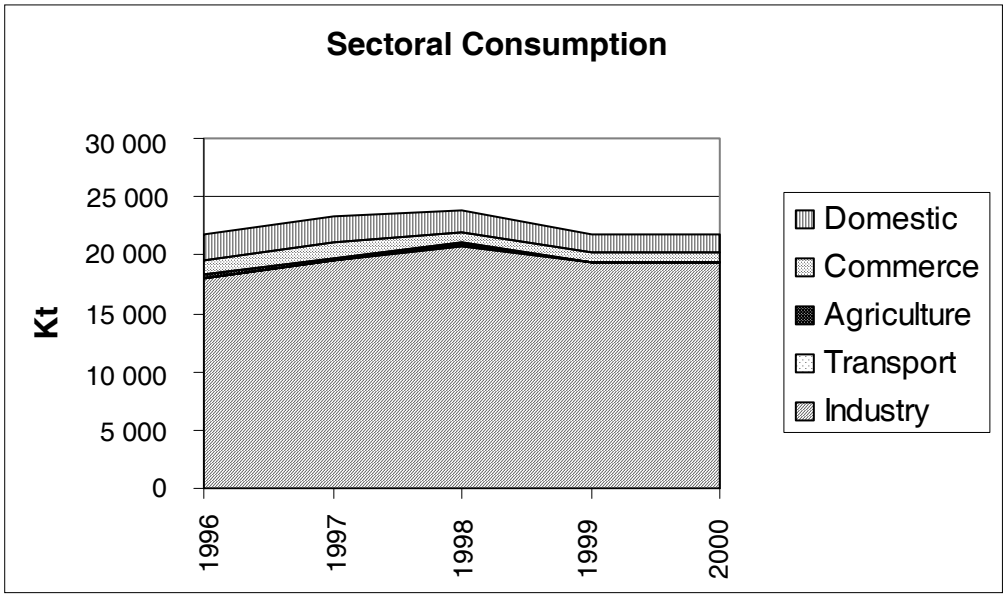
Source: National Energy Balances



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

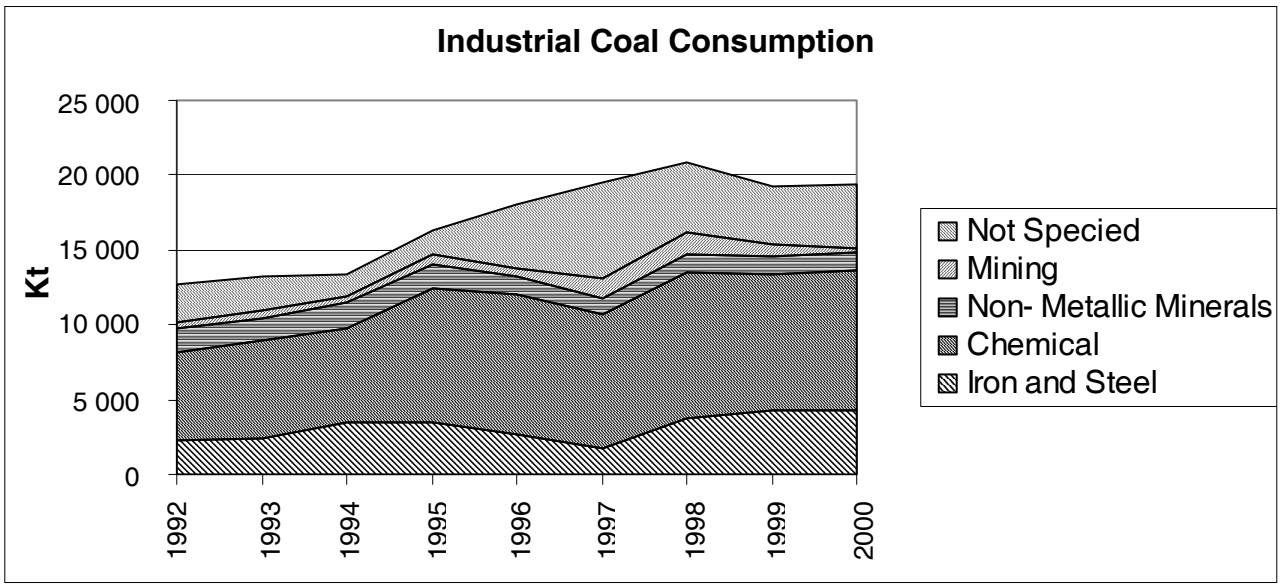
Source: National Energy Balances



Industrial Sector Use of Coal - Kt

Year	Iron and Steel	Chemical	of which Feedstock	Non-Metallic Minerals	Mining	Not Specied	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

Source: National Energy Balances

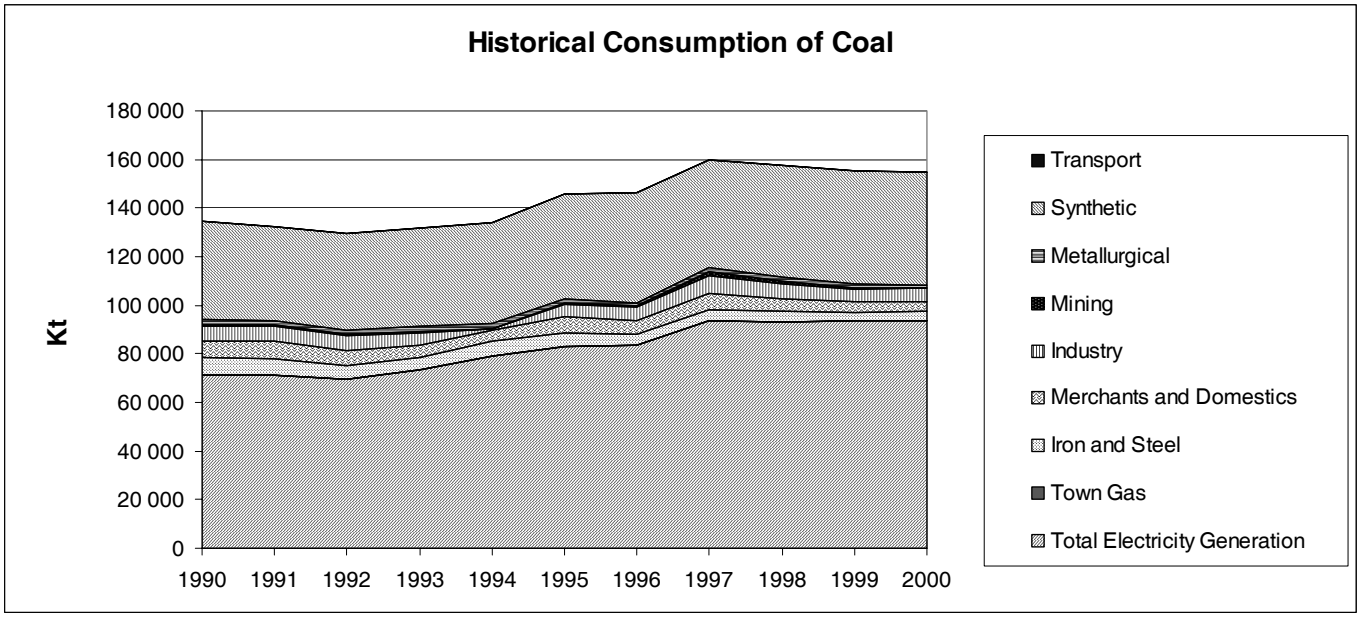


Historical Consumption of Coal

	Electricity Generation											
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		4 465	3 920	5 175	145	1 272	46 335		154 680

