



AFRICAN UNION



EDITION 2016

AFRICAN ENERGY COMMISSION
COMMISSION AFRICAINE DE L'ENERGIE
COMISSAO AFRICANA D'ENERGIA
اللجنة الإفريقية للطاقة

AFREC

KEY AFRICA ENERGY STATISTICS



KEY AFRICA ENERGY STATISTICS

List of Participating African Countries

Algeria	Madagascar
Angola	Malawi
Benin	Mali
Botswana	Mauritania
Burkina Faso	Mauritius
Burundi	Morocco
Cameroon	Mozambique
Cape Verde	Namibia
Central Africa	Niger
Chad	Nigeria
Comoros	Rwanda
Congo	Saharawi Republic
Congo DR	Somalia
Cote d'Ivoire	São Tome & Principe
Djibouti	Senegal
Egypt	Seychelles
Equatorial Guinea	Sierra Leone
Eritrea	South Africa
Ethiopia	South Sudan
Gabon	Sudan
Gambia	Swaziland
Ghana	Tanzania
Guinea	Togo
Guinea Bissau	Tunisia
Kenya	Uganda
Lesotho	Zambia
Liberia	Zimbabwe
Libya	

FORWARD

This is the 2016 publication of “Key Africa Energy Statistics” following the 2015, 2014, 2013 and 2012 edition produced by the African Energy Commission (AFREC). It provides a time series data of energy supply, transformation, consumption and energy balances of all African countries.

This handy, pocket-sized publication represents a summary of the main volume of the “Africa Energy Statistics 2016” which provides timely and clearly-presented data of the Africa’s energy supply and use in most cases from 2 000 to 2 014.

The Africa Energy Statistics is intended to become the Africa’s major and most authoritative source of energy statistics and reflects the real situation of the management of oil, natural gas, coal, electricity and renewable energy resources and products in the continent.

As mentioned in the main Africa Energy Statistics 2016 report, a mandate was given to AFREC by its Convention to design, create and update a continental energy data base and facilitate rapid dissemination of information and exchange of information among Member States as well as among the African Regional Economic Communities (RECs) and other agencies and institutions.

Along with this copy of hard version a complementary CD-ROM and Internet versions have been produced. The main report of the Africa Energy Statistics 2016 presents the full time series of energy data for each African nation, each region and the whole continent.

It is our expectation that the statistics contained in this publications will prove to be useful to wide range of end-users including energy analysts, planners, policy makers, researchers and academics in Africa and around the world.

AFREC welcomes any feedback by way of comments and suggestions from the readers and end-users.

This publication is available on the AFREC’s website www.afrec-energy.org.

Unit Abbreviations

(Source: IEA)

bcm	billion cubic metres
Gcal	gigacalorie
GCV	gross calorific value
GW	gigawatt
GWh	gigawatt hour
kb/cd	thousand barrels per calendar day
kcal	kilocalorie
kg	kilogramme
kJ	kilojoule
kWh	Kilowatt hour
MBtu	million British thermal units
Mt	million tonnes
Mtoe	million tonnes of oil equivalent
PPP	Purchasing Power Parity
t	metric ton=tonne=1000kg
kt	kilotonnes
TJ	terajoule
toe	tonne of oil equivalent= 10^7 kcal
TWh	terawatt hour

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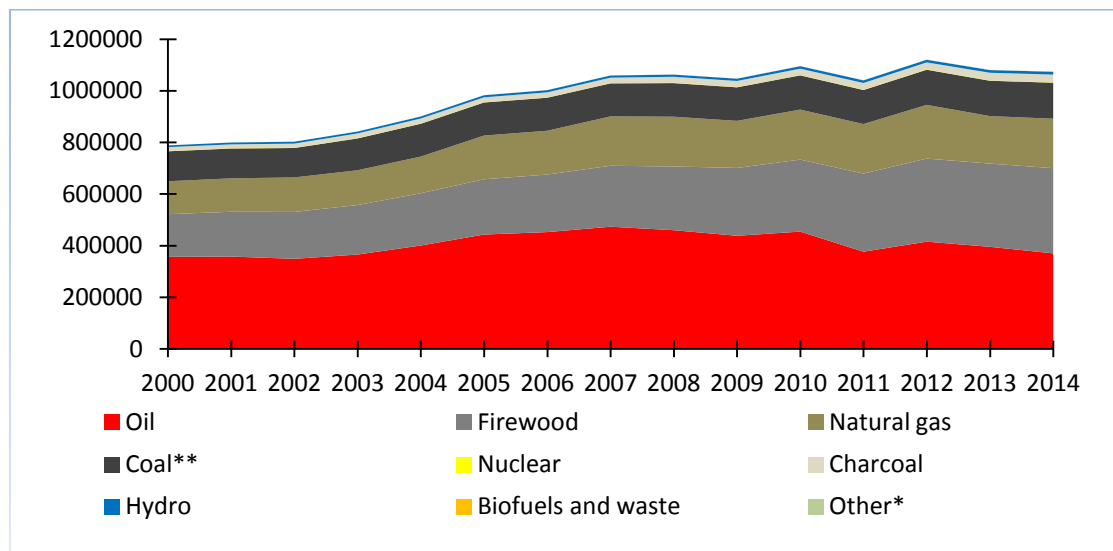
GLOSSARY

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TOTAL PRIMARY ENERGY SUPPLY BY FUEL

AFRICA

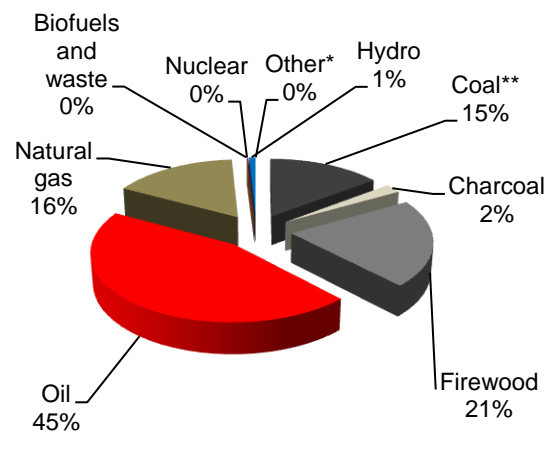
Africa Total Primary Energy Supply from 2 000 to 2 014 by fuel (ktoe)



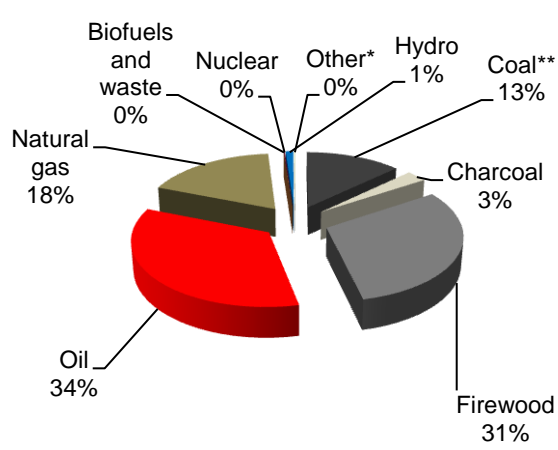
2 000 and 2 014 Fuel Shares of TPES

2 000

2 014



356 367 ktoe



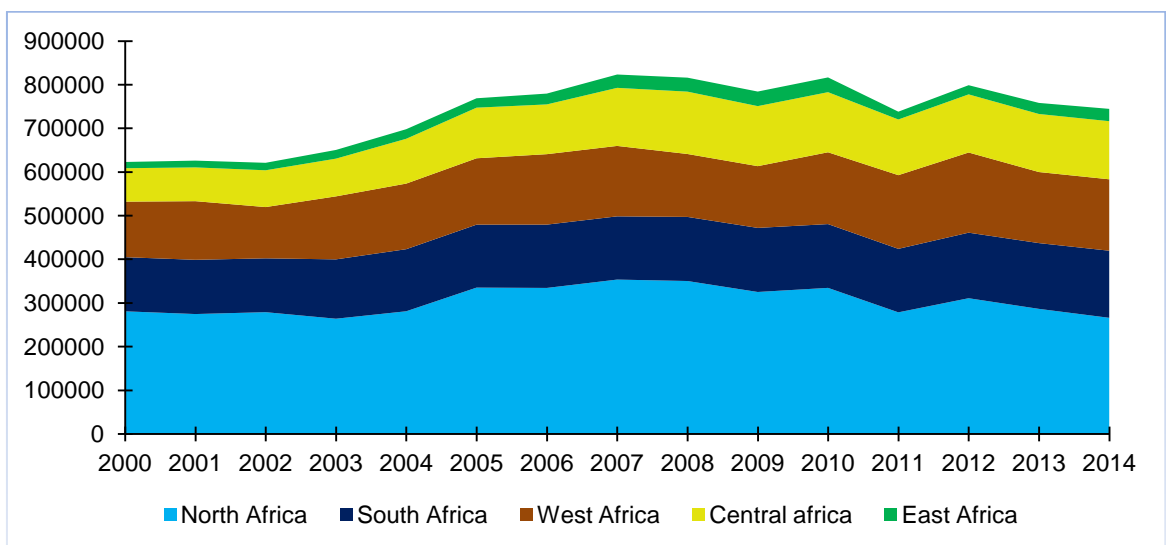
369 942 ktoe

* Other includes geothermal, solar, wind, wave, etc
** Includes steam coal, coking coal, lignite and recovered coal

TOTAL PRIMARY ENERGY SUPPLY BY REGION

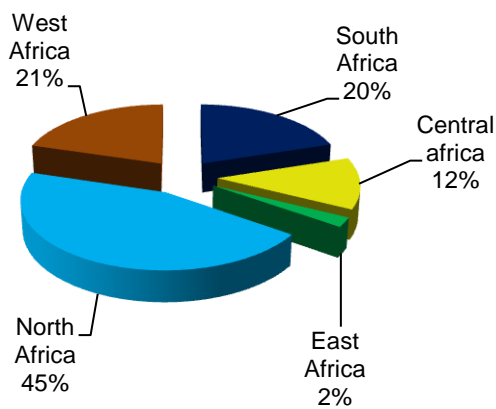
AFRICA

Africa Total Primary Energy Supply from 2 000 to 2 014
by region (ktoe)



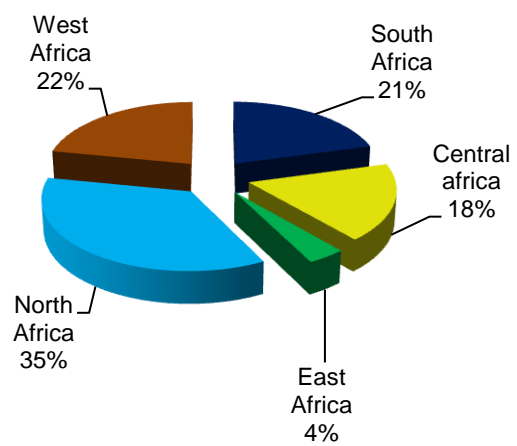
2 000 and 2 014 Regional Shares of TPES

2 000



281 309 ktoe

2 014

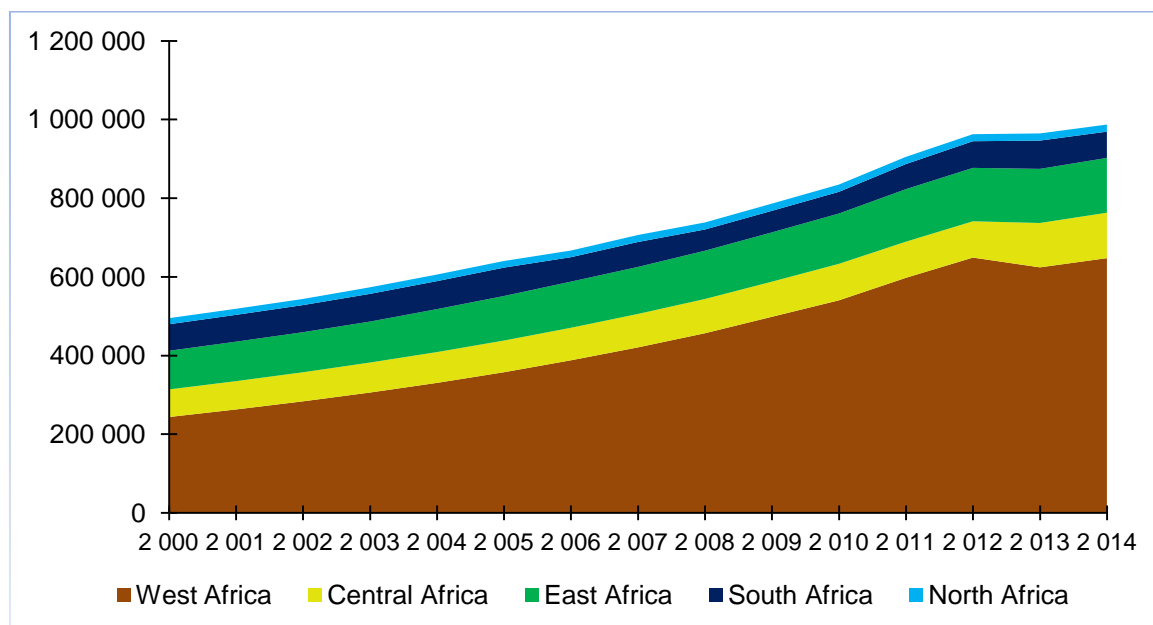


266 087 ktoe

FIREWOOD PRODUCTION

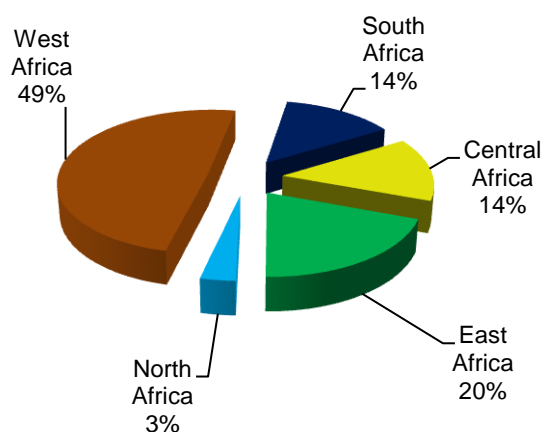
AFRICA

Firewood Production from 2 000 to 2 014
by region (kt)



