

AFREC



2014



AFRICAN UNION



ENERGY

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

KEY AFRICA ENERGY STATISTICS

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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 2014 publication of “Key Africa Energy Statistics” following the 2012 and 2013 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 2014” which provides timely and clearly-presented data of the Africa’s energy supply and use in most cases from 2000 to 2012.

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 2014 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 2014 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
TJ	terajoule
toe	tonne of oil equivalent=107 kcal
TWh	terawatt hour

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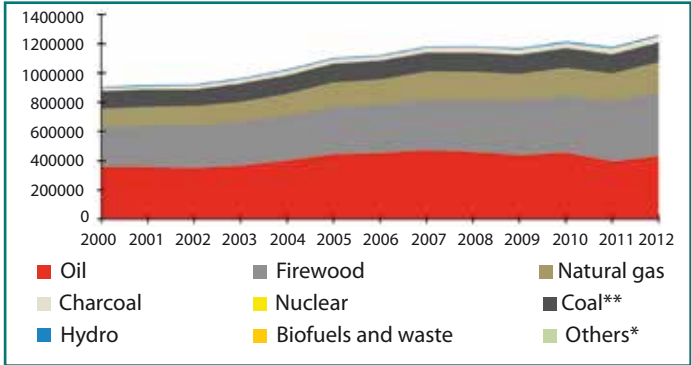
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GLOSSARY

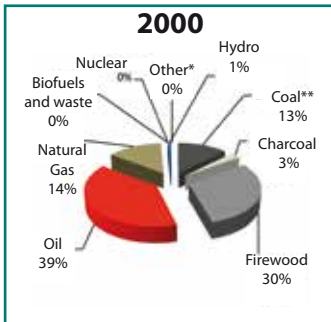


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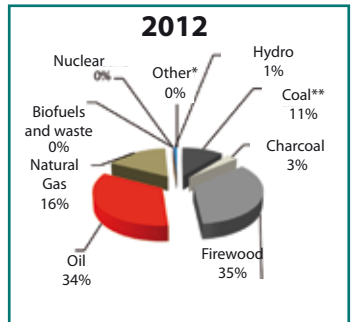
Africa Total Primary Energy Supply from 2000 to 2012 by fuel (ktoe)



2000 and 2012 Fuel Shares of TPES



356 367 ktoe



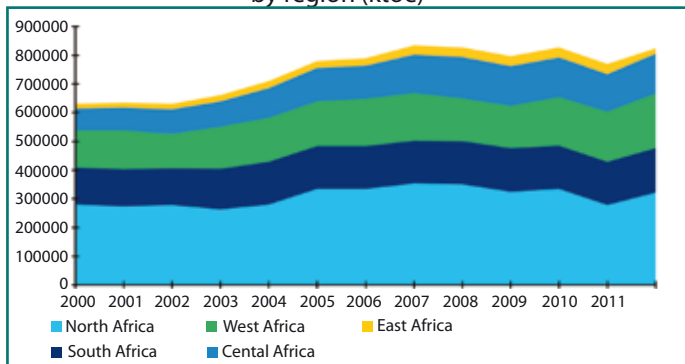
429 150 ktoe

* Other includes geothermal, solar, wind, wave, etc

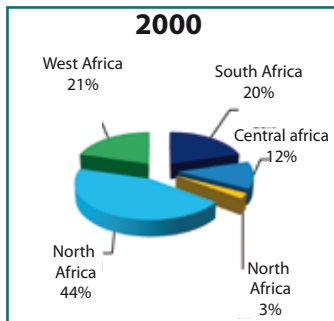
** Includes steam coal, coking coal, lignite and recovered coal

AFRICA

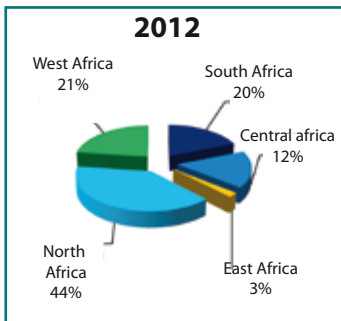
Africa Total Primary Energy Supply from 2000 to 2012
by region (ktoe)



2000 and 2012 Regional Shares of TPES



280 537 ktoe

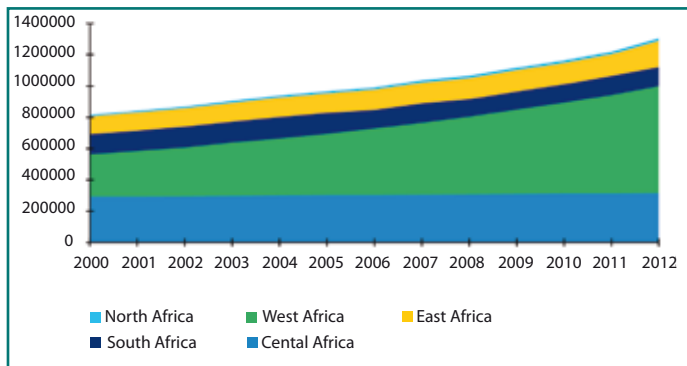


322 462 ktoe

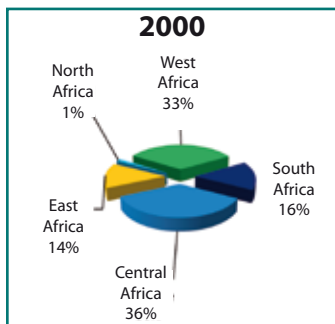


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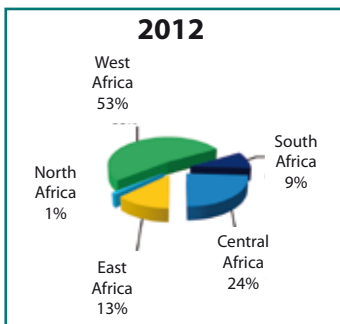
Firewood Production from 2000 to 2012
by region (kt)