Source: Minerals Bureau

No Figure for Town Gas for 1997 & 2000, and Transport for 1999 & 2000



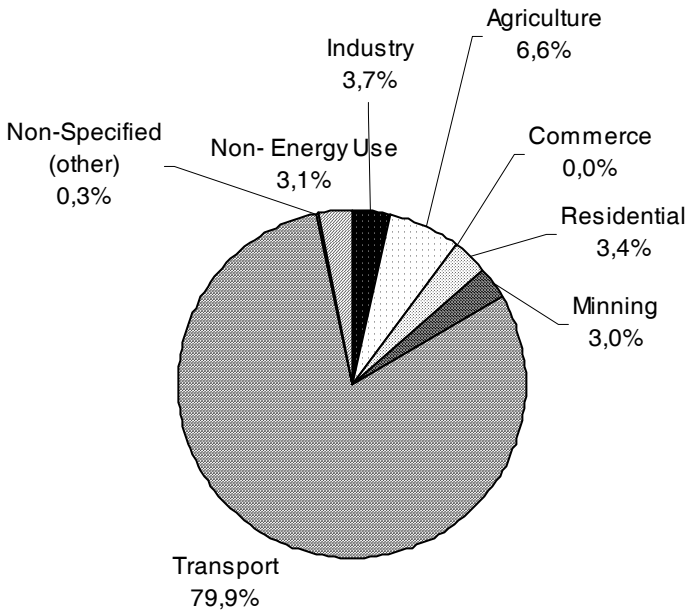
Notes

Section 5

Oil

South Africa relies heavily on imported crude oil for it's liquid fuel demands, supplemented by Sasol's process of liquefaction from coal to liquid fuels. There are limited reserves of oil and gas off the coast of Mossel Bay, which are exploited by PetroSA. Petrol and diesel are the two major liquid fuels used, and in 2000 accounted for about 52% of the domestic supply of petroleum products. The transport sector in turn accounts for about 80% of the consumption of petroleum products.

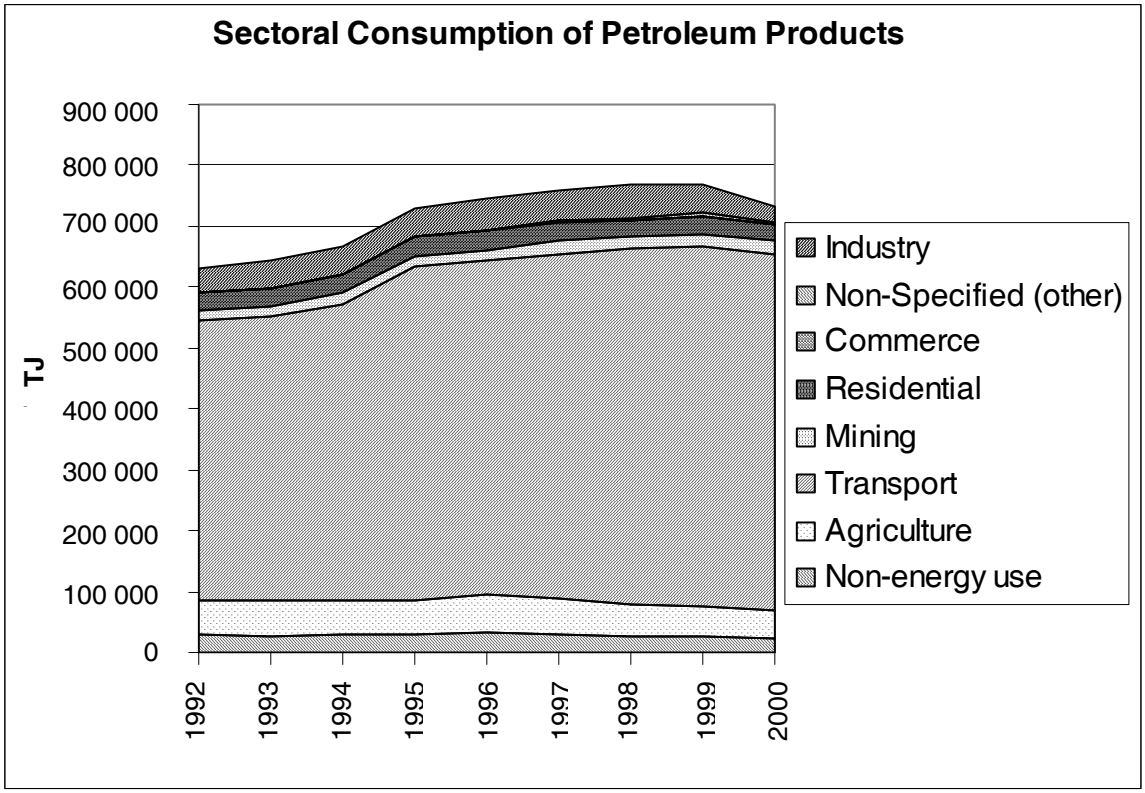
Sectoral Consumption Petroleum Products - 2000