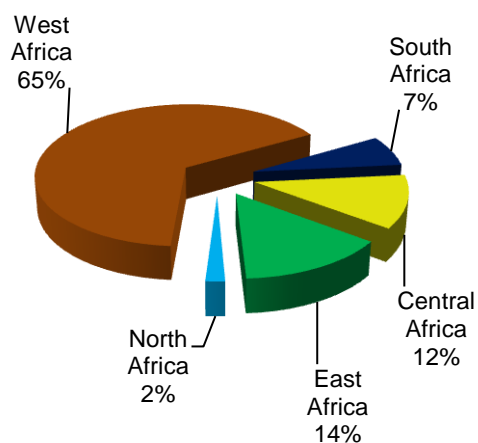
2 000 and 2 014 Regional Shares of Firewood Production

2 000



243 535 kt

2 014



647 522 kt

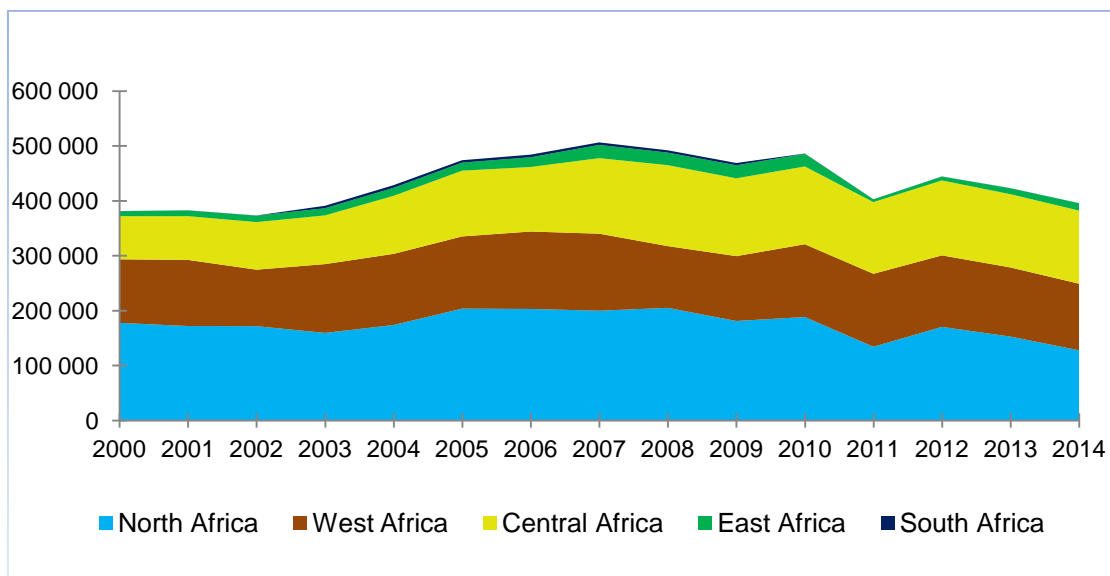
Producers of firewood from 2 014

Producers	kt
Nigeria	497 495
Ethiopia	78 877
Congo DR	78 342
Niger	70 139
Côte d'Ivoire	21 406
Uganda	21 122
Mozambique	19 360
Kenya	12 115
Tanzania	11 631
Ghana	10 763
Mali	8 902
Togo	7 668
Madagascar	6 694
Guinea	6 058
Benin	6 020
Burkina Faso	5 789
Cameroon	5 083
Zambia	4 762
Rwanda	4 128
Liberia	3 901
Senegal	3 732
Chad	3 716
Burundi	2 926
Congo	2 850
Sierra Leone	2 844
Malawi	2 786
Central Africa	2 685
Tunisia	2 674
Lesotho	2 261
South Sudan	2 192
Guinea Bissau	1 358
Djibouti	1 309
Mauritania	983
Botswana	689
Gabon	579
Swaziland	556
Eritrea	464
Gambia	361
Comoros	284
Equatorial Guinea	224
Cape Verde	102
São Tomé & Príncipe	55
Mauritius	20
Seychelles	2
Other Africa	71 324
Africa	987 231

CRUDE OIL PRODUCTION

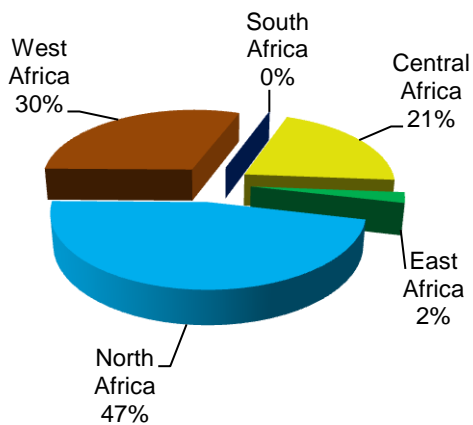
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Crude Oil* Production from 2 000 to 2 014
by region (kt)



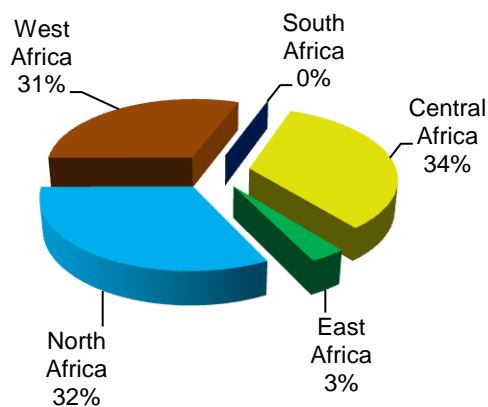
2 000 and 2 014 Regional Shares of Crude Oil* Production

2 000



177 908 kt

2 014



127 900 kt

* Include crude oil, NGL, additives and other hydrocarbons

Producers, Net Exporters and Net Importers of Crude Oil* from 2 014

Producers	kt
Nigeria	113 948
Angola	83 601
Algeria	69 123
Egypt	30 684
Libya	25 267
Equatorial Guinea	13 450
Congo	12 950
Gabon	11 607
South Sudan	7 950
Chad	6 683
Sudan	5 450
Ghana	5 328
Cameroon	3 731
Tunisia	2 818
Congo DR	1 246
Côte d'Ivoire	948
Niger	818
Mauritania	309
South Africa	213
Morocco	8
Africa	396 131

Net exporters	kt
Nigeria	111 052
Angola	81 274
Algerie	28 061
Libya	18 016
Equatorial Guinea	14 869
Congo	12 342
Gabon	10 792
South Sudan	7 850
Egypt	6 898
Chad	6 067
Ghana	4 693
Sudan	1 788
Cameroon	1 301
Congo DR	1 145
Tunisia	1 099
Mauritania	215
Africa	307 462

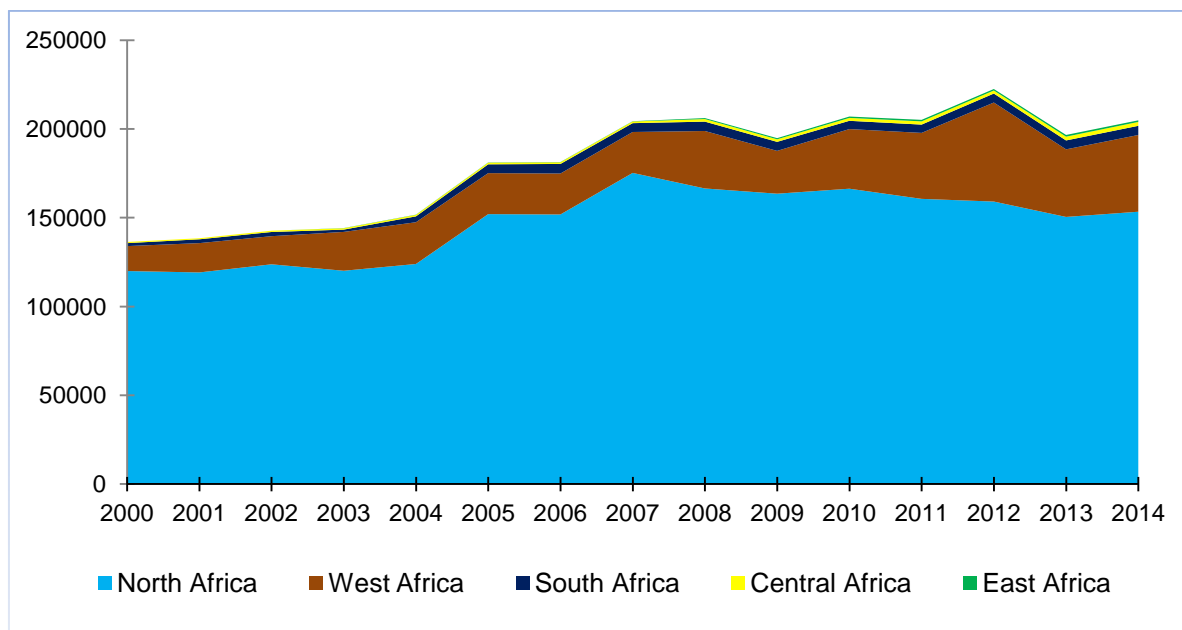
Net Importers	kt
South Africa	21 906
Morocco	6 471
Côte d'Ivoire	2 422
Kenya	903
Senegal	597
Zambia	560
Africa	32 859

* Include crude oil, NGL, additives and other hydrocarbons.

NATURAL GAS PRODUCTION

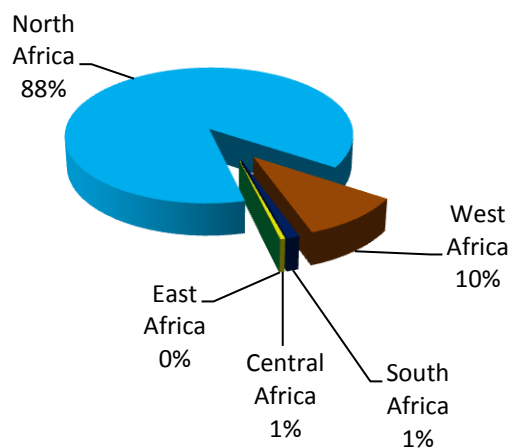
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Natural gas production from 2 000 to 2 014
by region (Million cubic meters)



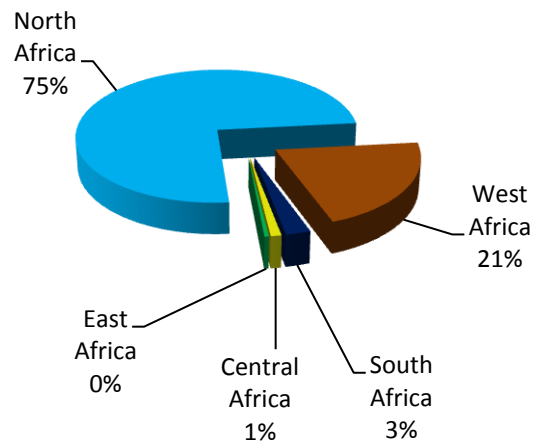
2 000 and 2 014 Regional Shares of Natural Gas Production

2 000



120 017 Mcm

2 014



153 403 Mcm

Producers, Net Exporters and Net Importers* Of Natural Gas from 2 014

Producers	Mcm
Algeria	83 389
Egypt	54 776
Nigeria	41 153
Libya	12 078
Mozambique	4 124
Tunisia	3 061
Côte d'Ivoire	1 962
South Africa	1 032
Tanzania	904
Angola	718
Cameroon	660
Equatoriale Guinea	328
Gabon	246
Congo	234
Morocco	100
Ghana	56
Senegal	46
Africa	185 407

Net exporters	Mcm
Algeria	45 071
Nigeria	23 972
Libya	6 316
Egypt	6 278
Mozambique	3 887
Angola	417
Africa	85 941

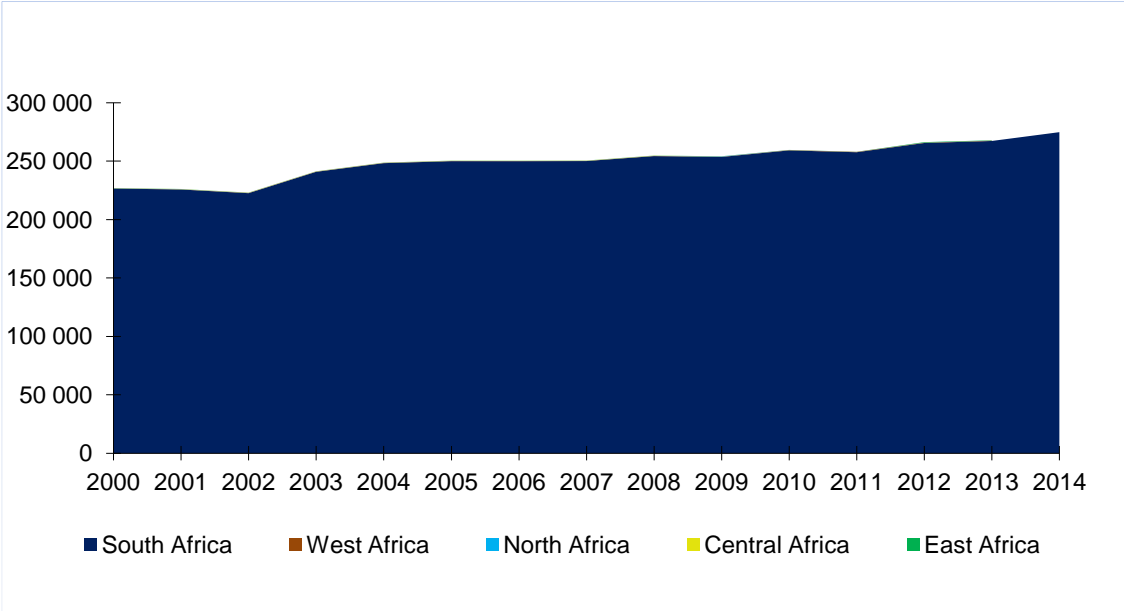
Net importers	Mcm
South Africa	3 540
Tunisia	2 814
Morocco	1 095
Ghana	607
Congo DR	2
Africa	8 058

* Net exports and net imports include pipeline gas and LNG.