2000 and 2012 Regional Shares of Firewood Production



294 089 kt



683 931 kt

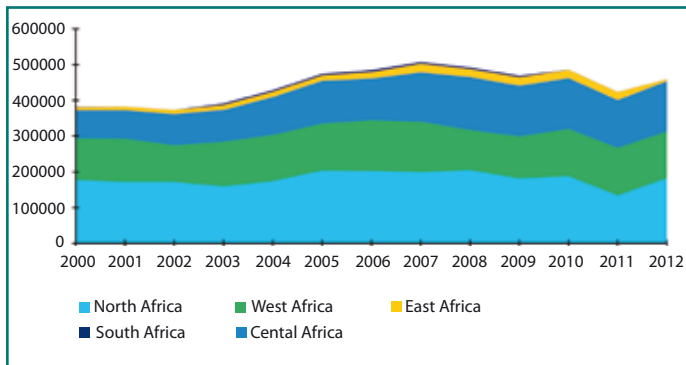


Producers	kt
Nigeria	492 539
Ethiopia	76 282
Niger	68 674
Congo DR	55 747
Uganda	43 279
Ivory coast	21 299
Mozambique	20 088
Zimbabwe	12 785
Ghana	11 387
Zambia	9 078
Mali	8 294
Burundi	8 246
Togo	7 376
Benin	5 847
Burkina Faso	5 762
Senegal	5 097
Rwanda	4 128
Congo	2 777
Tunisia	2 703
Central Africa	2 658
Egypt	1 531
Guinea Bissau	802
South Sudan	576
Mauritius	20
AFRICA	866 975

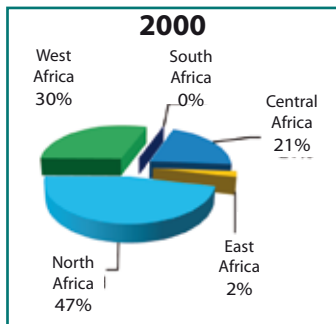


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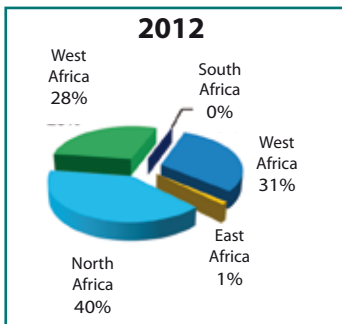
Crude Oil* Production from 2000 to 2012
by region (kt)



2000 and 2012 Regional Shares of Crude Oil* Production



177 908 kt



182 861 kt

* Include crude oil, NGL, additives and other hydrocarbons

Producers	kt
Nigeria	123768
Angola	87802
Algeria	72672
Libya	72505
Egypt	34481
Congo	15566
Equatorial Guinea	14945
Gabon	12277
Chad	5748
Sudan	5536
Ghana	4134
Tunisia	3193
Cameroon	3150
Ivory coast	1459
Congo DR	1213
Niger	636
Mauritania	241
South Africa	196
AFRICA	459 521

	kt
Nigeria	119 204
Angola	83 511
Libya	65 541
Algeria	36 691
Equatorial Guinea	14 745
Congo	13 377
Gabon	11 334
Chad	5 658
Tunisia	3 702
Ghana	2 924
Congo DR	1 213
Sudan	1 090
Cameroon	533
Mauritania	221
Mozambique	35
AFRICA	359 779

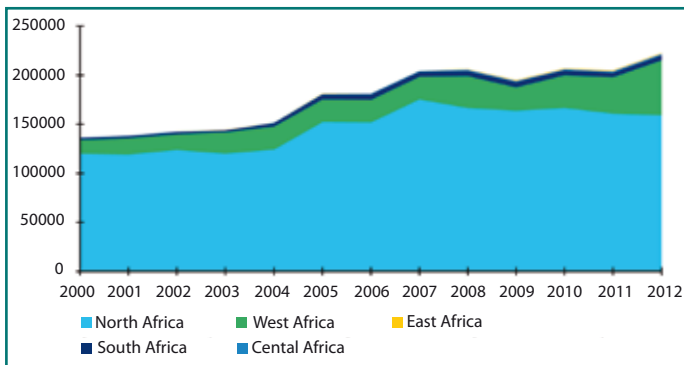
	kt
South Africa	21 393
Morocco	7 404
Egypt	6 611
Ivory coast	2 014
Kenya	997
Senegal	756
Zambia	717
AFRICA	39 893

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

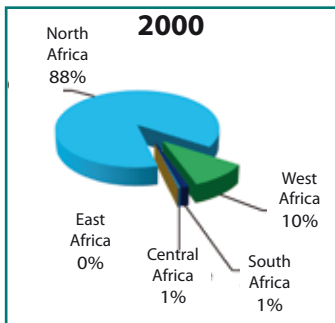


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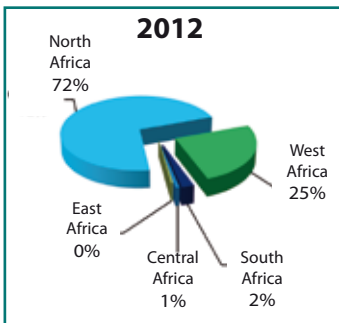
Natural gas production from 2000 to 2012 by region (Million cubic meters)