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

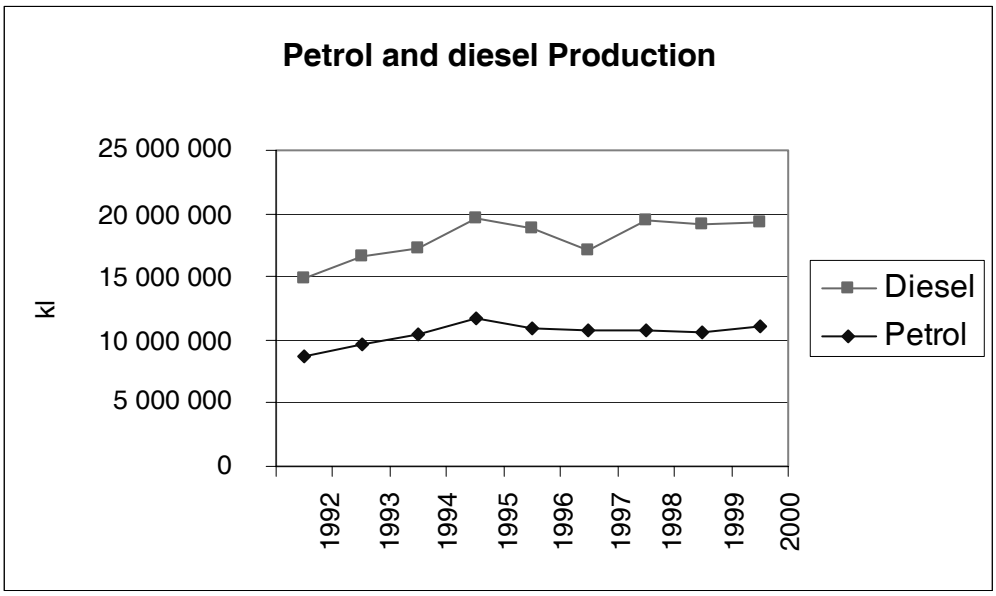
Source: National Energy Balances

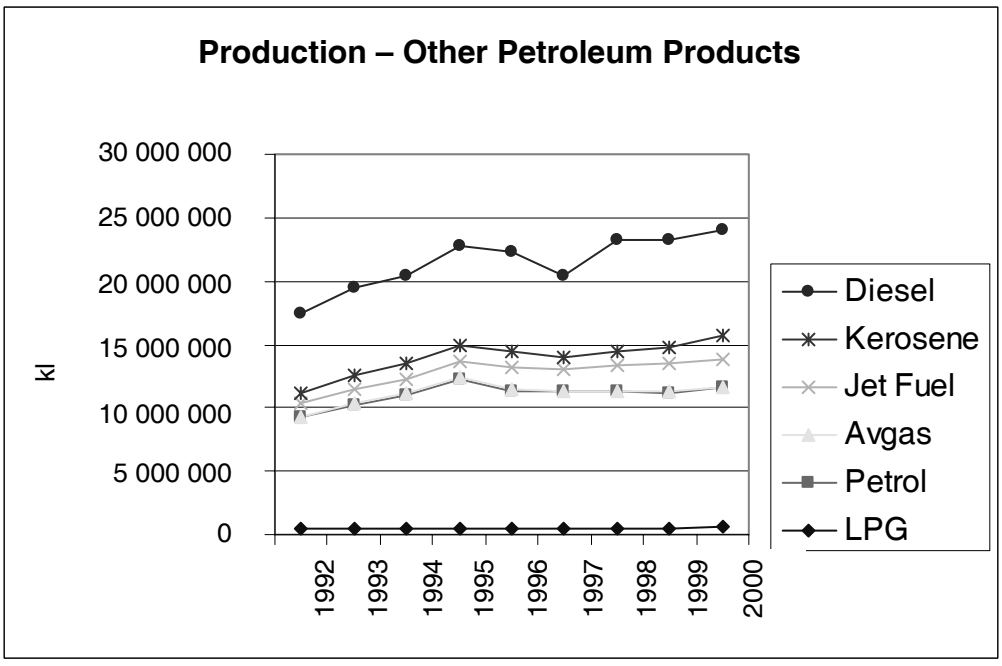


Production of Petroleum Products - kl

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

Source: National Energy Balances

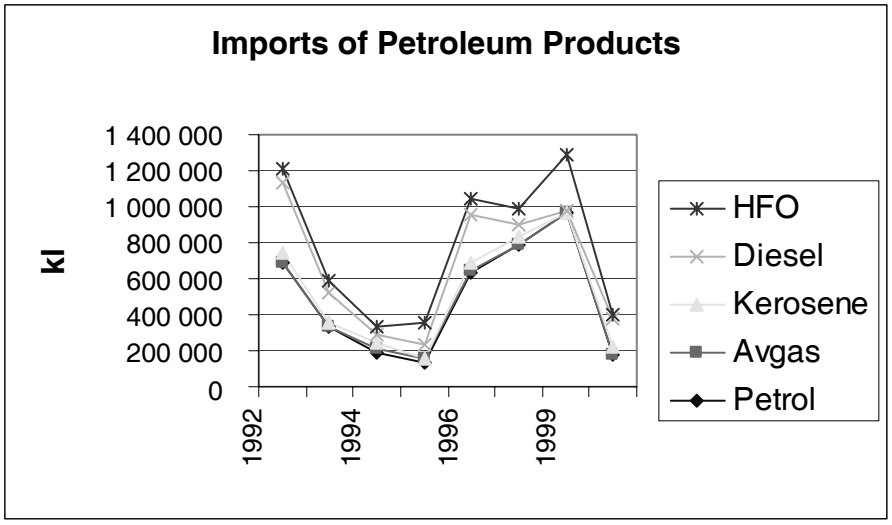




Imports of Petroleum Products - kl

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

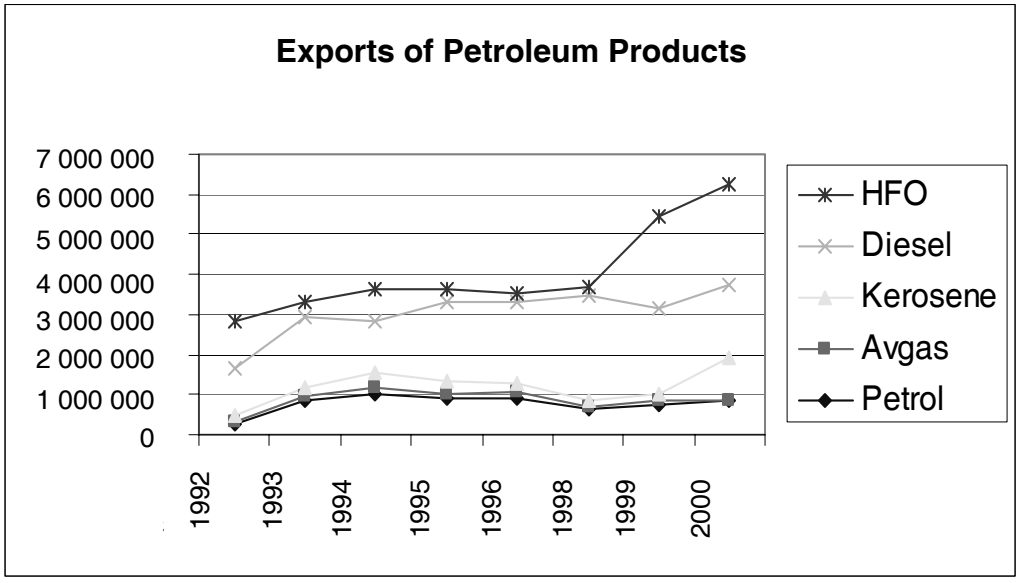
Source: National Energy Balances
Note: No import data available for 1997