COAL PRODUCTION

AFRICA

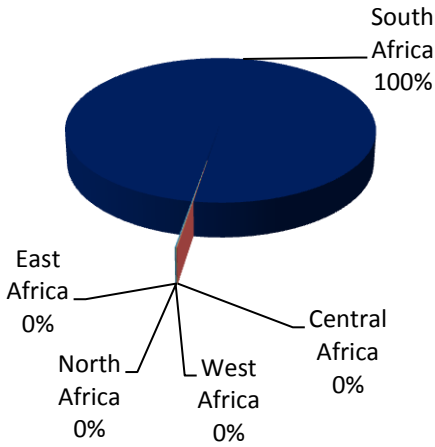
Coal* Production from 2 000 to 2 014
by region (kt)



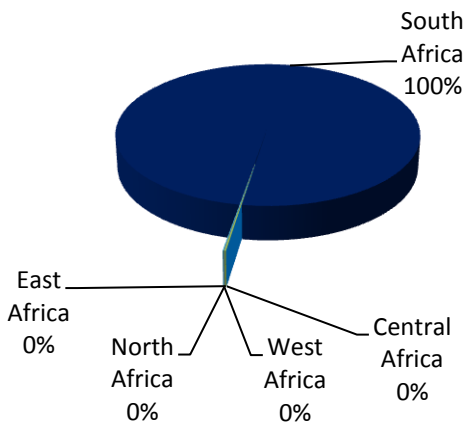
2 000 and 2 014 Regional Shares of Coal* Production

2 000

2 014



226 635 kt



274 903 kt

*Includes steam coal, coking coal, lignite and recovered coal

Producers, Net Exporters and Net Importers of Coal* from 2 014

Producers	kt
South Africa	260 540
Zimbabwe	5 783
Mozambique	6 331
Botswana	1 712
Tanzania	411
Swaziland	322
Niger	250
Zambia	159
Malawi	56
Nigeria	46
Ethiopia	22
Africa	275 632

Net exporters	kt
South Africa	67 387
Mozambique	4 679
Swaziland	339
Zimbabwe	132
Africa	72 537

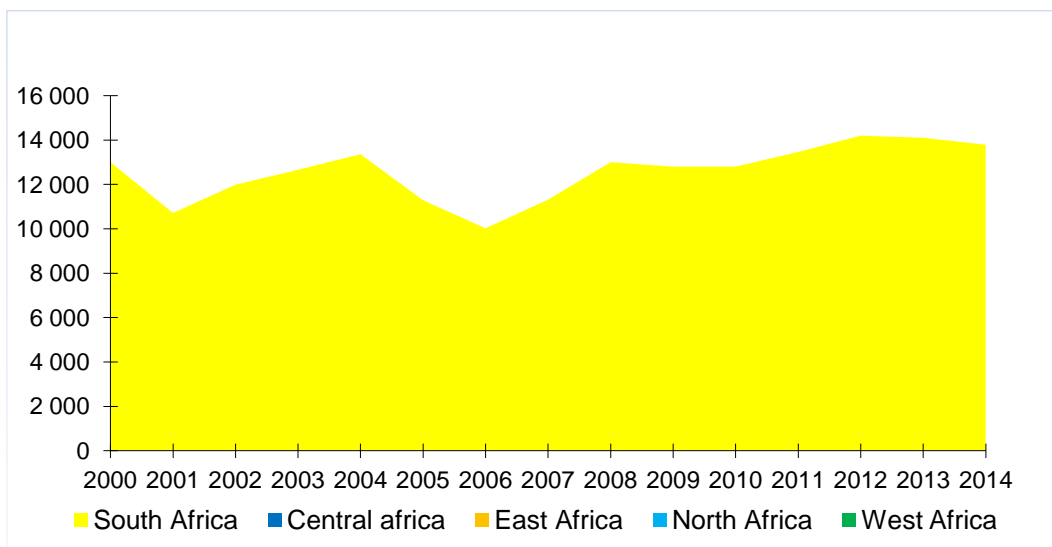
Net importers	kt
Morocco	5 810
Mauritius	750
Egypt	434
Algeria	382
Senegal	354
Kenya	347
Ethiopia	339
Madagascar	15
Namibia	10
Africa	8 441

*Includes steam coal, coking coal, lignite and recovered coal

NUCLEAR PRODUCTION

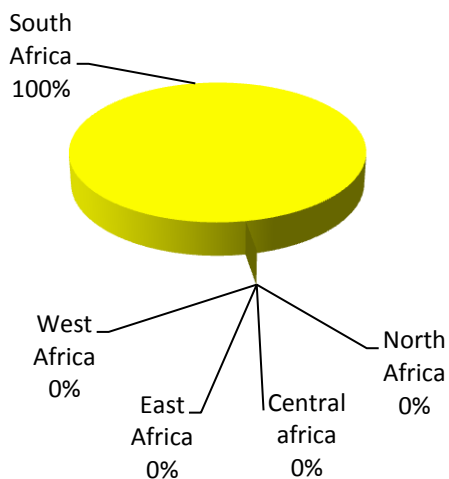
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Nuclear Production from 2 000 to 2 014
by region (GWh)



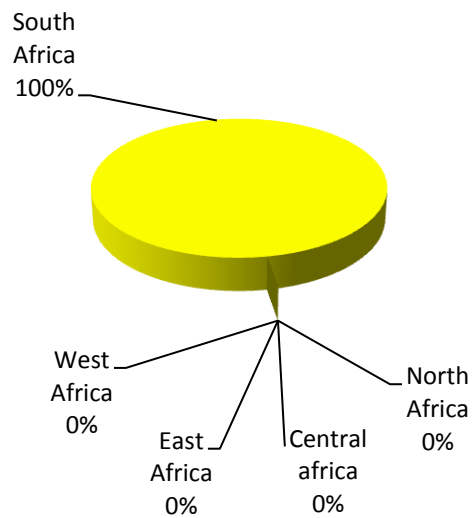
2 000 and 2 014 Regional Shares of Nuclear Production

2 000



13 010 GWh

2 014



13 794 GWh

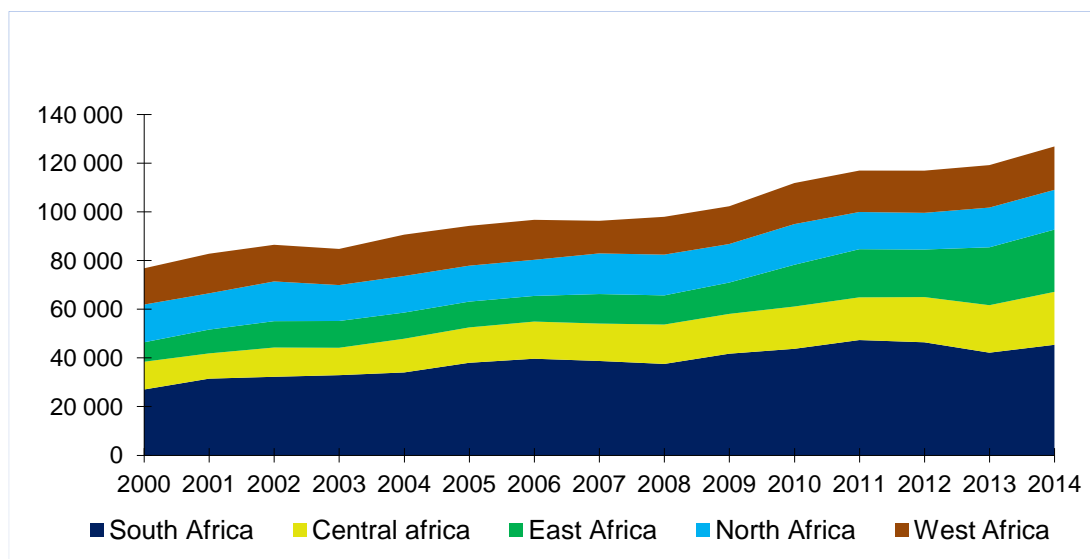
Producers of Nuclear Electricity from 2 014

Producers	GWh
South Africa	13 794
Africa	13 794

HYDRO PRODUCTION

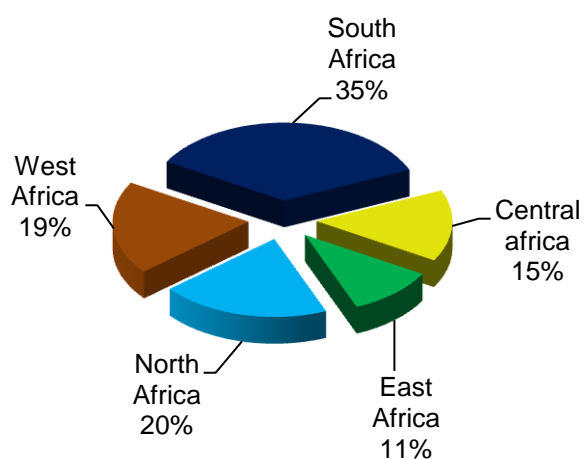
AFRICA

Hydro production from 2 000 to 2 014
by region (GWh)



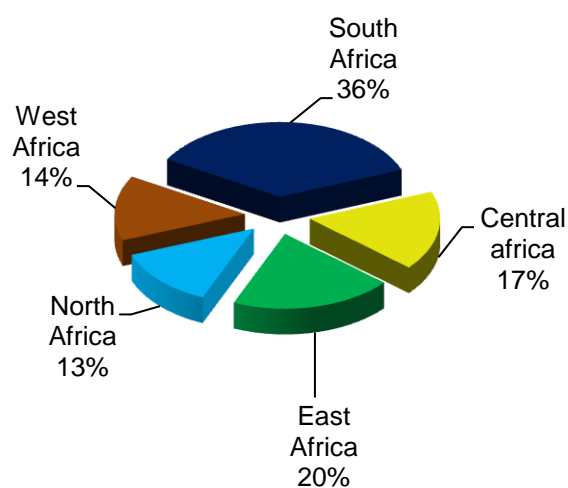
2 000 and 2 014 Regional Shares of Hydro Production

2 000



27 046 GWh

2 014



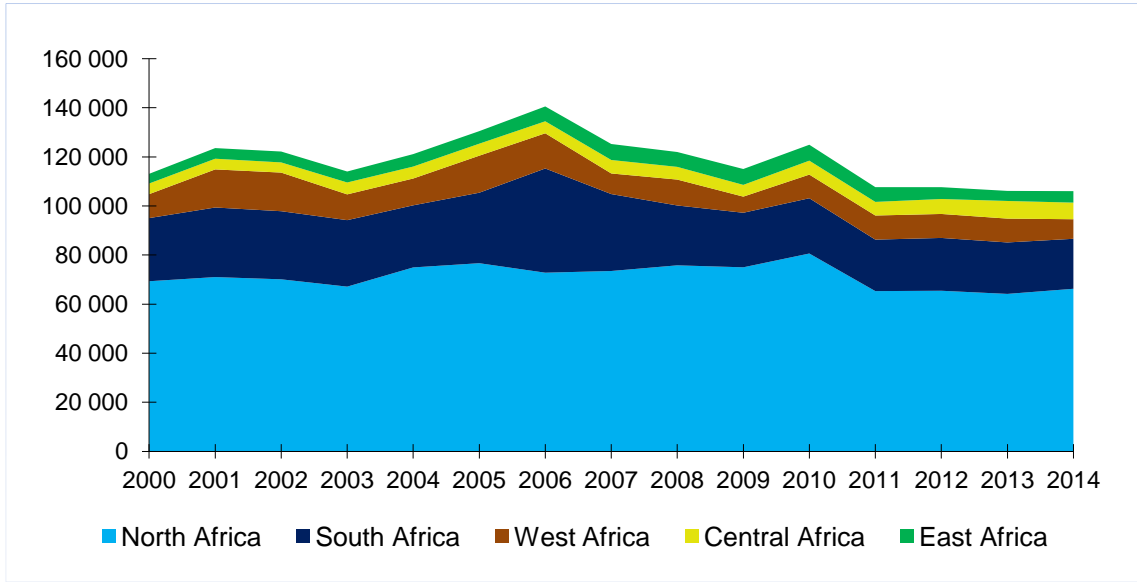
45 421 GWh

Producers of Hydro Electricity from 2 014

Producers	GWh
Mozambique	16 169
Zambia	14 042
Egypt	13 979
Sudan	8 913
Congo DR	8 820
Ghana	8 387
Ethiopia	8 338
Zimbabwe	5 431
Nigeria	5 346
Cameroon	5 068
Angola	5 041
South Africa	4 082
Kenya	3 310
Malawi	2 618
Tanzania	2 590
Uganda	2 393
Morocco	2 033
Côte d'Ivoire	1 913
Namibia	1 485
Congo	952
Madagascar	901
Gabon	795
Mali	701
Guinea	654
Equatorial Guinea	543
Lesotho	385
Senegal	323
Algeria	254
Rwanda	214
Swaziland	212
Mauritania	183
Burundi	179
Sierra Leone	145
Central Africa	139
Togo	120
Mauritius	91
Burkina Faso	64
Tunisia	56
South Sudan	21
São Tomé & Príncipe	11
Somalia	11
Comoros	5
Africa	126 917