2000 and 2012 Regional Shares of Natural Gas Production



120 017 Mcm



159 130 Mcm

Producers	Mcm
Algeria	86056
Egypt	58616
Nigeria	53621
Libya	11819
Mozambique	3748
Tunisia	2564
Ivory coast	1694
South Africa	1315
Tanzania	841
Angola	728
Ghana	417
Cameroon	282
Equatorial Guinea	243
Gabon	166
Congo	146
Morocco	75
Senegal	39
Congo DR	9
AFRICA	222 379

Net importers	Mcm
South Africa	3 658
Tunisia	2 946
Morocco	1 188
Ghana	417
AFRICA	8 209

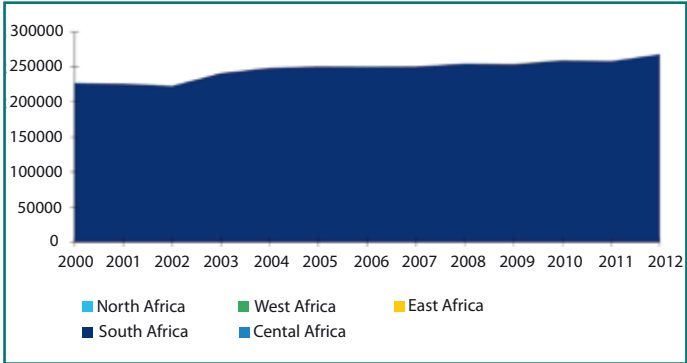
Net exporters	Mcm
Algeria	52 866
Nigeria	24 986
Egypt	6 277
Mozambique	6 016
Libya	3 658
AFRICA	93 803

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

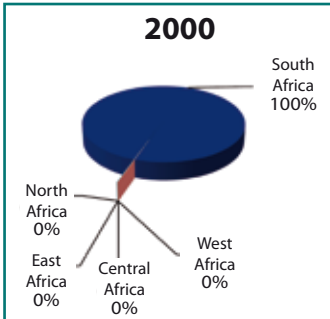


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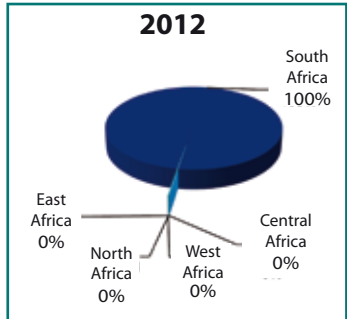
Coal* Production from 2000 to 2012
by region (kt)



2000 and 2012 Regional Shares of Coal* Production



226 635 kt



265 797 kt

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

Producers	Kt
South Africa	255 851
Mozambique	4 530
Zimbabwe	3 482
Botswana	1 471
Tanzania	400
Swaziland	318
Niger	251
Zambia	90
Malawi	55
Nigeria	48
Ethiopia	21
AFRICA	266 517

Net importers	Kt
Morocco	4 577
Egypt	905
Île Maurice	729
Algeria	421
Senegal	349
Kenya	343
Ethiopia	315
Namibia	28
Madagascar	15
Botswana	3
AFRICA	7 685

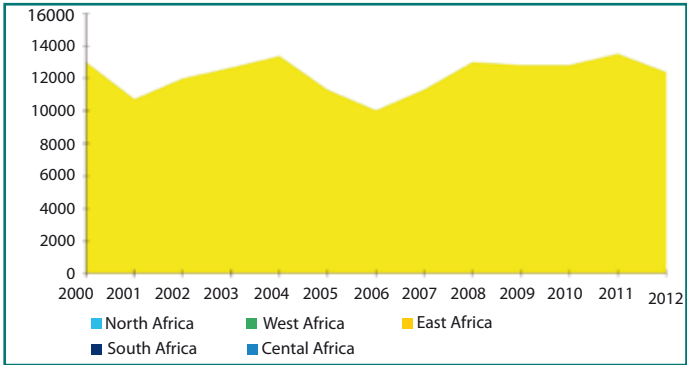
Net exporters	kt
South Africa	72 124
Mozambique	3 321
Swaziland	363
Zimbabwe	133
AFRICA	75 941

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

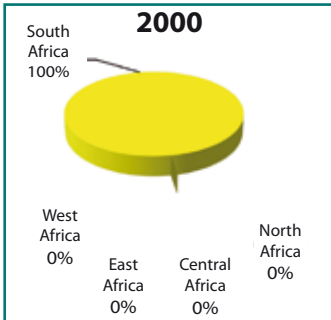


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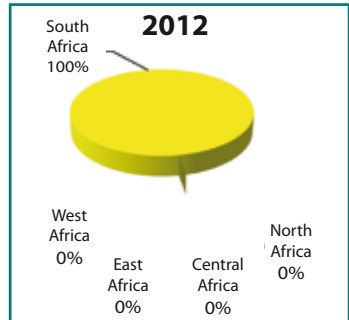
Nuclear Production from 2000 to 2012
by region (GWh)