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

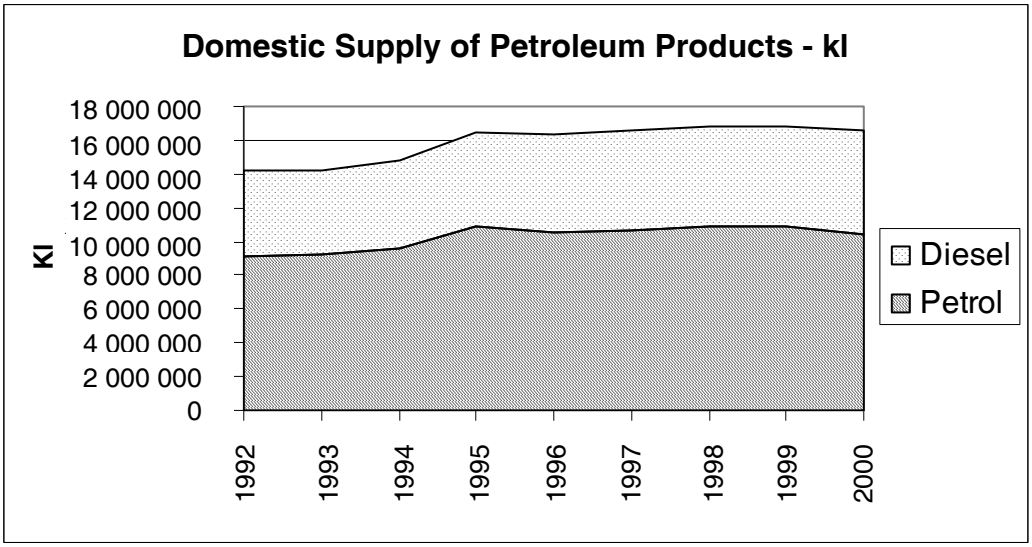
Source: National Energy Balances
Notes : No import data available for 1997

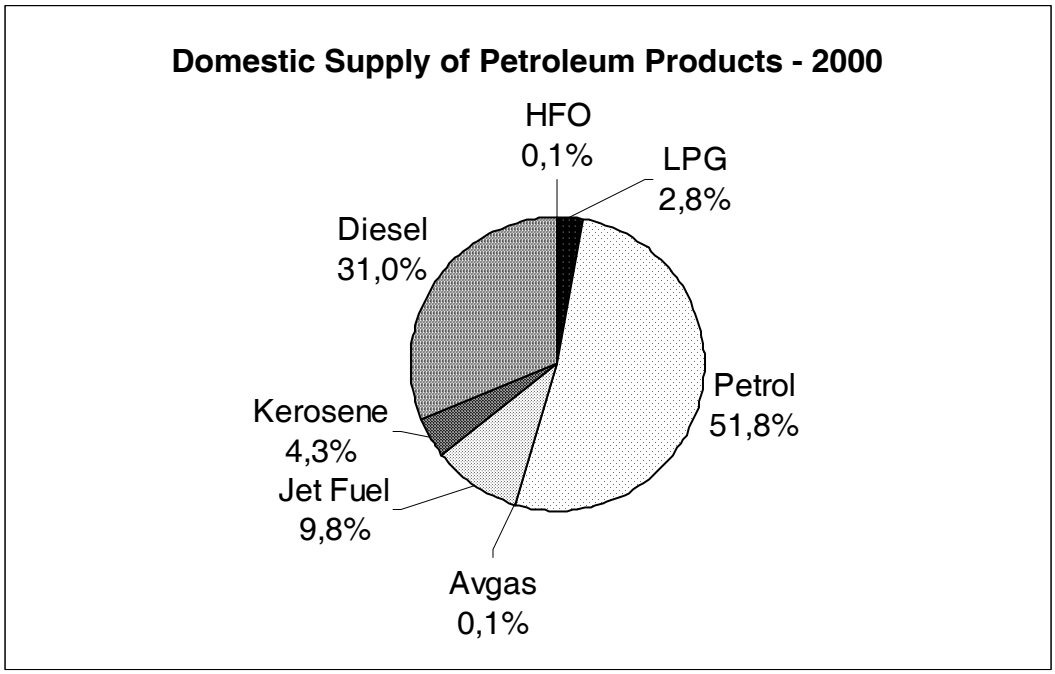


Domestic Supply of Petroleum Products - kl

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

Sources: National Energy Balances





Section 6

Electricity

More than 90% of South Africa's electricity is produced by Eskom, the national utility. The availability of cheap coal enabled them to produce among the cheapest electricity in the world. Some large industries and some municipalities also produce their own electricity.

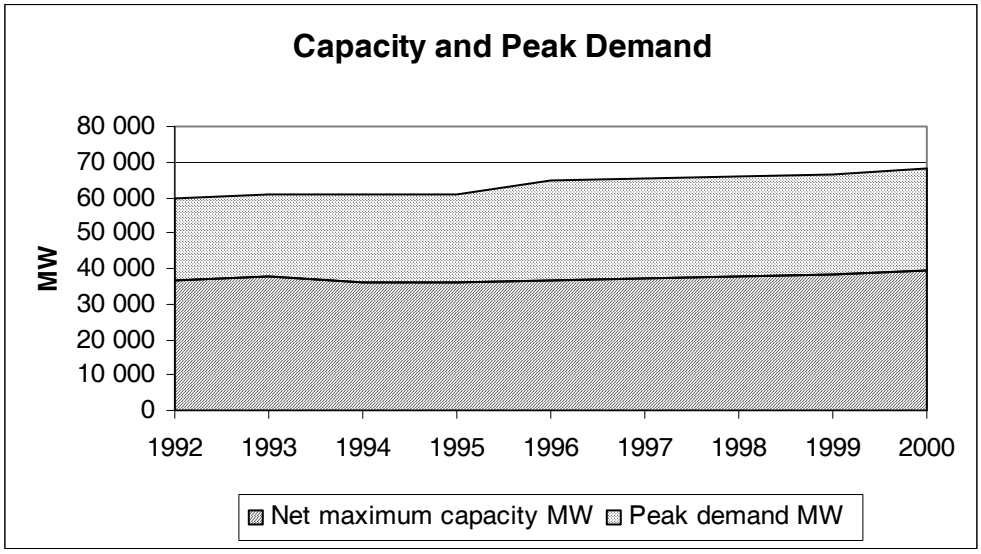
Following coal as the major energy source for the generation of electricity, nuclear energy account for about 6% of generated electricity. Hydro, pumped storage and biomass make up the rest.

There has been a continuos drive to connect more households to the grid, as can be seen from the table below.