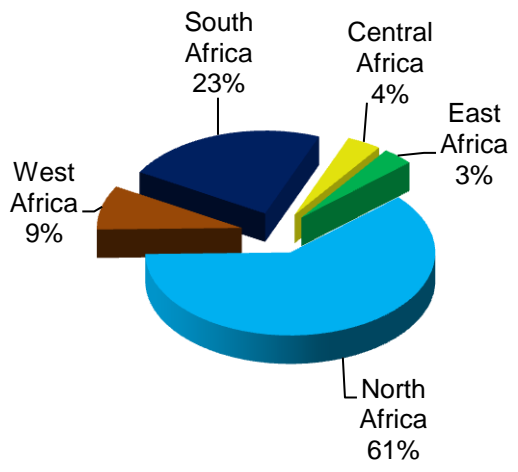
REFINING BY REGION

AFRICA
Refinery Production from 2 000 to 2 014
by region (kt)



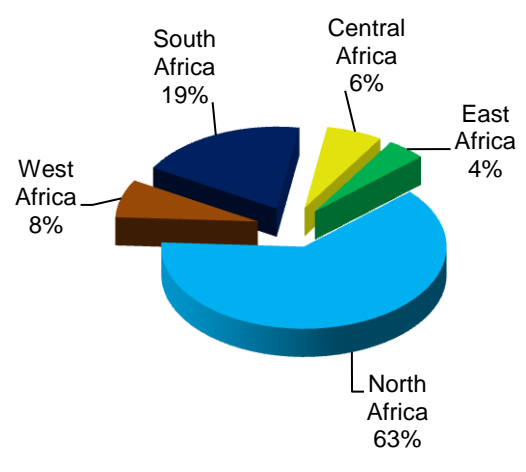
2 000 and 2 014 Regional Shares of Refinery Production

2 000



69 345 kt

2 014



66 275 kt

Producers, Net Exporters and Net Importers of Oil Products in 2 014

Producers	kt
Algeria	31 037
Egypt	22 219
South Africa	19 709
Morocco	6 581
Libya	4 797
Sudan	4 003
Nigeria	3 253
Côte d'Ivoire	3 066
Cameroon	2 507
Angola	2 235
Tunisia	1 641
Gabon	814
Senegal	802
Congo	791
Niger	715
Kenya	675
Zambia	659
Chad	420
Ghana	129
Africa	106 053

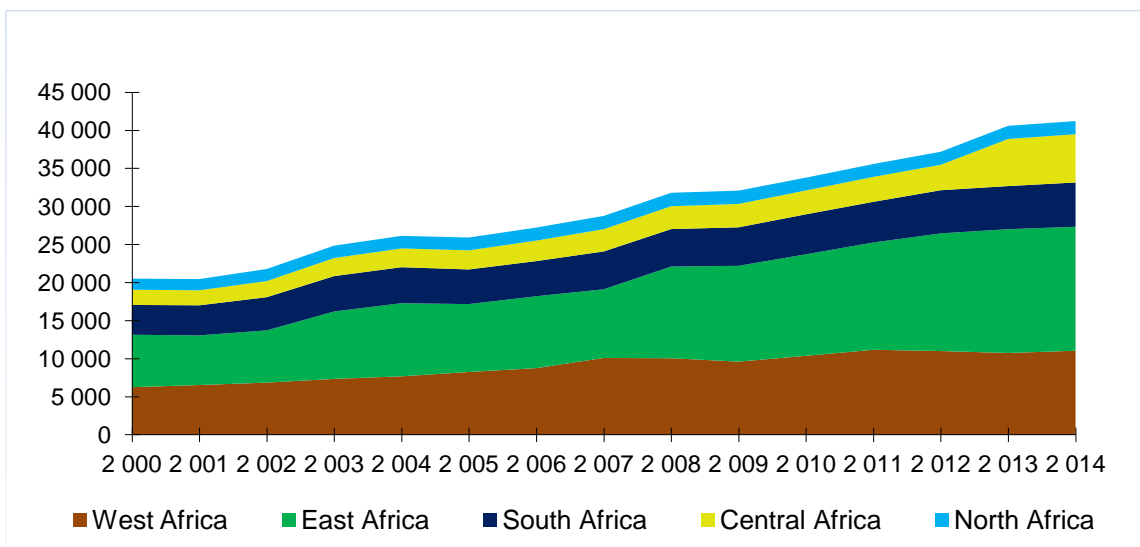
Net exporters	kt
Algeria	20 820
Côte d'Ivoire	1 324
Cameroon	696
Niger	165
Congo	11
Africa	23 016

Net importers	kt
Nigeria	7 751
Morocco	7 272
Libya	7 105
Egypt	7 042
Angola	4 572
South Africa	3 902
Kenya	3 504
Ghana	3 489
Uganda	3 167
Ethiopia	3 130
Tunisia	2 994
Tanzania	2 772
Benin	1 962
Mozambique	1 910
Congo DR	1 698
Zimbabwe	1 231
Namibia	1 153
Senegal	1 078
Mauritius	1 070
Mali	989
Botswana	978
Guinea	880
Sudan	857
Mauritania	825
Chad	772
Madagascar	734
Burkina Faso	674
Togo	597
South Sudan	509
Djibouti	464
Malawi	389
Zambia	361
Gabon	339
Seychelles	321
Sierra Leone	304
Swaziland	295
Equatorial Guinea	270
Rwanda	224
Cape Verde	195
Liberia	191
Eritrea	181
Gambia	176
Lesotho	176
Somalia	130
Saharawi Republic	84
Burundi	77
Central Africa	53
São Tomé & Príncipe	52
Guinea Bissau	47
Comoros	36
Africa	78 980

CHARCOAL PRODUCTION

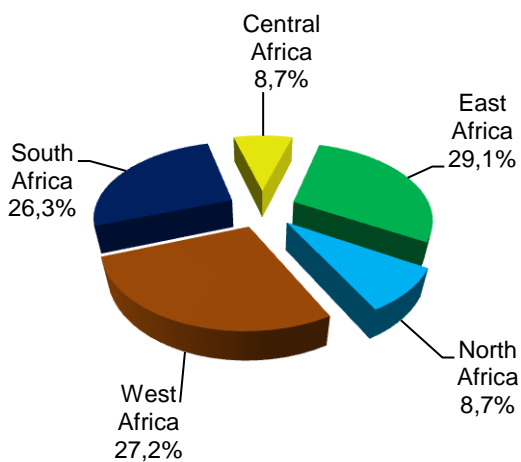
AFRICA

Charcoal production from 2 000 to 2 014
by region (kt)



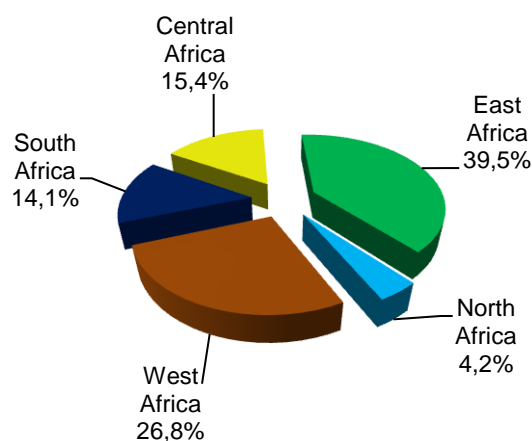
2 000 and 2 014 Regional Shares of Charcoal Production

2 000



6 697 kt

2 014



16 295 kt

Producers of Charcoal from 2 014

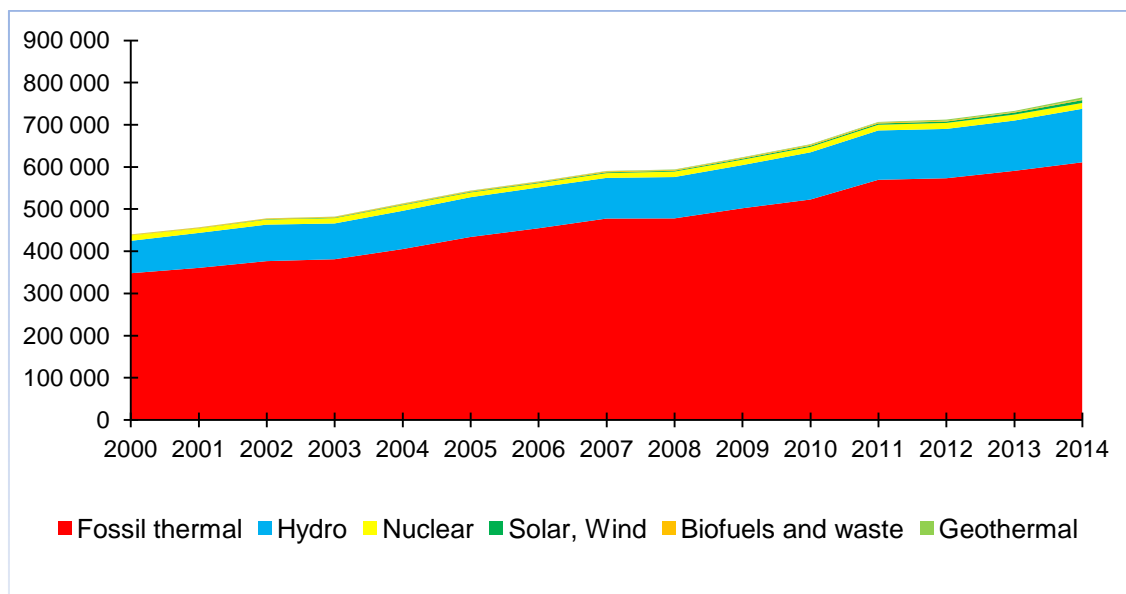
Producers	kt
Ethiopia	6 011
Nigeria	3 844
Congo DR	3 803
Kenya	3 572
Tanzania	1 937
Uganda	1 833
South Africa	1 804
Sudan	1 596
Côte d'Ivoire	1 437
Egypt	1 401
Madagascar	1 252
Ghana	1 212
Angola	1 164
Somalia	1 136
Zambia	1 083
Burkina Faso	795
Mozambique	714
Togo	670
Malawi	540
Senegal	497
Mali	495
Niger	446
Chad	446
Sierra Leone	412
Guinea	372
Benin	273
Burundi	264
Liberia	264
Cameroon	236
Congo	206
Tunisia	203
Mauritania	202
Rwanda	172
Eritrea	147
Namibia	145
Libya	108
Lesotho	104
Botswana	73
Guinea Bissau	69
Gambia	63
Djibouti	51
Swaziland	47
Comoros	43

Gabon	21
Morocco	17
Central Africa	13
South Sudan	11
Equatorial Guinea	10
São Tomé & Príncipe	9
Zimbabwe	9
Algeria	2
Mauritius	1
Cape Verde	1
Africa	41 236

ELECTRICITY GENERATION BY FUEL

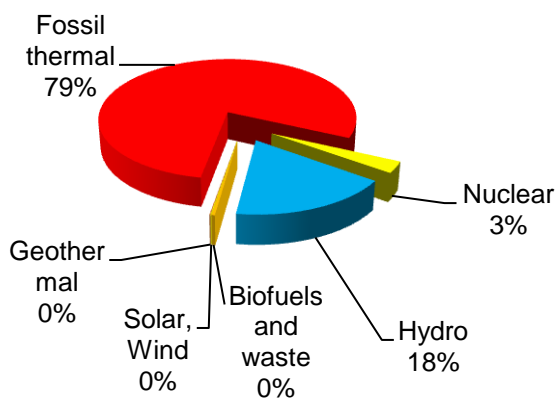
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Electricity Generation from 2 000 to 2 014
by fuel (GWh)



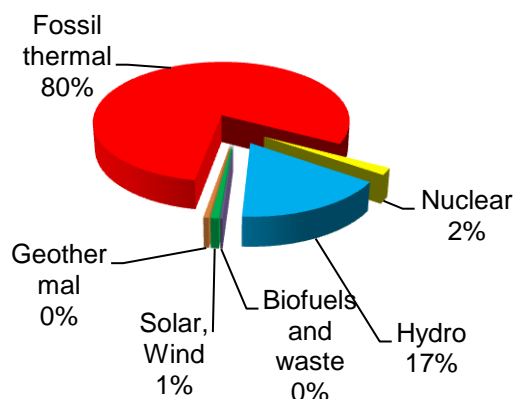
2 000 and 2 014 Fuel Shares of Electricity Generation

2 000



347 982 GWh

2 014



611 026 GWh

Electricity Production by Fuel from 2 014

Nuclear	GWh
South Africa	13 794
Africa	13 794

Solar, wind, Geothermal, Biofuels and waste	GWh
Kenya	4 269
Egypt	2 490
Morocco	1 924
Ethiopia	854
Tunisia	501
Mauritius	485
South Africa	455
Rwanda	298
Algeria	285
Sudan	211
Uganda	201
Côte d'Ivoire	179
Zimbabwe	149
Cameroon	140
Senegal	88
Nigeria	74
Mali	59
Swaziland	45
Cape Verde	34
Tanzania	29
Togo	28
Sierra Leone	27
Mauritania	25
Madagascar	24
Namibia	19
Seychelles	18
Botswana	14
Malawi	14
Gabon	14
Libya	9
Benin	8
Central Africa	7
Congo DR	7
Guinea	7
Eritrea	7
Other Africa	38
Africa	13 037