2000 and 2012 Regional Shares of Natural Gas Production



13 010 GWh



14 202 GWh

SUPPLY

Producers of Nuclear Electricity from 2012



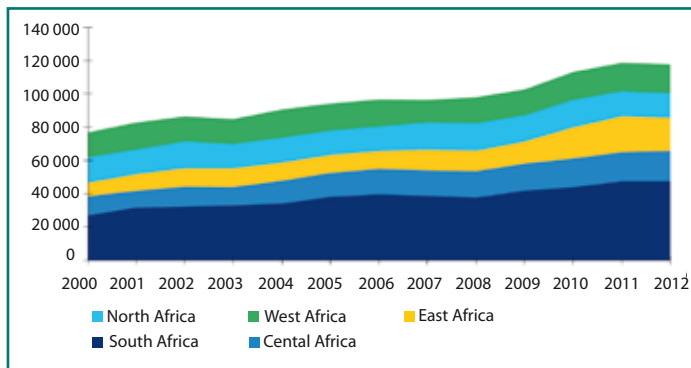
2014

Producers	GWh
South Africa	14 202
AFRICA	14 202

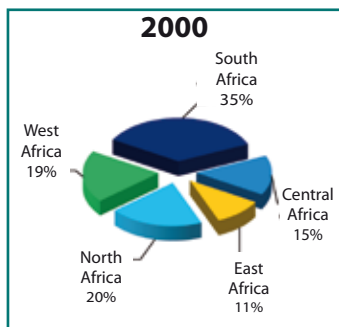


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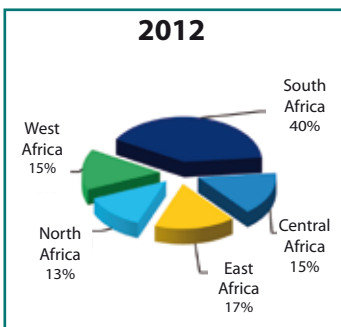
Hydro production from 2000 to 2012
by region (GWh)



2000 and 2012 Regional Shares of Hydro Production



27 046 GWh



47 339 GWh

SUPPLY

PRODUCERS OF HYDRO ELECTRICITY FROM 2012



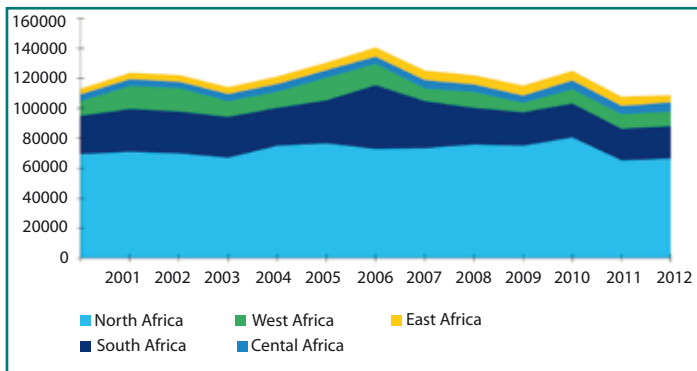
Producers	GWh
Mozambique	16 567
Egypt	12 935
Zambia	11 134
Ghana	8 070
Sudan	7 884
South Africa	7 858
Congo DR	7 235
Ethiopia	6 485
Zimbabwe	5 844
Nigeria	5 307
Cameroon	4 470
Angola	4 287
Kenya	2 402
Madagascar	2 164
Morocco	1 816
Ivory coast	1 789
Malawi	1 763
Uganda	1 514
Tanzania	1 472
Namibia	1 413
Gabon	1 030
Congo	827

Producers	GWh
Mali	766
Guinea	542
Senegal	290
Lesotho	280
Sierra Leone	268
Swaziland	212
Tunisia	196
Burundi	179
Rwanda	150
Central Africa R.	149
Algeria	126
Mauritania	115
Mauritius	98
Burkina Faso	97
Togo	89
South Sudan	18
Guinea Equatorial	14
Somalia	11
São Tomé & Príncipe	11
Comoros	5
Benin	1
AFRICA	117 881

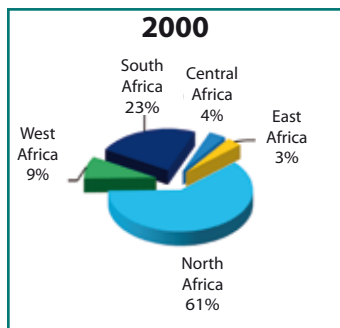


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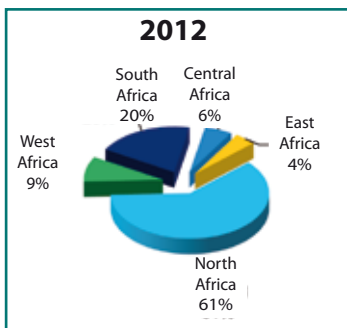
Refinery Production from 2000 to 2012
by region (kt)



2000 and 2012 Regional Shares of Refinery Production



69 345 kt



66 506 kt

TRANSFORMATION

PRODUCERS, NET EXPORTERS AND NET IMPORTERS OF OIL PRODUCTS IN 2012



NET IMPORTERS	kt
Nigeria	7 600
Egypt	7 304
Morocco	6 151
South Africa	4 269
Libya	3 384
Uganda	3 108
Tunisia	3 099
Kenya	3 041
Angola	2 713
Ethiopia	2 563
Tanzania	2 329
Ghana	1 944
Benin	1 742
Mauritius	1 131
Senegal	1 027
Namibia	1 012
Botswana	952
Congo DR	916
Mali	891
Mauritania	891
Sudan	859
Mozambique	821
Madagascar	716
Zimbabwe	690
Burkina Faso	680