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

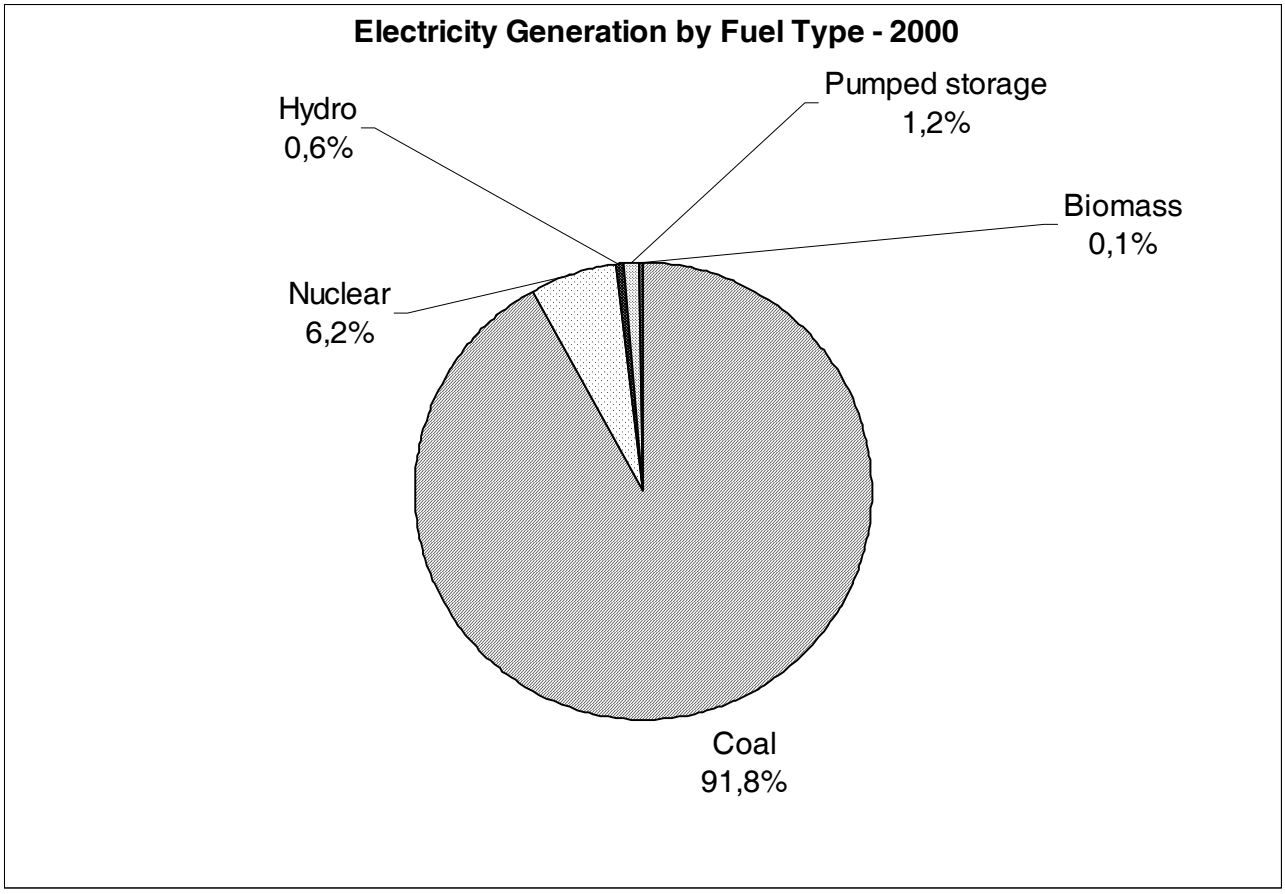
Sources: Integrated National Electrification Planning Manual
Eskom Annual Reports (2000)



Electricity - Generation by Fuel Type - GWh

Year	Coal	Nuclear	Hydro	Pumped storage	Biomass	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	266	149	3 000
1996	184 952	11 775	1 319	2 220	300	29	5 579
1997	192 705	12 647	2 092	2 608	300	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	307	4 719	4 007

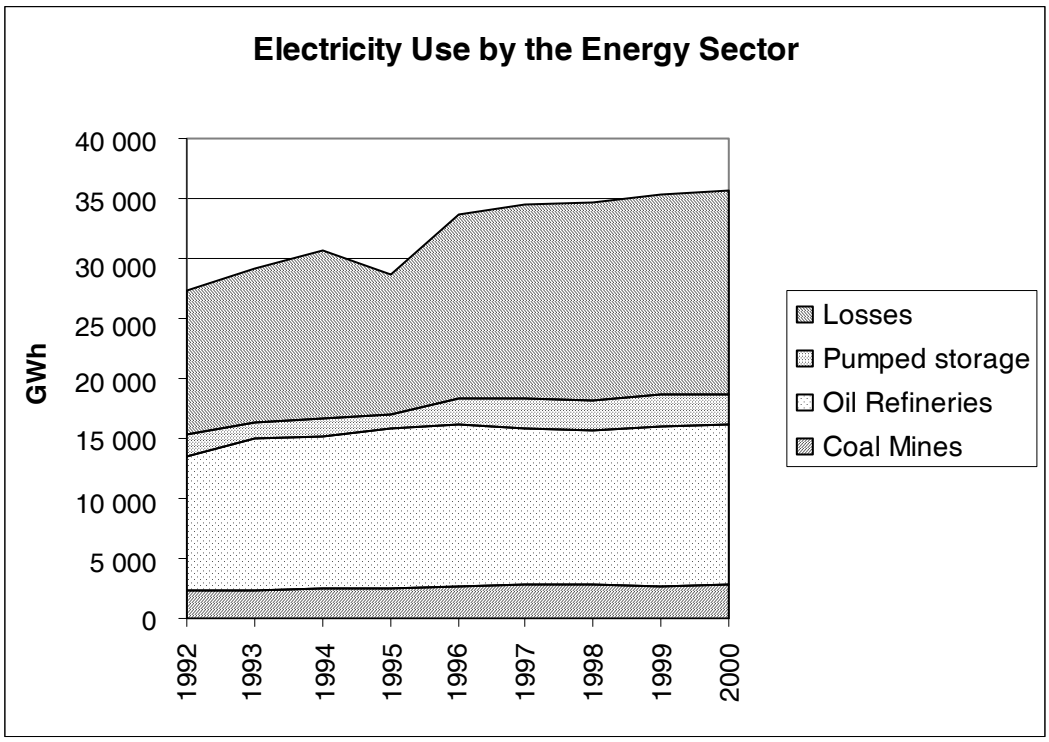
Sources: National Energy Balances and Eskom Annual Report - 2000



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

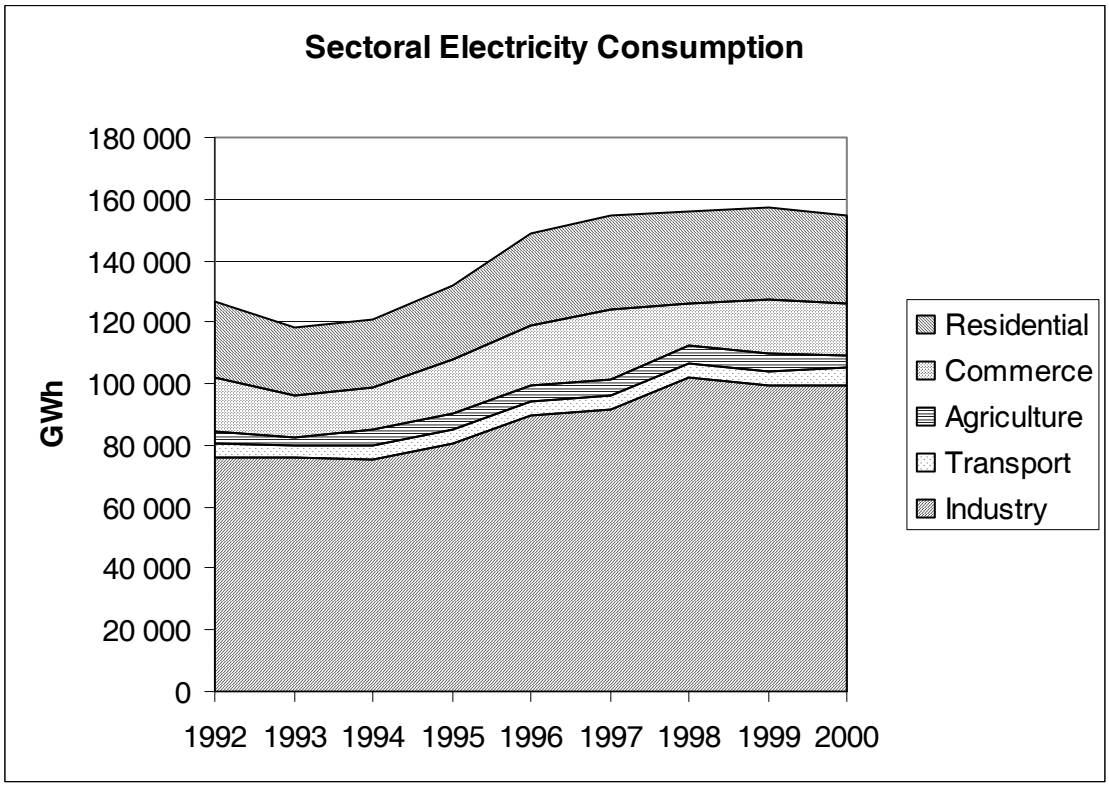
Source: Eskom Annual Report
Source: National Energy Balances