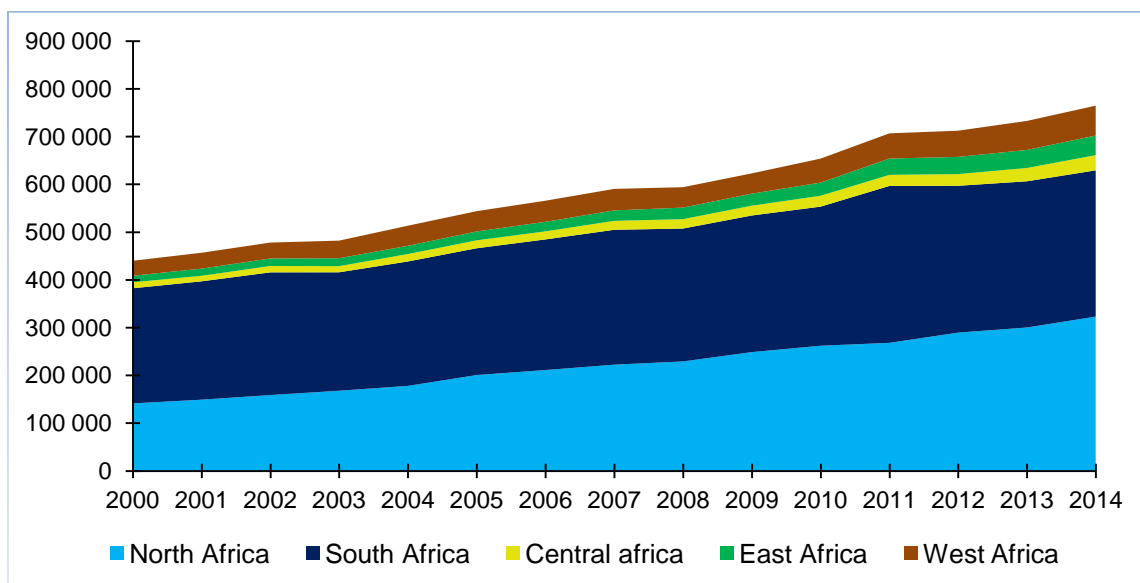
Hydro	GWh
Mozambique	16 169
Zambia	14 042
Egypt	13 979
Sudan	8 913
Congo DR	8 820
Ghana	8 387
Ethiopia	8 338
Zimbabwe	5 431
Nigeria	5 346
Cameroon	5 068
Angola	5 041
South Africa	4 082
Kenya	3 310
Malawi	2 618
Tanzania	2 590
Uganda	2 393
Morocco	2 033
Côte d'Ivoire	1 913
Namibia	1 485
Congo	952
Madagascar	901
Gabon	795
Mali	701
Guinea	654
Equatorial Guinea	543
Lesotho	385
Senegal	323
Algeria	254
Rwanda	214
Swaziland	212
Mauritania	183
Burundi	179
Sierra Leone	145
Central Africa	139
Togo	120
Mauritius	91
Burkina Faso	64
Tunisia	56
South Sudan	21
São Tome & Principe	11
Somalia	11
Comoros	5
Africa	126 917

Fossil fuel	GWh
South Africa	232 209
Egypt	156 206
Algeria	63 988
Libya	37 731
Morocco	25 185
Nigeria	25 044
Tunisia	18 458
Côte d'Ivoire	6 303
Ghana	4 572
Zimbabwe	4 448
Angola	4 439
Tanzania	3 589
Senegal	3 273
Sudan	2 463
Botswana	2 362
Mauritius	2 338
Cameroon	1 782
Kenya	1 714
Madagascar	1 573
Mozambique	1 569
Gabon	1 560
Mali	1 320
Congo	788
Burkina Faso	722
Niger	658
Uganda	613
Guinea	521
South Sudan	486
Mauritania	479
Seychelles	412
Zambia	410
Equatorial Guinea	396
Somalia	372
Eritrea	368
Djibouti	352
Swaziland	315
Cape Verde	315
Rwanda	308
Gambia	304
Chad	286
Benin	183
Sierra Leone	142
Guinea Bissau	136
Liberia	104
Saharawi Republic	90
Comoros	60
São Tome & Principe	18
Togo	17
Namibia	13
Congo DR	11
Ethiopia	9
Malawi	8
Burundi	4
Africa	611 026

ELECTRICITY GENERATION BY REGION

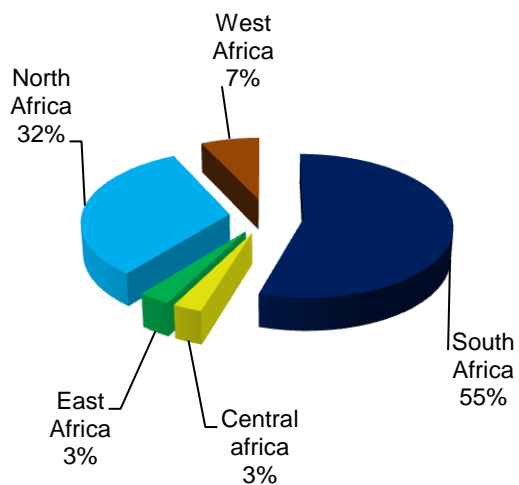
AFRICA

Electricity Generation from 2 000 to 2 014
by region (GWh)



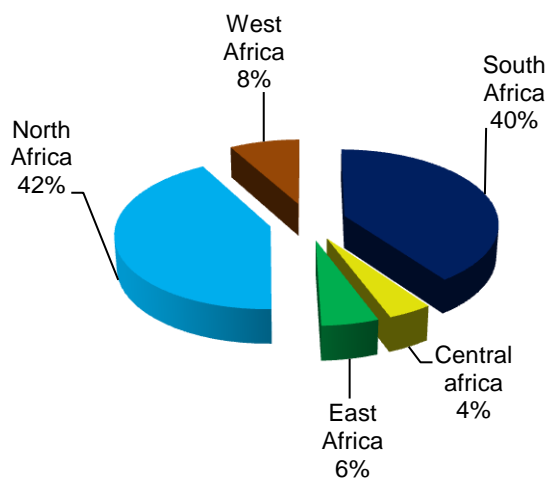
2 000 and 2 014 Regional Shares of Electricity Generation

2 000



241 026 GWh

2 014



323 189 GWh

Producers, Net Exporters and Net Imports of Electricity from 2 014

Producers	GWh
South Africa	250 540
Egypt	172 675
Algeria	64 527
Libya	37 740
Nigeria	30 464
Morocco	29 142
Tunisia	19 015
Mozambique	17 739
Zambia	14 455
Ghana	12 963
Sudan	11 587
Zimbabwe	10 028
Angola	9 484
Kenya	9 293
Ethiopia	9 201
Congo DR	8 838
Côte d'Ivoire	8 395
Cameroon	6 990
Tanzania	6 208
Senegal	3 684
Uganda	3 207
Mauritius	2 914
Malawi	2 640
Madagascar	2 498
Botswana	2 376
Gabon	2 368
Mali	2 081
Congo	1 740
Namibia	1 517
Guinea	1 182
Equatorial Guinea	939
Rwanda	821
Burkina Faso	791
Mauritania	687
Niger	664
Swaziland	572
South Sudan	508
Seychelles	430
Lesotho	385
Somalia	383
Eritrea	375
Djibouti	355
Cape Verde	349
Sierra Leone	314
Gambia	310
Chad	286
Benin	191
Burundi	184
Togo	165
Central Africa	146
Guinea Bissau	139
Liberia	105
Saharawi Republic	90
Comoros	65
São Tome & Príncipe	29
Africa	764 775

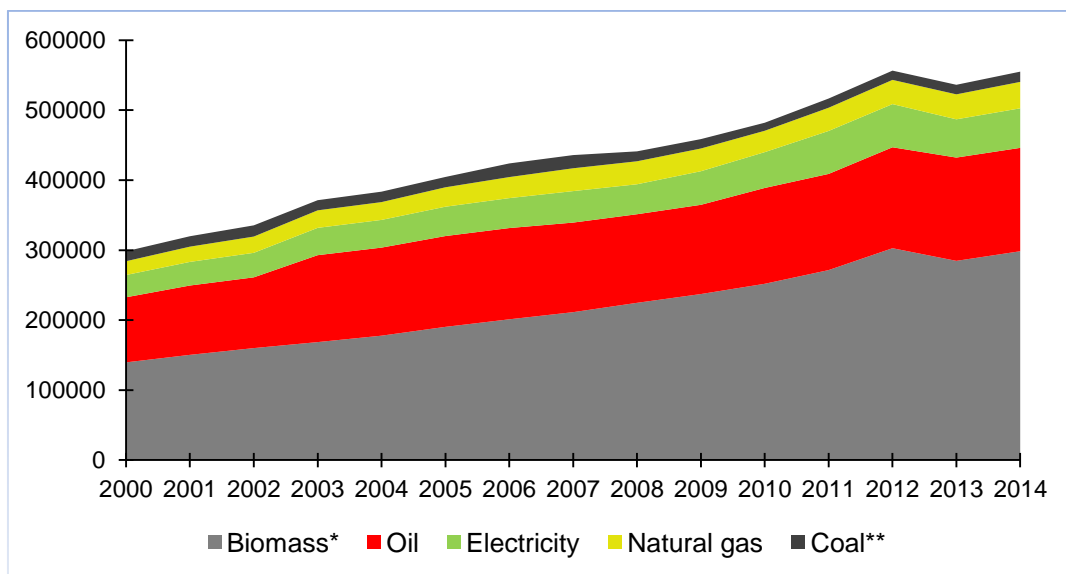
Net importers	GWh
Morocco	6 010
Namibia	2 802
Botswana	1 684
Benin	1 101
Congo DR	1 069
Togo	1 065
Niger	727
Mali	569
Burkina Faso	523
Swaziland	476
Gabon	388
Senegal	283
Lesotho	224
Burundi	92
Libya	88
Rwanda	83
Tanzania	60
Kenya	41
Africa	17 285

Net exporters	GWh
South Africa	2659
Mozambique	2543
Zambia	1243
Ethiopia	1052
Côte d'Ivoire	857
Ghana	471
Egypt	390
Algeria	191
Uganda	103
Zimbabwe	99
Tunisia	39
Congo	4
Africa	9 652

TOTAL FINAL CONSUMPTION BY FUEL

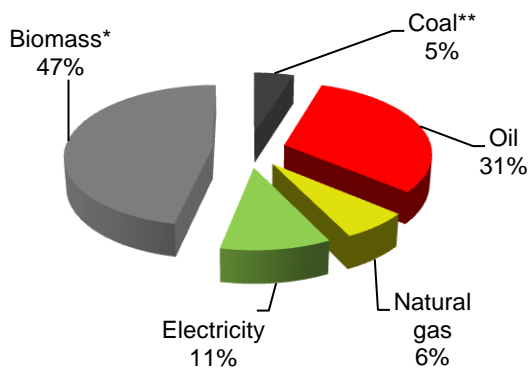
AFRICA

Total final consumption from 2 000 to 2 014
by fuel (ktoe)



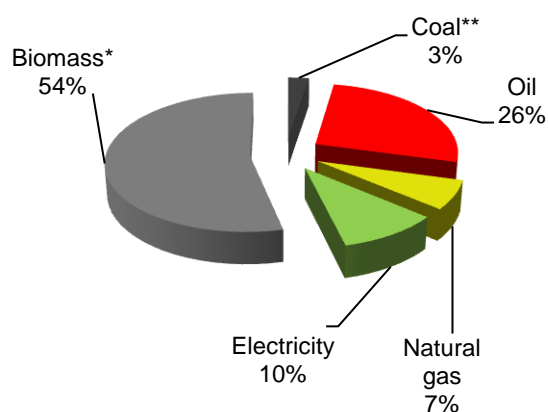
2 000 and 2 014 Fuel Shares of Total Final Consumption

2 000



139 660 ktoe

2 014



298 483 ktoe

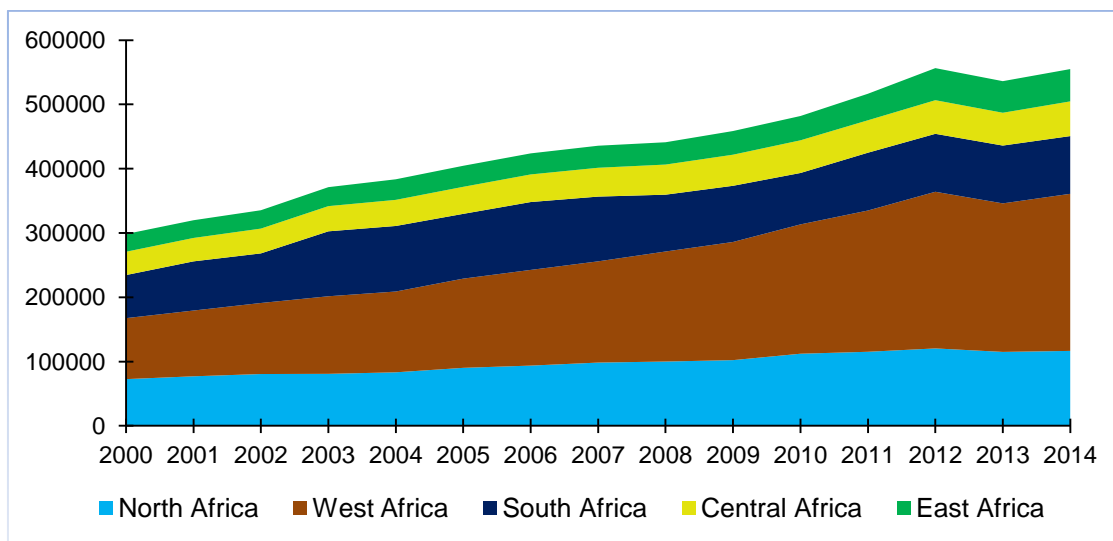
* includes firewood and charcoal

**Includes steam coal, coking coal, lignite and recovered coal

TOTAL FINAL CONSUMPTION BY REGION

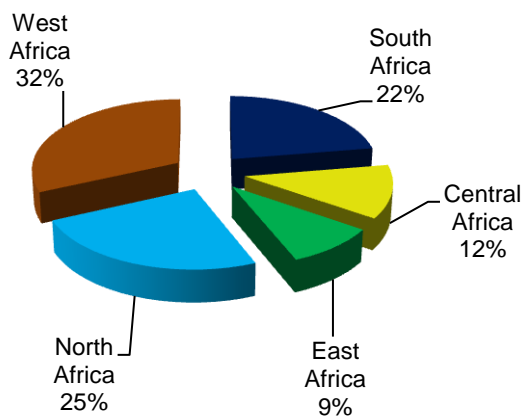
AFRICA

Total final consumption from 2 000 to 2 014
by region (ktoe)