NET IMPORTERS	kt
Togo	561
Djibouti	500
Guinea	500
South Sudan	465
Malawi	405
Seychelles	330
Swaziland	304
Sierra Leone	300
Equatorial Guinea	250
Rwanda	240
Zambia	206
Liberia	201
Cape Verde	189
Gambia	180
Eritrea	176
Lesotho	170
Somalie	140
Saharawi Republic	90
Burundi	85
Centrafrique	71
São Tomé & Príncipe	50
Guinée Bissau	44
Comoros	38
Tchad	30
AFRICA	65 356

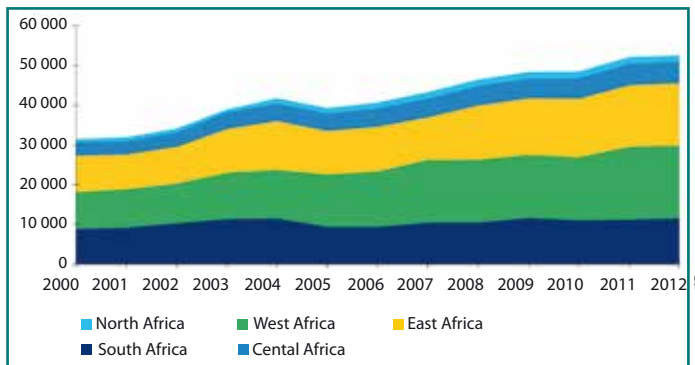
**PRODUCERS, NET EXPORTERS AND NET IMPORTERS
OF OIL PRODUCTS IN 2012**

Producers	kt
Egypt	26367
Algeria	23007
South Africa	20842
Libya	8042
Morocco	7399
Nigeria	4728
Sudan	3848
Ivory coast	3213
Cameroon	1958
Angola	1928
Tunisia	1691
Kenya	968
Gabon	900
Congo	833
Senegal	754
Zambia	678
Chad	517
Niger	514
Ghana	514
AFRICA	108 702

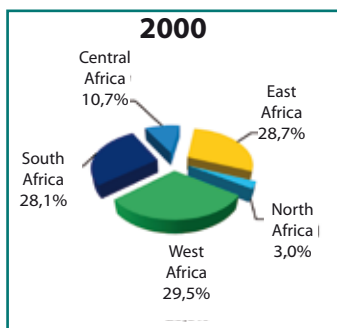
Net exporters	kt
Algeria	13 460
Ivory coast	1 799
Gabon	408
Cameroon	211
Congo	154
Niger	55
AFRICA	16 087

AFRICA

Charcoal production from 2000 to 2012
by region (kt)



2000 and 2012 Regional Shares of Charcoal Production



9 320 kt



18 333 kt



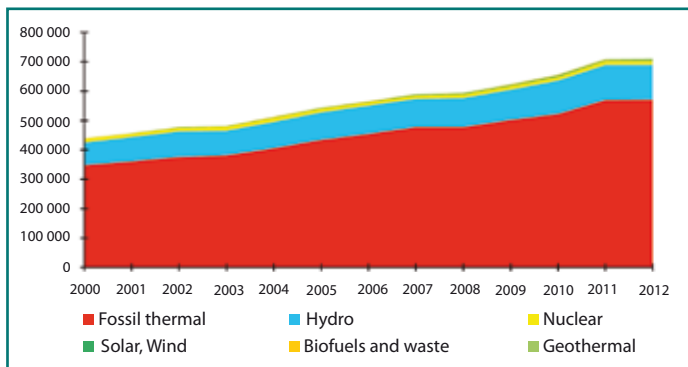
Producers	kt
Ethiopia	5 800
Nigeria	4 005
Kenya	3 311
Liberia	3 039
Sudan	1 961
Malawi	1 886
Uganda	1 799
South Africa	1 747
Guinea	1 663
Tanzania	1 602
Ghana	1 417
Ivory coast	1 319
Angola	1 260
Lesotho	1 178
Zambia	1 111
Chad	840
Burkina Faso	785
Congo DR	780
Madagascar	740
Somalia	711
Mozambique	695
Cape Verde	643

Producers	kt
Togo	635
Senegal	576
Mali	461
Niger	430
Sierra Leone	382
Benin	259
Namibia	245
Cameroon	224
Tunisia	199
Congo	192
Rwanda	169
Eritrea	145
Guinea Bissau	89
Algeria	22
Morocco	17
Sud Soudan	11
Zimbabwe	9
Central Africa R.	6
Mauritius	1
AFRICA	42 363

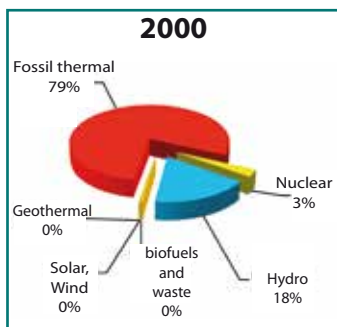


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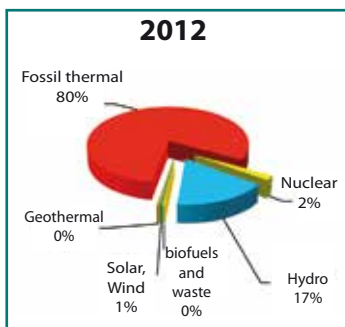
Electricity Generation from 2000 to 2012
by fuel (GWh)



2000 and 2012 Fuel Shares of Electricity Generation



347 982 GWh



570 678 GWh

ELECTRICITY PRODUCTION FROM
FOSSIL FUEL FROM 2012

Nuclear	GWh
South Africa	14 202
AFRICA	14 202

Solar, Wind, Geothermal, Biofuels and waste	GWh
Kenya	2863
Egypt	1621
Morocco	728
Mauritius	681
Ethiopia	519
South Africa	412
Sudan	209
Swaziland	173
Ivory coast	173
Uganda	164
Mozambique	156
Cameroon	122
Tunisia	113
Tanzania	107
Algeria	83
Senegal	56
Mali	52
Zimbabwe	40
Madagascar	21
Gabon	13
Malawi	9