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

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	3 179	6 147	986	4	95
1993	12 606	3 017	6 234	963	4	109
1994	14 604	3 150	5 945	1 051	6	100
1995	16 251	3 603	6 956	1 190	9	104
1996	15 630	2 524	13 046	1 143	9	115
1997	17 875	2 432	14 584	1 188	11	127
1998	18 865	2 630	14 769	1 155	15	37
1999	19 527	2 500	14 907	1 119	15	42
2000	20 913	2 640	15 038	1 154	69	53

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

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.

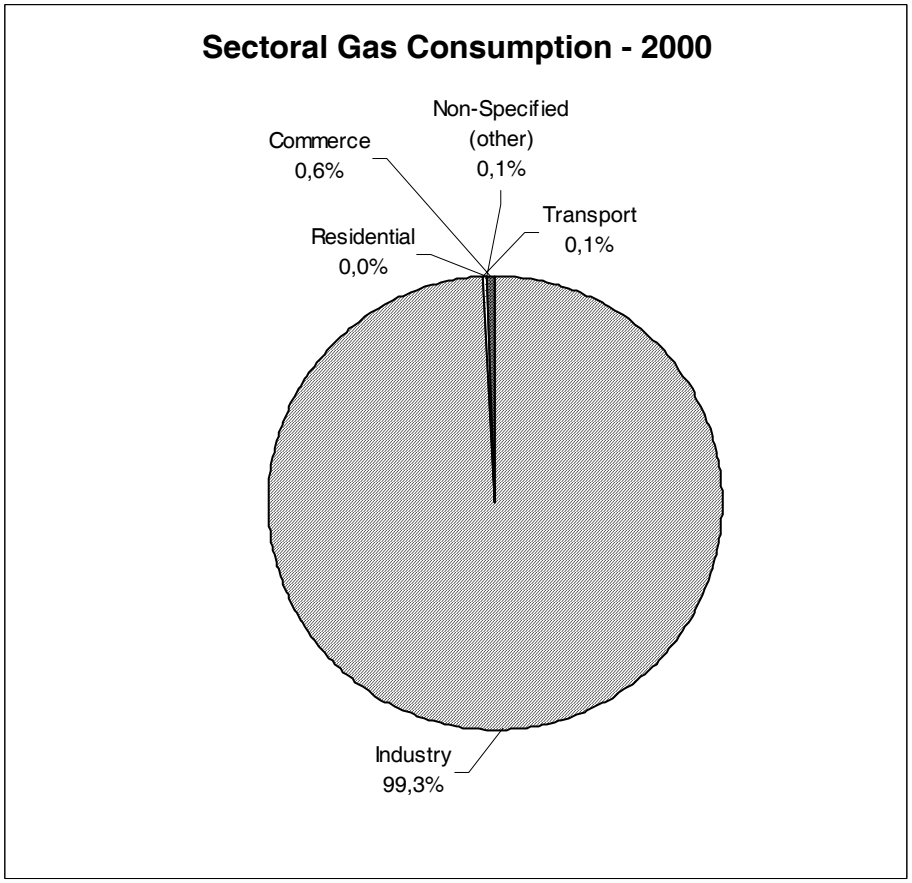
Sasol produces gas from coal, and is currently engaged in the construction of a gas pipeline to import gas from Mozambique. Prospects to import gas from Namibia to South Africa are also being researched.

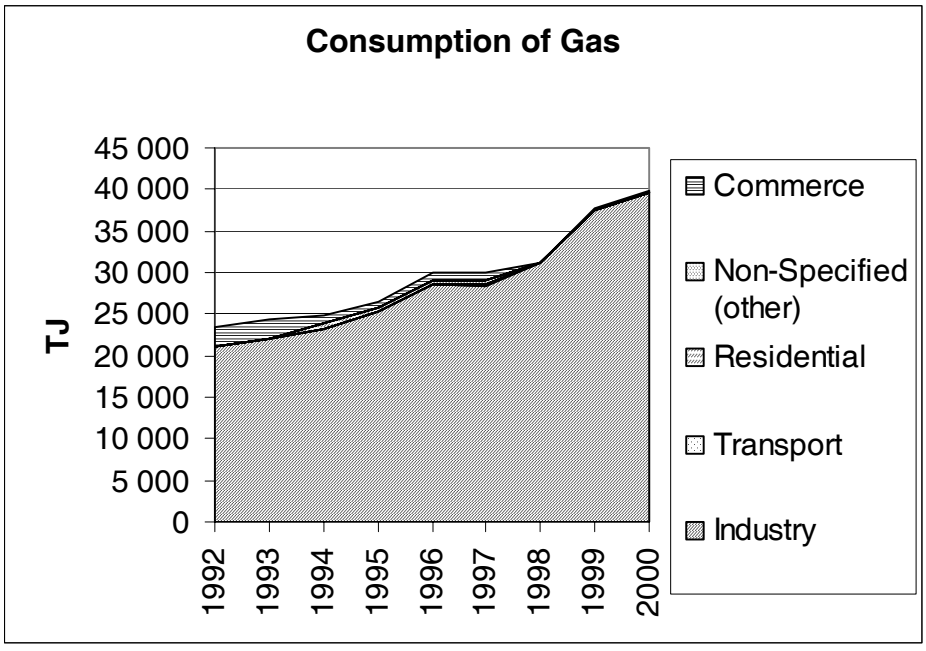
Even though the consumption of gas has increased in recent years, the importance of gas in the South African energy economy is still small compared to other countries. Industry remains the largest customer by far.