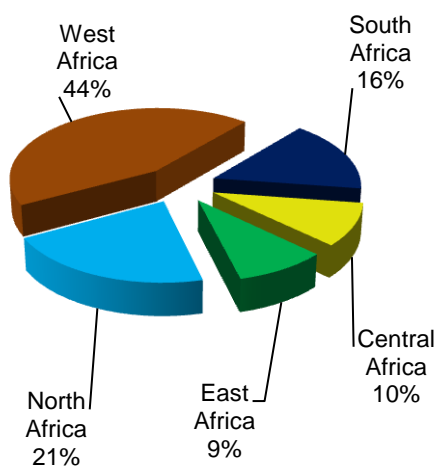
2 000 and 2 014 Regional Shares of Total Final Consumption

2 000



94 881 ktoe

2 014

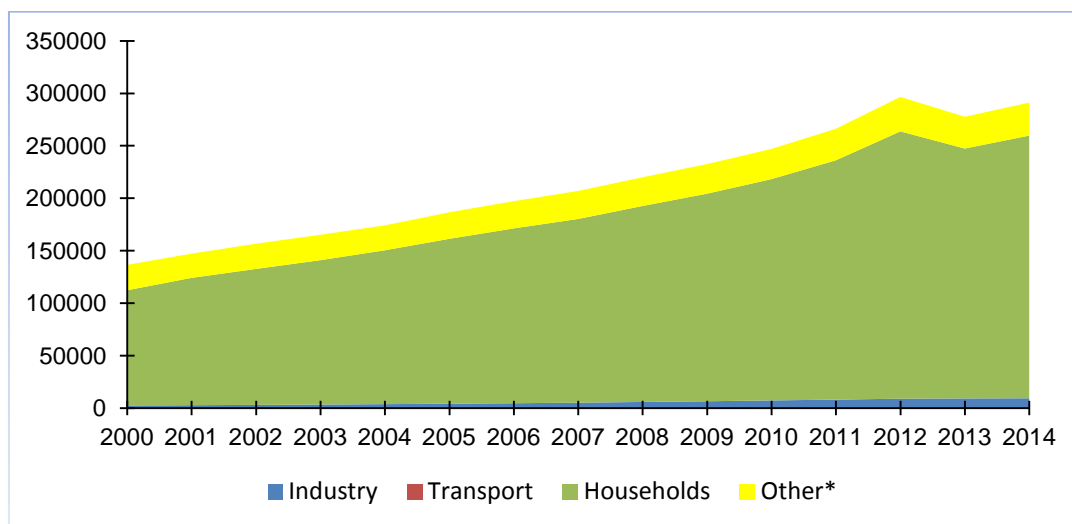


244 367 ktoe

TOTAL FINAL CONSUMPTION BY SECTOR

Firewood

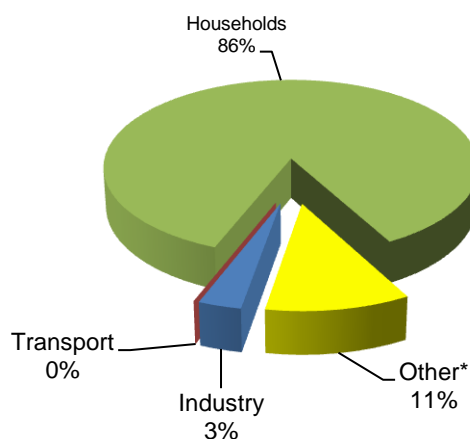
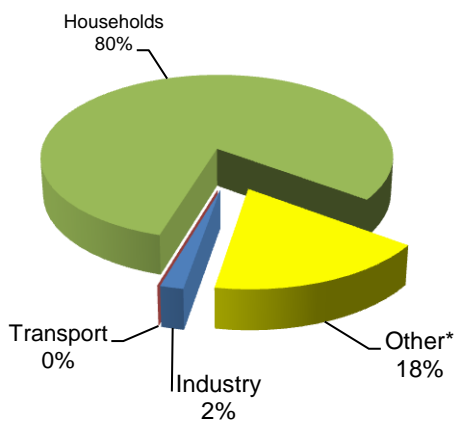
Total Final Consumption from 2 000 to 2 014
by sector (ktoe)



2 000 and 2 014 shares of Africa firewood consumption

2 000

2014



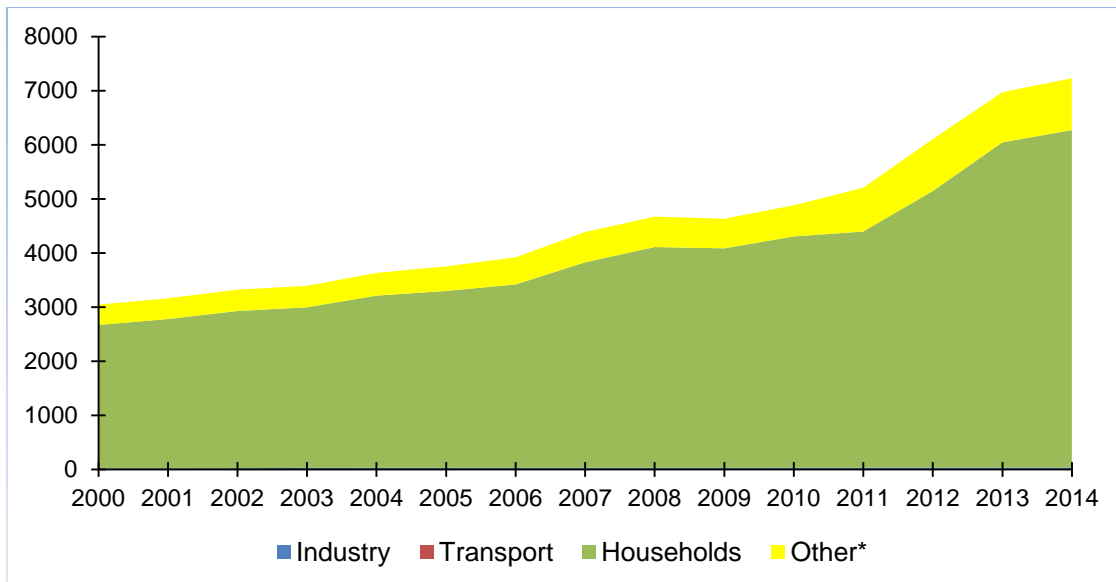
109 812 ktoe

250 367 ktoe

* Includes agriculture, commercial, public service, and non-specified other

Charcoal

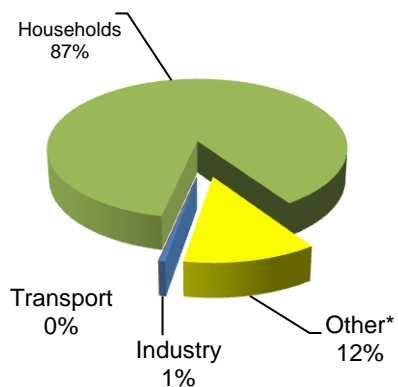
**Total Final Consumption from 2 000 to 2 014
by sector (ktoe)**



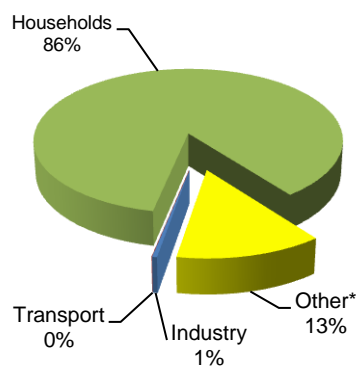
2 000 and 2 014 shares of Africa charcoal consumption

2 000

2 014



2 650 ktoe

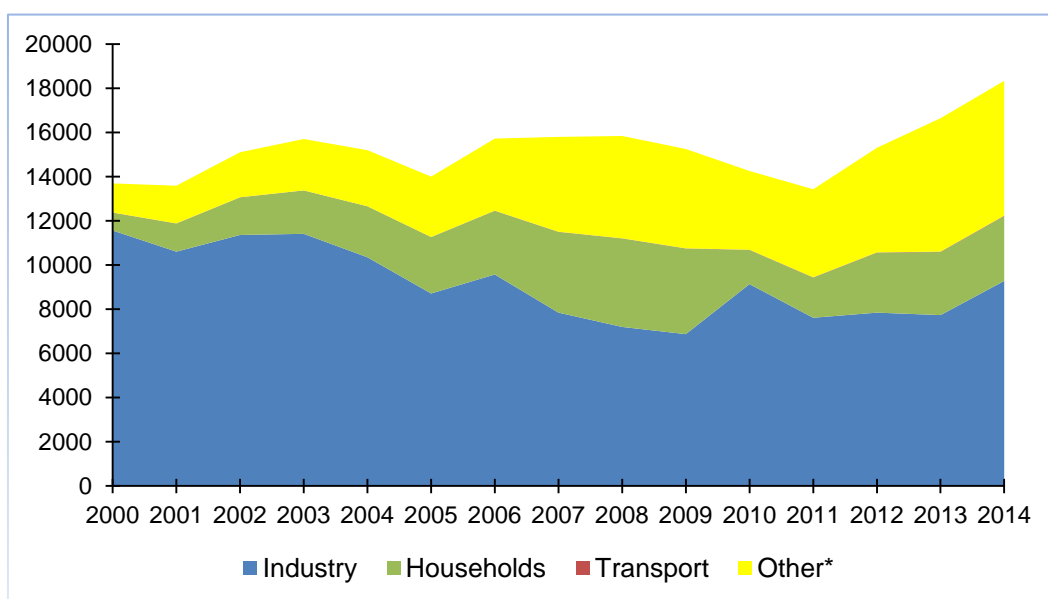


6 237 ktoe

* Includes agriculture, commercial, public service, and non-specified other

Coal**

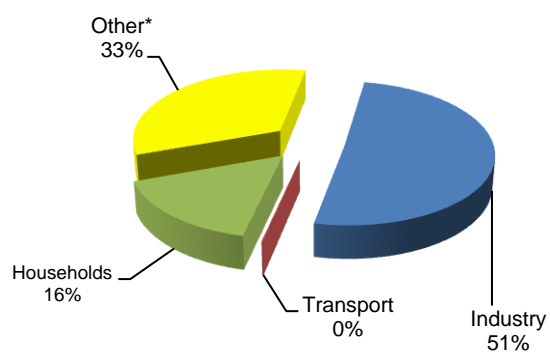
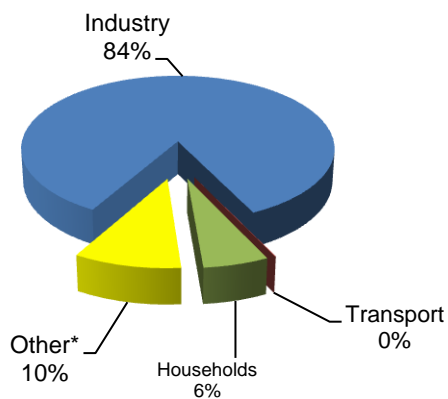
**Total Final Consumption from 2 000 to 2 014
by sector (ktoe)**



2 000 and 2 014 shares of Africa coal consumption**

2 000

2 014



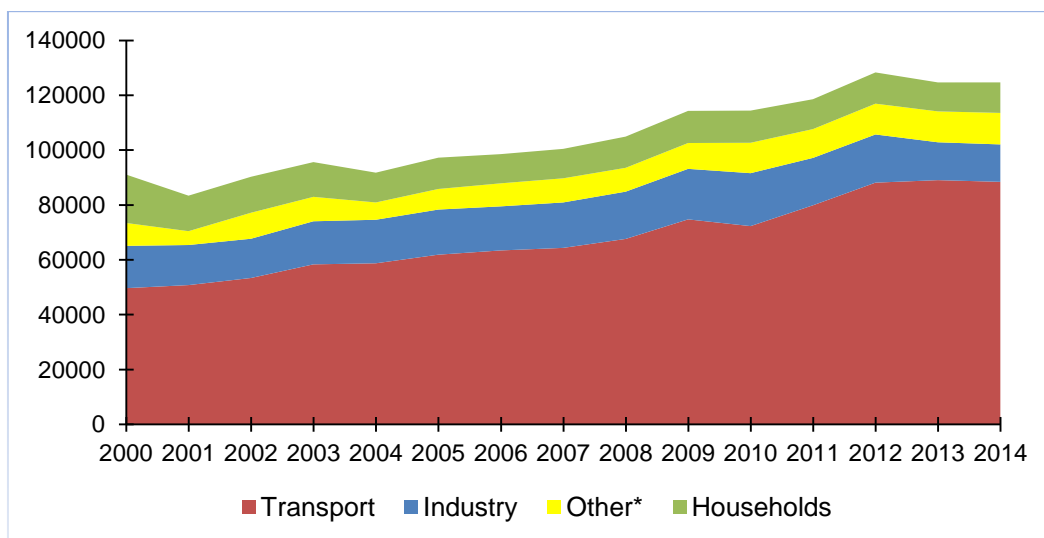
11 555 ktoe

9 274 ktoe

* Includes agriculture, commercial, public service, and non-specified other
 ** Includes steam coal, coking coal, lignite and recovered coal