Solar, Wind, Geothermal, Biofuels and waste	GWh
Libya	9
Botswana	8
Cape Verde	7
Guinea	4
Eritrea	4
Angola	3
Congo DR	3
Rwanda	3
Djibouti	2
Gambia	2
Togo	2
Zambia	2
Central Africa R.	1
Seychelles	1
Benin	1
AFRICA	8 370

TRANSFORMATION

ELECTRICITY PRODUCTION FROM FOSSIL FUEL FROM 2012



Hydro	GWh
Mozambique	16 567
Egypt	12 935
Zambia	11 134
Ghana	8 070
Sudan	7 884
South Africa	7 858
Congo DR	7 235
Ethiopia	6 485
Zimbabwe	5 844
Nigeria	5 307
Cameroon	4 470
Angola	4 287
Kenya	2 402
Madagascar	2 164
Morocco	1 816
Ivory coast	1 789
Malawi	1 763
Uganda	1 514
Tanzania	1 472
Namibia	1 413
Gabon	1 030
Congo	827
Mali	766
Guinea	542
Senegal	290

Hydro	GWh
Lesotho	280
Sierra Leone	268
Swaziland	212
Tunisia	196
Burundi	179
Rwanda	150
Central Africa R.	149
Algeria	126
Mauritania	115
Mauritius	98
Burkina Faso	97
Togo	89
South Sudan	18
Equatorial Guinea	14
Somalia	11
São Tomé & Príncipe	11
Comoros	5
Benin	1
AFRICA	117 881

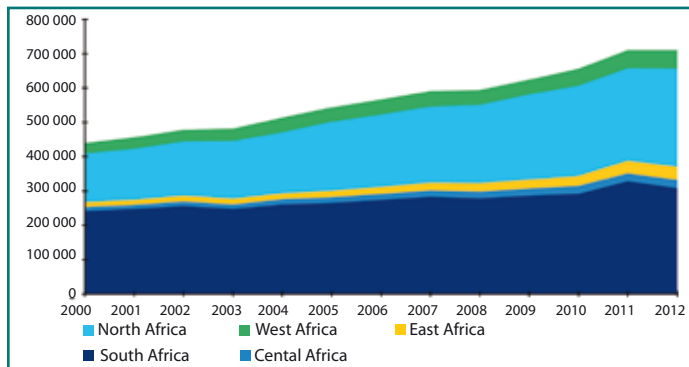
Fossil fuel	GWh
South Africa	235766
Egypt	142468
Algeria	53423
Libya	31174
Morocco	23812
Nigeria	20084
Tunisia	17746
Côte d'Ivoire	7016
Tanzania	4293
Ghana	3953
Sudan	3460
Kenya	3274
Zimbabwe	2917
Senegal	2586
Botswana	2250
Mauritius	1757
Angola	1710
Cameroon	1574
Madagascar	1512
Gabon	974
Mali	864
Zambia	781
Guinea	598
Ethiopia	564

Fossil fuel	GWh
Uganda	547
Congo	522
Seychelles	404
Niger	399
Equatorial Guinea	396
Eritrea	383
Burkina Faso	382
Djibouti	345
Somalia	331
Swaziland	315
Cape Verde	290
Mauritania	268
Gambia	236
Chad	203
Rwanda	196
South Sudan	175
Benin	160
Togo	111
Saharawi Republic	90
Guinea Bissau	75
Comoros	57
Sierra Leone	45
Namibia	41
Liberia	40
Congo DR	36
Central Africa R.	27
Mozambique	21
São Tomé & Príncipe	18
Malawi	7
Burundi	4
AFRICA	570 678

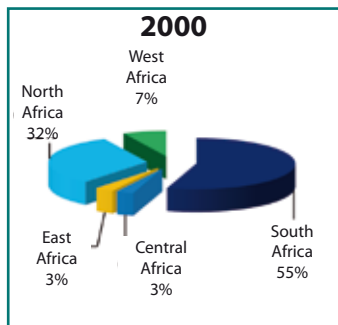
ELECTRICITY GENERATION BY REGION

AFRICA

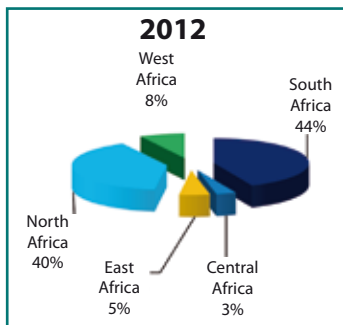
Electricity Generation from 2000 to 2012
by region (GWh)



2000 and 2012 Regional Shares of Electricity Generation



241 026 GWh



308 870 GWh

PRODUCERS, NET EXPORTERS AND NET IMPORTS OF ELECTRICITY FROM 2012

Producers	GWh
South Africa	258 237
Egypt	157 024
Algeria	53 632
Libya	31 183
Morocco	26 356
Nigeria	25 391
Tunisia	18 056
Mozambique	16 744
Ghana	12 023
Zambia	11 916
Sudan	11 554
Ivory coast	8 977
Zimbabwe	8 800
Kenya	8 540
Ethiopia	7 567
Congo DR	7 274
Cameroon	6 167
Angola	6 000
Tanzania	5 871
Madagascar	3 696
Senegal	2 932
Mauritius	2 537
Botswana	2 257
Uganda	2 224
Gabon	2 017
Malawi	1 779
Mali	1 682