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

Source: National Energy Balances


Sectoral Gas Consumption - 2000
Non-Specified (other) 0,1%
Commerce 0,6%
Transport 0,1%
Residential 0,0%
Industry 99,3%


Consumption of Gas
TJ
45 000
40 000
35 000
30 000
25 000
20 000
15 000
10 000
5 000
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
Commerce
Non-Specified (other)
Residential
Transport
Industry

Gas-Industrial Consumption TJ

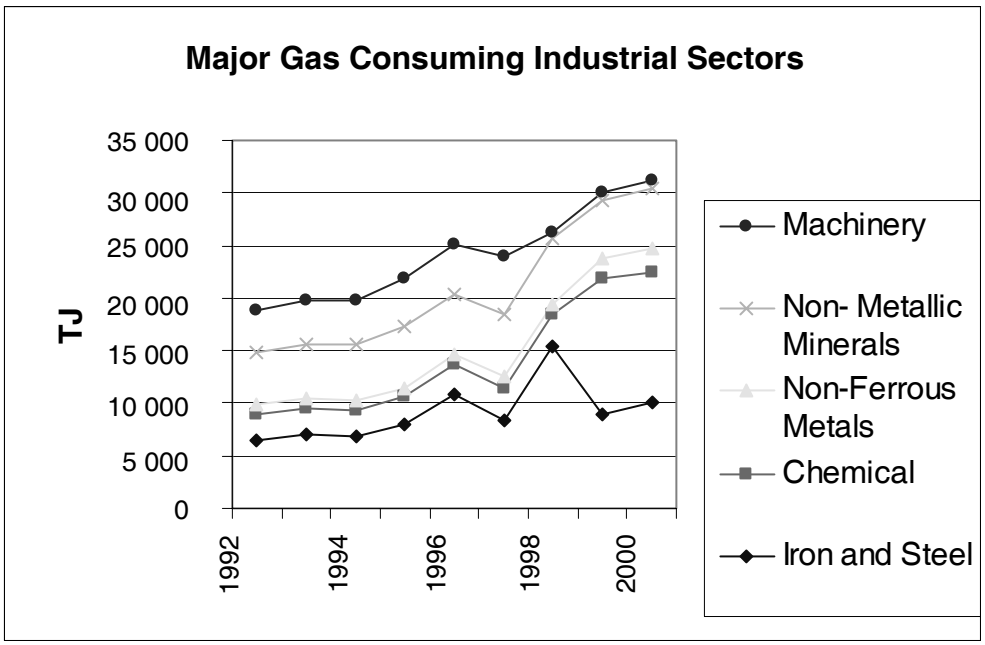
Year	Iron and Steel	Chemical	Non-Ferrous Metals	Non-Metallic Minerals	Transport Equipment	Machinery
1992	6 474	2 508	951	4 865	155	4 054
1993	7 092	2 455	1 002	5 077	154	4 153
1994	6 830	2 523	862	5 300	142	4 327
1995	7 960	2 642	805	5 861	168	4 573
1996	10 748	2 866	972	5 740	201	4 734
1997	8 372	2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

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

Source:National Energy Balances



Notes

Section 8

Renewables

The country is well endowed with solar resources, offering great potential for the development of renewable energy sources. Fuel wood is used for non-commercial uses include those for households. The data quality for this energy source is poor and the data presented below is an estimate since the accuracy cannot be verified. Wind energy will be exploited in the near future.

Renewables - PJ

Year	Bagasse	Other Solid biomass	Total
1992	52	362	414
1993	47	372	419
1994	33	400	433
1995	9	400	409
1996	9	400	409
1997	9	400	237
1998	47	190	237
1999	47	190	237
2000	47	190	237