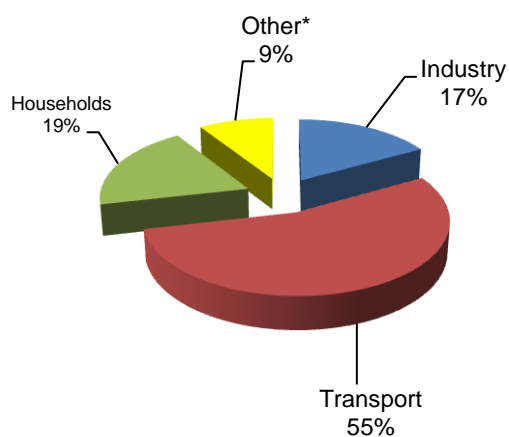
Oil

**Total Final Consumption from 2 000 to 2 014
by sector (ktoe)**



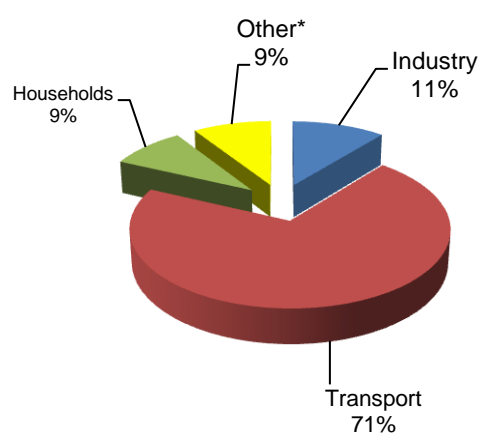
2 000 and 2 014 Shares of Africa Oil Consumption

2 000



49 699 ktoe

2 014

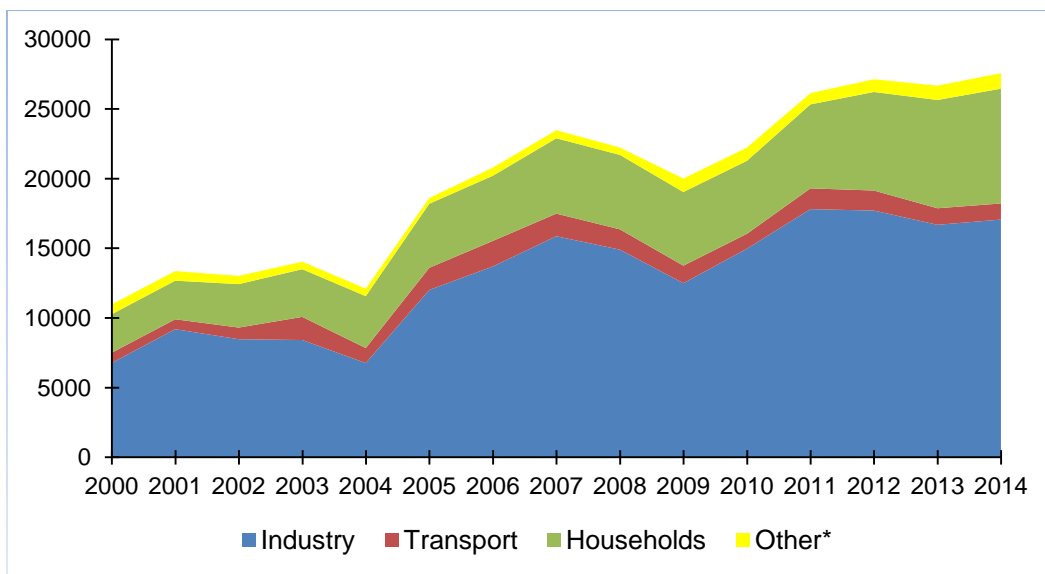


88 464 ktoe

** Includes agriculture, commercial, public service, and non-specified other*

Natural gas

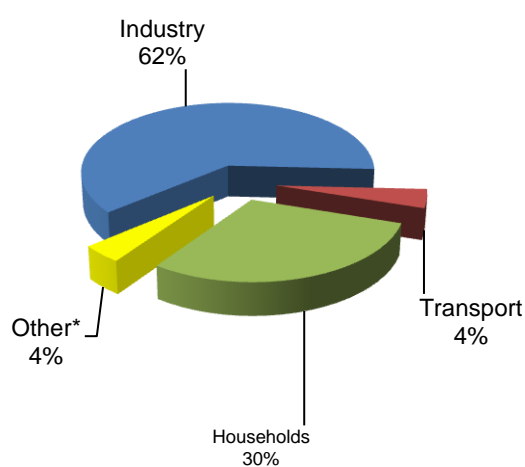
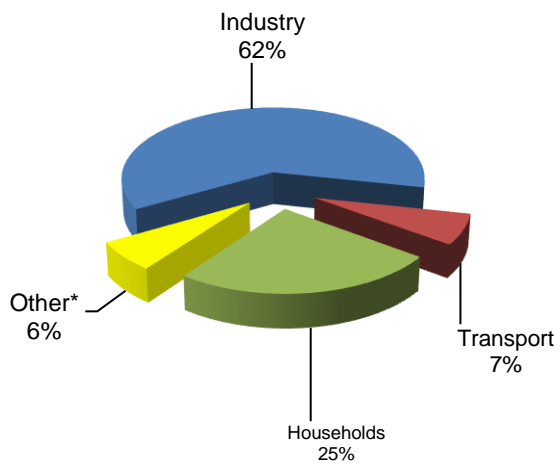
**Total Final Consumption from 2 000 to 2 014
by sector (ktoe)**



2 000 and 2 014 Shares of Africa Natural Gas Consumption

2 000

2 014



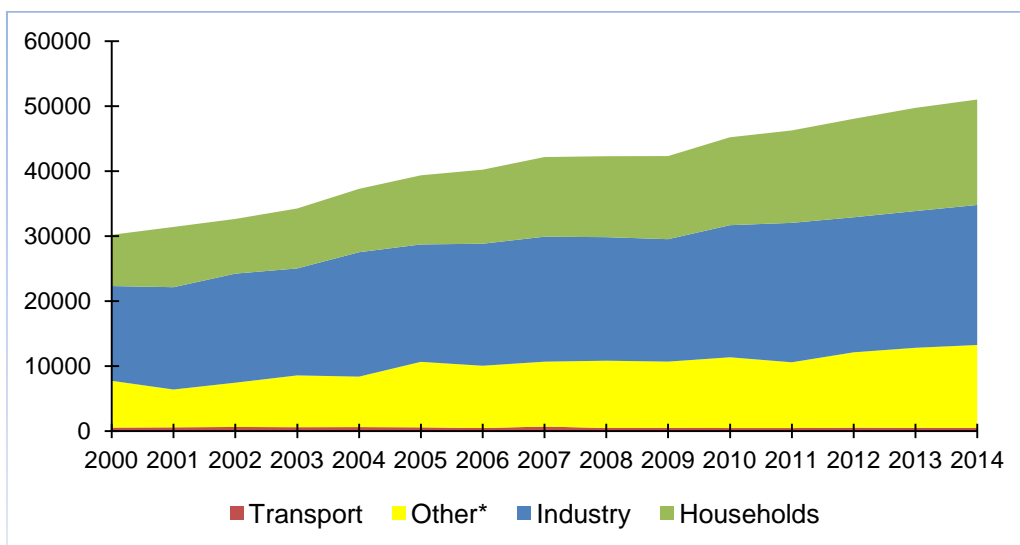
6 373 ktoe

17 065 ktoe

** Includes agriculture, commercial, public service, and non-specified other*

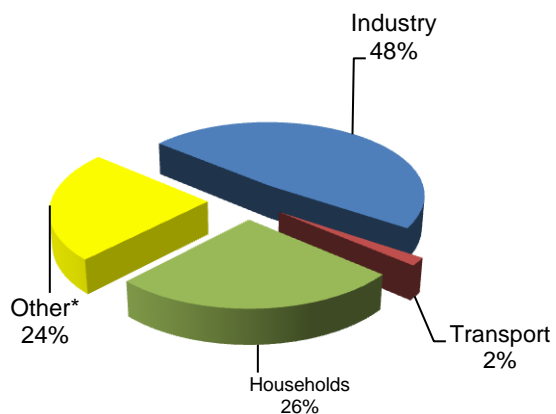
Electricity

**Total Final Consumption from 2 000 to 2 014
by sector (ktoe)**



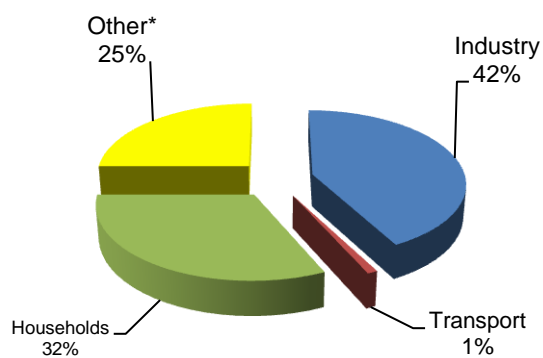
2 000 and 2 014 shares of Africa electricity consumption

2 000



14 585 ktoe

2 014



21 548 ktoe

** Includes agriculture, commercial, public service, and non-specified other*

SIMPLIFIED ENERGY BALANCE TABLE

AFRICA

2 000

Thousand Tonnes of Oil Equivalent (ktoe)		Crude Oil	Oil Products	Coal / peat	Natural Gas	Nuclear	Hydro	Wind & Geothermal & Solar PV	Biofuels and Waste	Electricity	Total
PRIMARY SUPPLY	Production	356 367	-	116 021	114822	3390	6607	394	274 756	-	872 357
	Imports	31 549	25 575	3926	6912	-	-	-	-	1 162	69123
	Exports	-270 377	-38 348	-38798	-78983	-	-	-	-	-1 124	-427 629
	Intl. Marine Bunkers	-	-	-	-	-	-	-	-	-	-
	Intl. Aviation Bunkers	-	-	-	-	-	-	-	-	-	-
	Stock Changes	-1457	689	931	-	-	-	-	-	-	163
	TPES	116 081	-12 084	82 081	42 752	3 390	6 607	394	274 756	38	514 015
	Transfers	-	-	-	-	-	-	-	-	-	-
	Statistical diff.	71	-696	-84	-748	-	-	-	-323	676	-1 103
TRANSFORMATION	Transformation	-114 906	102 291	-67 268	-21 983	-3 390	-6 607	-394	-161 083	37 840	-235 500
	Electricity Producers	-233	-11 772	-67 268	-21 983	-3 390	-6 607	-394	-1 391	37 840	-75 199
	Petroleum Refineries	-114 672	114 063	-	-	-	-	-	-	-	-609
	Charcoal Plants	-	-	-	-	-	-	-	-159 693	-	-159 693
	Gas-To-Liquids	-	-	-	-	-	-	-	-	-	-
	Coal-To-Liquids	-	-	-	-	-	-	-	-	-	-
	Blast Furnaces	-	-	-	-	-	-	-	-	-	-
Other Transf.	-	-	-	-	-	-	-	-	-	-	
	Energy Ind. Own Use	-434	-1 871	-28	-9 994	-	-	-	-	-3 726	-16 053
	Losses	-756	-	-	-143	-	-	-	-	-4 643	-5 542
FINAL CONSUMPTION	TFC	56	87 640	14 701	9 884	-	-	-	159 846	30 186	302 312
	Industry	56	16 091	11 555	6 095	-	-	-	12 616	14 585	60 998
	Transport	-	51 883	10	663	-	-	-	-	522	53 076
	Households	-	14 146	805	2 484	-	-	-	131 881	7 883	157 199
	Com. & Public	-	984	568	41	-	-	-	-	3 810	5 403
	Agriculture/Forestry	-	2 091	-	-	-	-	-	294	-	2 385
	Others (Non Specified)	-	2 440	750	600	-	-	-	15 054	3 386	22 231
	Non-Energy Use	-	5	1 014	-	-	-	-	-	-	1 019