Producers	GWh
Namibia	1 454
Congo	1 349
Guinea	1 145
Swaziland	700
Burkina Faso	479
Equatorial Guinea	410
Seychelles	405
Niger	399
Eritrea	387
Mauritania	383
Rwanda	348
Djibouti	348
Somalia	342
Sierra Leone	313
Cape Verde	297
Lesotho	280
Gambia	238
Chad	203
Togo	202
South Sudan	193
Burundi	184
Central Africa	176
Benin	162
Saharawi Republic	90
Guinea Bissau	75
Comoros	62
Liberia	40
São Tomé & Príncipe	28
AFRICA	711 130

TRANSFORMATION

PRODUCERS, NET EXPORTERS AND NET IMPORTS OF ELECTRICITY FROM 2012



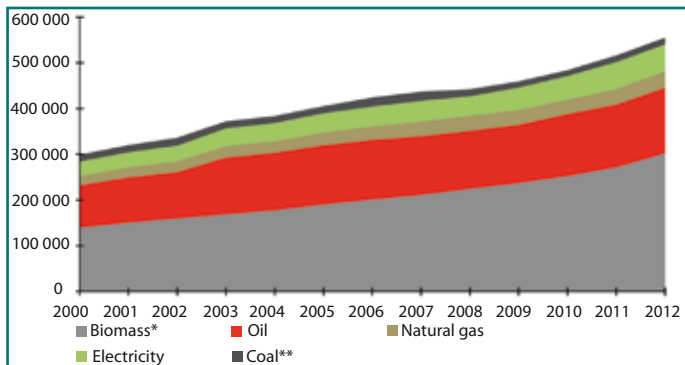
Net importers	GWh
Morocco	4 841
Botswana	3 371
Namibia	2 428
Benin	983
Togo	959
Niger	632
Zimbabwe	548
Swaziland	515
Burkina Faso	515
Senegal	290
Lesotho	215
Burundi	90
Rwanda	88
Tanzania	61
Congo	55
Libya	47
Mali	13
Kenya	11
AFRICA	15 663

Net exporters	GWh
South Africa	5 029
Mozambique	1 487
Zambia	593
Ivory coast	591
Ghana	539
Ethiopia	400
Egypt	397
Uganda	99
Algeria	49
Tunisia	42
AFRICA	9 226

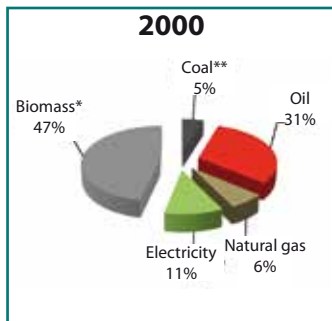
TOTAL FINAL CONSUMPTION BY FUEL

AFRICA

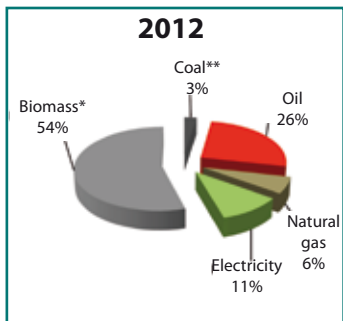
Total final consumption from 2000 to 2012
by fuel (ktoe)



2000 and 2012 Fuel Shares of Total Final Consumption



139 660 ktoe



302 229 ktoe

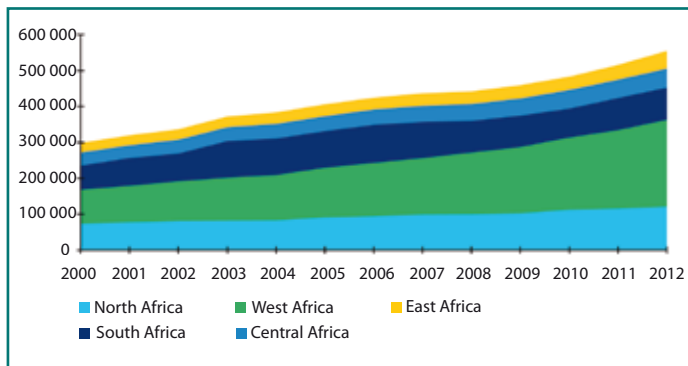
* includes firewood and charcoal

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

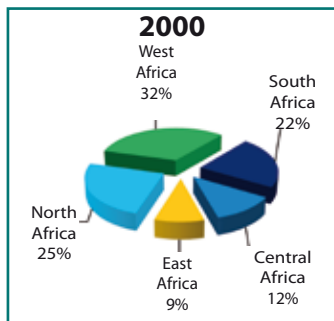
TOTAL FINAL CONSUMPTION BY REGION

AFRICA

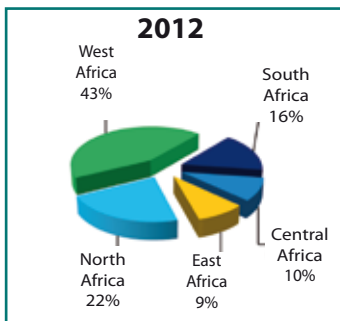
Total final consumption from 2000 to 2012
by region (ktoe)