Notes

Section 9

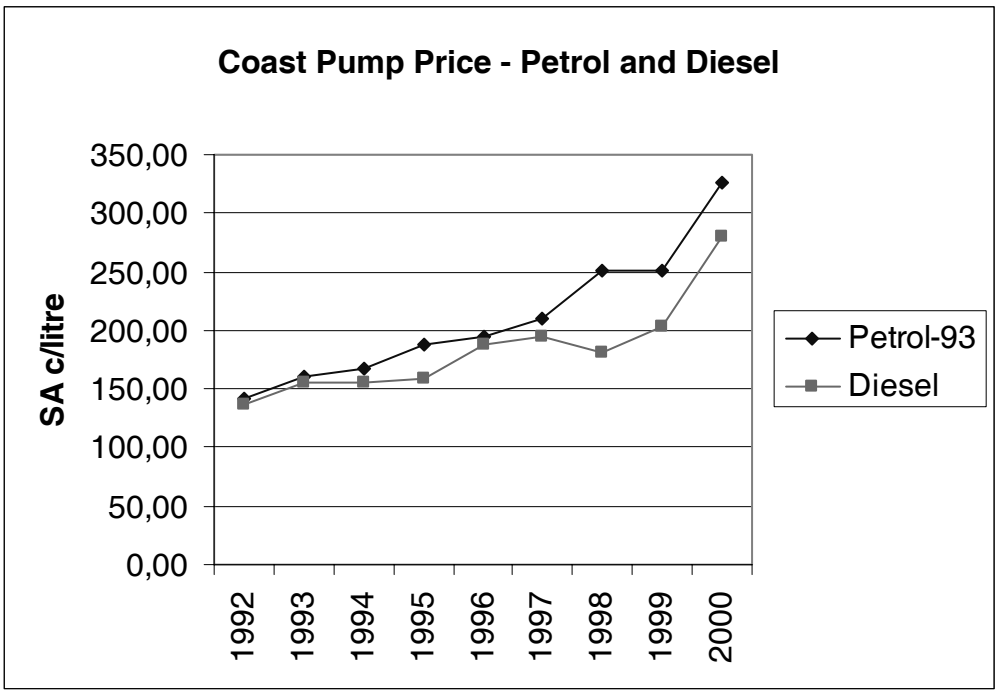
Prices

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

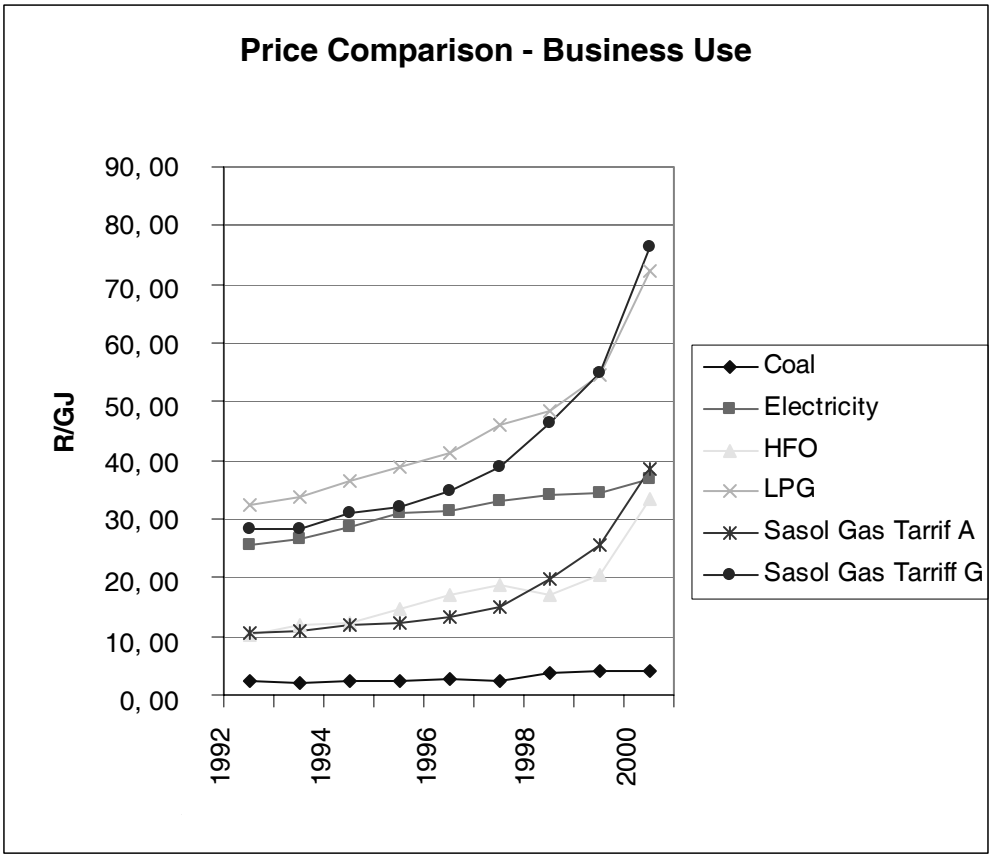
Source: Petroleum Products Price Report



Price Comparison - Business Use - R/GJ

Year	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

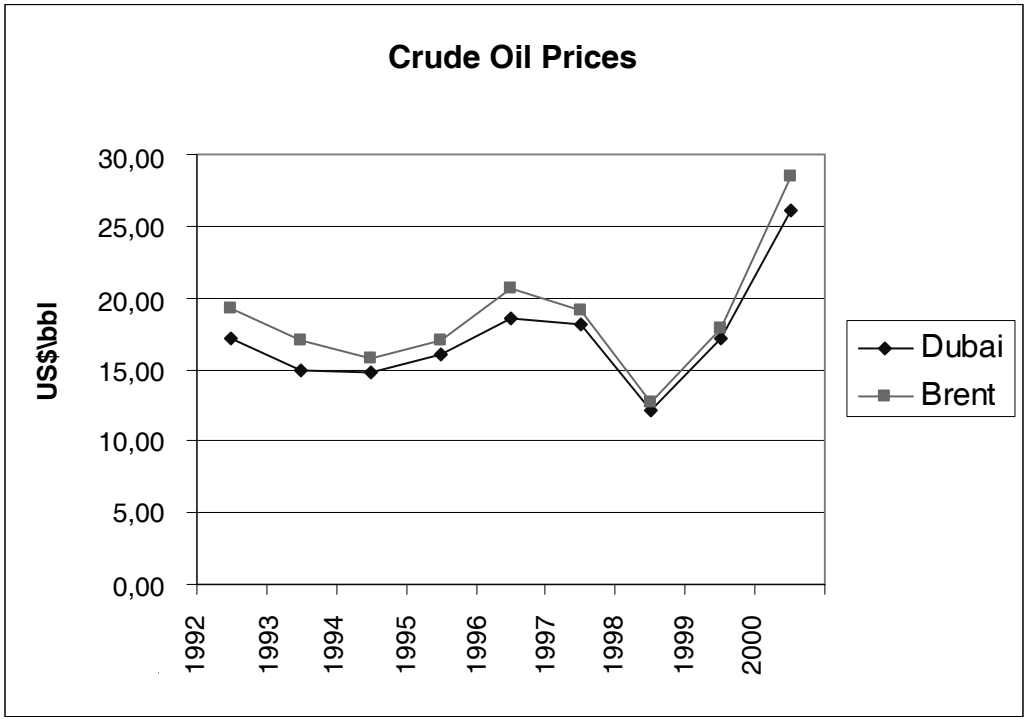
Sources: Petroleum Products Price Report
Minerals Bureau Coal Price Report (Bituminous - Industries)
Eskom Annual Reports



Crude Oil - US$/bbl

Year	Dubai	Brent
1992	17,19	19,31
1993	14,91	17,00
1994	14,74	15,80
1995	16,11	17,03
1996	18,56	20,69
1997	18,17	19,13
1998	12,16	12,73
1999	17,19	17,87
2000	26,14	28,45

Source: Petroleum Products Price



Notes

Section 10

Economic data

Year	Gross Domestic Product (1995 Rm)	Consumer Price Index (1995 = 100)	Production Price Index (2000 = 100)	Exchange rate - R/$	Gold price - US$/oz	Gold price - R/oz
1993	514 886	61,2	61,6	3,27	359,70	1 176,73
1994	531 537	66,6	66,7	3,55	384,05	1 363,43
1995	548 098	72,4	73,0	3,63	384,17	1 393,48
1996	571 706	77,7	78,1	4,30	387,71	1 664,02
1997	586 838	84,4	83,6	4,61	331,11	1 523,48
1998	591 309	90,2	86,6	5,53	294,14	1 622,92
1999	603 842	94,9	91,6	6,11	278,92	1 702,71
2000	624 129	100,0	100,0	6,94	279,13	1 932,51

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

Notes

Section 11

Useful Information

List of addresses

Department of Minerals and Energy
Private Bag X59
Pretoria, 0001
Tel: (012) 317 9000

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

National Electricity Regulator
P O Box 40343
Arcadia, 0007
(012) 401 4600

Central Energy Fund
P O Box 786141
Sandton, 2199
Tel: (011) 535 7000

SAPIA
P O Box 7082
Roggebaai, 8012
Tel: (021) 419 8054

PetroSA
P O Box 307
Parow
Cape Town, 7499
Tel: (021) 938 3644

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

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

Energy and Development Research Centre
University of Cape Town
Private Bag
Rondebosch, 7701
Tel: (021) 650 3230

Energy Research Institute
University of Cape Town
Private Bag
Rondebosch, 7001
Tel: (021) 650 3892

CSIR
P O Box 395
Pretoria, 0001
(012) 841 2911

Nuclear Energy Corporation of SA (NECSA)
P O Box 582
Pretoria, 0001
Tel: (012) 305 4911

Council for Geoscience
Private Bag X 112
Pretoria, 0001
Tel: (012) 841 1911

Chamber of Mines SA
P O Box 809
Johannesburg, 2000
Tel; (011) 498 7100

Ingwe Coal Corporation
P O Box 61820
Marshalltown, 2107
Tel: (011) 376 9111

Anglo Coal
P O Box 61587
Marshalltown, 2107
Tel: (011) 638 9111

Institute for Energy Studies
Rand Afrikaans University
P O Box 524
Auckland Park, 2006
Tel: (011) 489 2547

Institute for Futures Research
University of Stellenbosch
P O Box 2010
Belville, 7535
Tel: (021) 918 4144

South African National Energy Association
Suite 121, Postnet RAU
Private Bag X12
Melville 2109
Tel: (011) 489 2547

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	
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}