SIMPLIFIED ENERGY BALANCE TABLE

AFRICA

2014

Thousand Tonnes of Oil Equivalent (ktoe)		Crude Oil	Oil Products	Coal / peat	Natural Gas	Nuclear	Hydro	Wind & Geothermal & Solar PV	Biofuels and Waste	Electricity	Total
PRIMARY SUPPLY	Production	369 942	-	140 818	156 113	3 594	10 913	4 384	330 115	-	1 015 878
	Imports	30 687	75 833	4 312	6 785	-	-	-	-	1 486	119 104
	Exports	-287 135	-22 099	-37 059	-72 363	-	-	-	-	-830	-419 485
	Intl. Marine Bunkers	-	-6 072	-	-	-	-	-	-	-	-6 072
	Intl. Aviation Bunkers	-	-6 881	-	-	-	-	-	-	-	-6 881
	Stock Changes	-3 067	-249	-1 879	-5	-	-	-	-	-	-5 199
	TPES	110 427	40 532	106 193	90 531	3 594	10 913	4 384	330 115	656	697 345
	Transfers	-	-	-	-	-	-	-	-	-	-
	Statistical diff.	-570	-585	-4 130	-18	-	-	-	13 449	-860	7 287
TRANSFORMATION	Transformation	-108 486	82 392	-75 298	-50 358	-3 594	-10 913	-4 384	-144 026	65 759	-248 907
	Electricity Producers	-596	-19 436	-73 052	-49 519	-3 594	-10 913	-4 384	0	65 759	-95 735
	Petroleum Refineries	-107 890	101 828	-	-	-	-	-	-	-	-6 062
	Charcoal Plants	-	-	-	-	-	-	-	-144 026	-	-144 026
	Gas-To-Liquids	-	-	-	-	-	-	-	-	-	-
	Coal-To-Liquids	-	-	-	-	-	-	-	-	-	-
	Blast Furnaces	-	-	-	-	-	-	-	-	-	-
	Other Transf.	-	-	-2 245	-838	-	-	-	-	-	-3 084
Energy Ind. Own Use	-495	-3 196	-10 786	-14 837	-	-	-	-	-4 590	-33 905	
Losses	-747	-510	-1	-498	-	-	-	-	-9 961	-11 718	
FINAL CONSUMPTION	TFC	129	118 634	15 979	24 819	-	-	-	260 208	51 004	470 773
	Industry	129	12 784	9 274	15 358	-	-	-	9 497	21 548	68 590
	Transport	-	82 870	21	1 042	-	-	-	-	484	84417
	Households	-	10 428	2 935	7 416	-	-	-	217 141	16 223	254 142
	Com. & Public	-	1 963	1 642	171	-	-	-	-	10 518	14 294
	Agriculture/Forestry	-	5 051	307	69	-	-	-	-	1 818	7 245
	Others (Non Specified)	-	3 726	658	763	-	-	-	33 570	413	39 130
	Non-Energy Use	-	1 812	1 143	-	-	-	-	-	-	2 955

CONVERSION FACTORS

(Source: IEA)

General Conversion Factors for Energy

To:	TJ	Gcal	Mtoe	MBtu	GWh
From:	Multiply by :				
TJ	1	238.8	2.388×10^{-5}	947.8	0.2778
Gcal	4.1868×10^{-3}	1	10^{-7}	3.968	1.163×10^{-3}
Mtoe	4.1868×10^4	10^7	1	3.968×10^7	11630
MBtu	1.0551×10^{-3}	0.252	2.52×10^{-8}	1	2.931×10^{-4}
GWh	3.6	860	8.6×10^{-5}	3412	1

Conversion Factors for Mass

To:	kg	t	lt	st	lb
From:	Multiply by :				
kilogramme (kg)	1	0.001	9.84×10^{-4}	1.102×10^{-3}	2.2046
tonne (t)	1 000	1	0.984	1.1023	2 204.6
long ton (lt)	1 060	1.016	1	1.120	2 240.0
short ton (st)	907.2	0.9072	0.893	1	$2\,000.0^4$
pound (lb)	0454	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}	1

Conversion Factors for Volume

To:	gal U.S.	gal U.K.	bbl	Ft ³	l	m ³
From:	Multiply by :					
U.S. gallon (gal)	1	0.8327	0.02381	0.1337	3.785	0.0038
U.K. gallon (gal)	1.201	1	0.02859	0.1605	4.5466	0.0045
barrel (bbl)	42.0	34.97	1	5.615	159.0	0.159
cubic foot (ft ³)	7.48	6.229	0.1781	1	28.3	0.0283
litre(l)	0.2642	0.220	0.0063	0.0353	1	0.001
cubic metre (m ³)	264.2	220.0	6.289	35.3147	1 000	1

GLOSSARY

(Source: IEA)

Coal/peat

Coal/peat includes all coal primary (including hard coal and lignite) and derived fuels (including patent fuel, coke oven coke, gas coke, BKB, gas works gas, coke oven gas, blast furnace gas and other recovered gases). Peat is also included in this category.

Hard coal

Hard coal comprises anthracite coking coal and other bituminous coal

Steam coal

Steam coal comprises anthracite, other bituminous coal and sub-bituminous coal.

Crude oil

Crude oil comprises crude oil, natural gas liquids, refinery feedstock and additives as well as other hydrocarbons.

Oil products

Oil products comprise refinery gas liquids, refinery feedstock and additives as well as other hydrocarbons.

Oil products

Oil products comprises refinery gas, ethane, LPG, aviation gasoline, motor gasoline, jet fuels, kerosene, gas/diesel oil, fuel oil, naphtha, white spirit, lubricants, bitumen, paraffin waxes, petroleum coke and other oil products.

Natural gas

Natural gas includes both “associated” and “non-associated” gas.

Nuclear

Nuclear shows the primary heat equivalent of the electricity produced by a nuclear power plant with an average thermal efficiency of 33%

Hydro

Hydro shows the energy content of the electricity produced in hydro power plants hydro output excludes output from pumped storage plants.

Biofuels and waste

Biofuels and waste comprises solid biofuels liquid biofuels, biogases, industrial waste and municipal waste. Biofuels are defined as any plant matter used directly as fuel or converted into fuels (e.g., charcoal) or electricity and/or heat. Included here are wood, vegetal waste (including wood waste and crops used for energy production), ethanol, animal materials/ wastes and sulphite lyes. Municipal waste comprises wastes produced by residential, commercial and public services that are collected by local authorities for disposal in a central location for the production of heat and/or power.

Other

Other includes geothermal, solar, wind, tide/wave/ocean energy, electricity and heat. Unless the actual efficiency of the geothermal process is known, the quantity of geothermal energy entering electricity generation is inferred from the electricity production at geothermal plants assuming an average thermal efficiency of 10% For solar, wind and tide/Wave/ocean energy, the quantities entering electricity generation are equal to the electrical energy generated. Direct use of geothermal and solar heat is also included here. Electricity is accounted for at the same heat value as electricity in final consumption (i.e., 1GWh = 0.000086 Mtoe). Heat includes heat that is produced for sale and is accounted for in the transformation sector.

Production

Production is the production of primary energy, i.e., hard coal, lignite, peat, crude oil, NGLs, natural gas, biofuels and waste, nuclear, hydro, geothermal, solar and the heat from heat pumps that is extracted from the ambient environment production is calculated after removal of impurities (e.g., sulphur from natural gas).

Imports and exports

Imports and exports comprise amounts having crossed the national territorial boundaries of the country, whether or not customs clearance has taken place.

a) Oil and natural gas

Quantities of crude oil and oil products imported or exported under processing agreements (i.e., refining on account) are included. Quantities of oil in transit are excluded. Crude oil, NGL and natural gas are reported as coming from the country of origin; refinery feedstock and oil products are reported as coming from the country of last consignment. Re-exports of oil imported for processing within bonded areas are shown as exports of product from the processing country to the final destination.

b) Coal/peat

Imports and exports comprise the amount of fuels obtained from or supplied to other countries, whether or not there is an economic or customs union between the relevant countries. Coal in transit is not included.

c) Electricity

Amounts are considered as imported or exported when they have crossed the national territorial boundaries of the country.

International marine bunkers

International marine bunkers cover those quantities delivered to ships of all flags that are engaged in international navigation. The international navigation may take place at sea, on inland lakes and waterways, and in coastal waters. Consumption by ships engaged in domestic navigation is excluded. The domestic/International split is determined on the basis of port of departure and port of arrival, and not by the flag or nationality of the ship. Consumption by fishing vessels and by military forces is also excluded.

International aviation bunkers

International aviation bunkers covers deliveries of aviation fuels to aircraft for international aviation. Fuels used by airlines for their road vehicles are excluded. The domestic/International split should be determined ON THE BASIS OF DEPARTURE AND LANDING LOCATIONS AND NOT BY THE NATIONALITY OF THE AIRLINE; For many countries this incorrectly excludes fuel used by domestically owned carriers for their international departures.

Stock changes

Stock changes reflects the difference between opening stock levels on the first day of the year and closing levels on the last day of the year of stocks on national territory held by producers, importers, energy transformation industries and large consumers. A stock build is shown as a negative number, and a stock draw as a positive number.

Total primary energy supply (TPES)

Total primary energy supply (TPES) is made up of production + imports – exports – international marine bunkers – international aviation bunkers ± stock changes. For the world total, international marine bunkers and international aviation bunkers are not subtracted from TPES.

Transfers

Transfers includes both inter-product transfers, products transferred and recycled products.

Statistical differences

Statistical differences include the sum of the unexplained statistical differences for individual fuels, as they appear in the basic energy statistics. It also includes the statistical differences that arise because of the variety of conversion factors in the coal/peat and oil columns.

Electricity plants

Electricity plants refer to plants which are designed to produce electricity only. If one or more units of the plant is a CHP unit (and the inputs and outputs cannot be distinguished on a unit basis) then the whole plant is designated as a CHP plant. Both main activity producers and auto producer plants are included here.

Combined heat and power plants

Combined heat and power plants refers to plants which are designed to produce both heat and electricity. Sometimes referred to as cogeneration power stations. If possible, fuel inputs and electricity/heat outputs are on a unit basis rather than on a plant basis. However, if data are not available on a unit basis, the convention for defining a CHP plant noted above is adopted. Both main activity producers and auto producer plants are included here.

Blast furnaces

Blast furnaces contain inputs to and outputs of fuels from blast furnaces.

Gas works

Gas works is treated similarly to electricity generation, with the quantity produced appearing as a positive figure in the coal/peat column or the natural gas column after blending with natural gas, inputs as negative entries in the coal/peat and oil products columns, and conversion losses appearing in the total column.

Coke ovens

Coke ovens contain losses in transformation of coal from primary to secondary fuel and from secondary to tertiary fuels (hard coal to coke and patent fuel, lignite to BKB, etc.).

Oil refineries

Oil refineries show the use of primary energy for the manufacture of finished oil products and the corresponding output. Thus, the total reflects transformation losses. In certain cases the data in the total column are positive numbers. This can be due to either problem in the primary refinery balance or to the fact that the IEA uses regional net calorific values for oil products.

Petrochemical plants

Petrochemical plants covers backflows returned from the petrochemical industry. Note that backflows from oil products that are used for non-energy purposes (i.e white spirit and lubricants) are not included here, but in non-energy use.

Liquefaction plants

Liquefaction plants include diverse liquefaction processes, such as coal liquefaction plants and gas-to-liquid plants.

Other transformation

Other transformation covers non-specified transformation not shown elsewhere, such as the transformation of primary solid biofuels into charcoal.

Energy industry own use

Energy industry own use contains the primary and secondary energy consumed by transformation industries for heating, pumping, traction and lighting purposes (ISIC 05, 06, 19 and 35, Group 091 and Classes 0892 and 0721).

Losses

Losses include losses in energy distribution, transmission and transport.

Total final consumption (TFC)

Total final consumption (TFC) is the sum of consumption by the different end-use sectors; Backflows from the petrochemical industry are not included in final consumption.

Industry

Industry consumption is specified in the following subsectors (energy used for transport by industry is not included here but reported under transport):

- Iron and steel industry [ISIC Group 241 and Class 2431];
- Chemical and petrochemical industry [ISIC Divisions 20 and 21] excluding petrochemical feedstock;
- Non-ferrous metals basic industries [ISIC Group 242 and class 2432];
- Non-metallic minerals such as glass, ceramic, cement, etc. [ISIC Division 23];
- Transport equipment [ISIC Divisions 29 and 30];
- Machinery comprises fabricated metal product, machinery and equipment other than transport equipment [ISIC Divisions 25 to 28]

Industry (ctd.)

- Mining (excluding fuels) and quarrying [ISIC Divisions 07 and 08 and Group 099];
- Food and tobacco [ISIC Divisions 10 and 12];
- Paper, pulp and printing [ISIC Divisions 17 and 18];
- Wood and wood products (other than pulp and paper) [ISIC Division 16];
- Construction [ISIC Divisions 41 and 43];
- Textile and leather [ISIC Divisions 13 to 15];
- Non-specified (any manufacturing industry not included above) [ISIC Divisions 22, 31 and 32].

Transport

Transport includes all fuels used for transport [ISIC Divisions 39 to 51]. It includes transport in industry and covers domestic aviation, road, rail, pipeline transport, domestic navigation and non-specified transport. Fuel used for ocean, coastal and inland fishing (included under fishing and military consumption (included in other non-specified) are excluded from transport.

Please note that international marine and international aviation bunkers are also included here for world total.

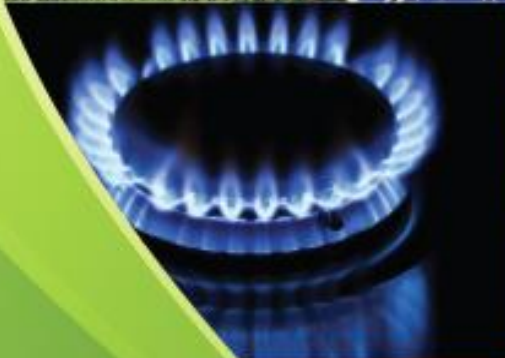
Other

Other covers residential, commercial and public services [ISIC Divisions 33, 36-39, 45-47, 52, 53, 56, 58-66, 68-75, 77-82, 84 (excluding Class 8422) 85-88, 90-99], agriculture/forestry [ISIC Divisions 01 and 02], fishing [ISIC Division 03] and non-specified consumption.

Non-energy use

Non-energy use covers those fuels that are used as raw materials in the different sectors and are not consumed as a fuel or transformed into another fuel. Non-energy use also includes petrochemical feedstock. Non-energy use is shown separately in final consumption under the heading non-energy use.

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