2000 and 2012 Regional Shares of Total Final Consumption



94 881 ktoe

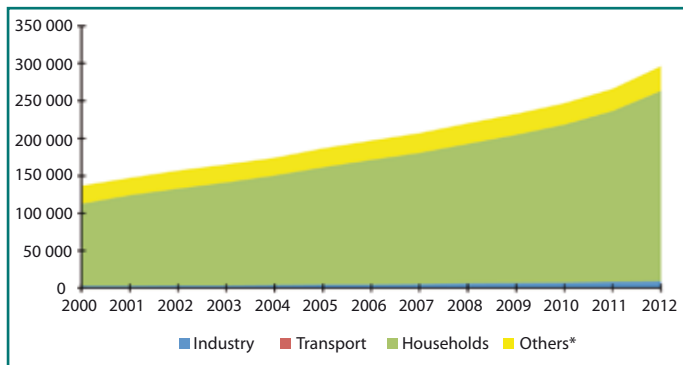


241 766 ktoe

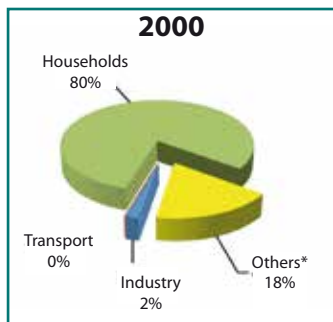
TOTAL FINAL CONSUMPTION BY SECTOR

Firewood

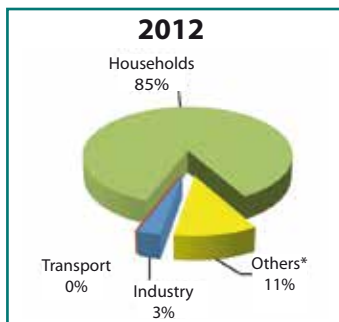
Total Final Consumption from 2000 to 2012
by sector (ktoe)



2000 and 2012 shares of Africa firewood consumption



109 812 ktoe



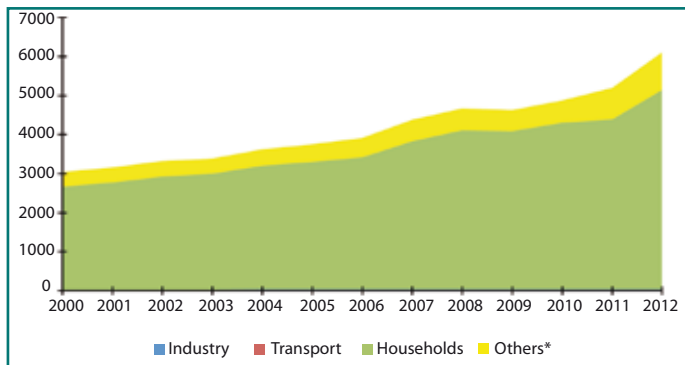
254 311 ktoe

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

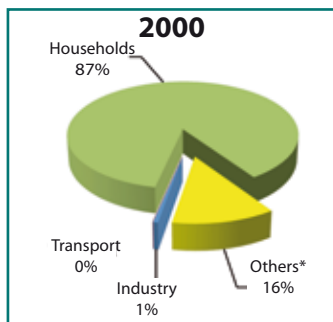
TOTAL FINAL CONSUMPTION BY SECTOR

Charcoal

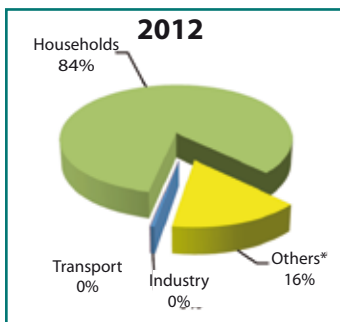
Total Final Consumption from 2000 to 2012
by sector (ktoe)



2000 and 2012 shares of Africa charcoal consumption



2 650 ktoe



5 112 ktoe

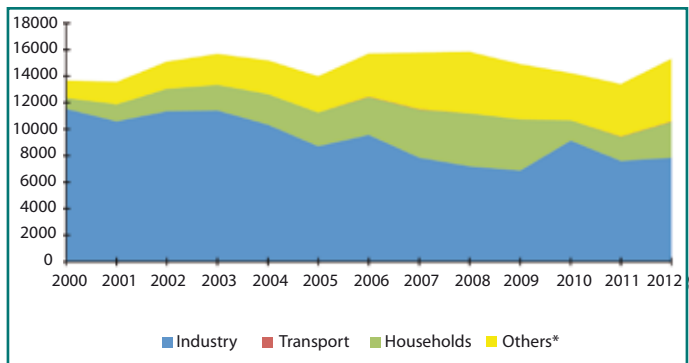
* Includes agriculture, commercial, public service, and non-specified other



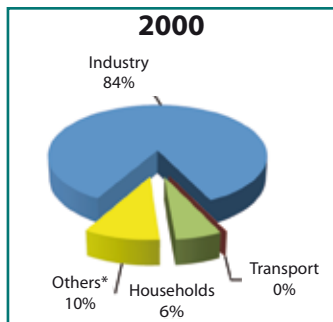
TOTAL FINAL CONSUMPTION BY SECTOR

Coal**

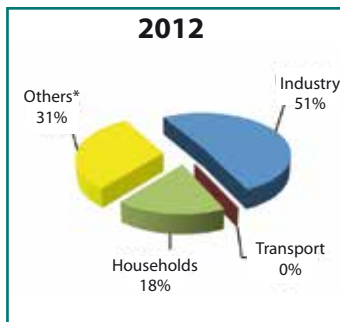
Total Final Consumption from 2000 to 2012
by sector (ktoe)



2000 and 2012 shares of Africa coal** consumption



11 555 ktoe



7 855 ktoe

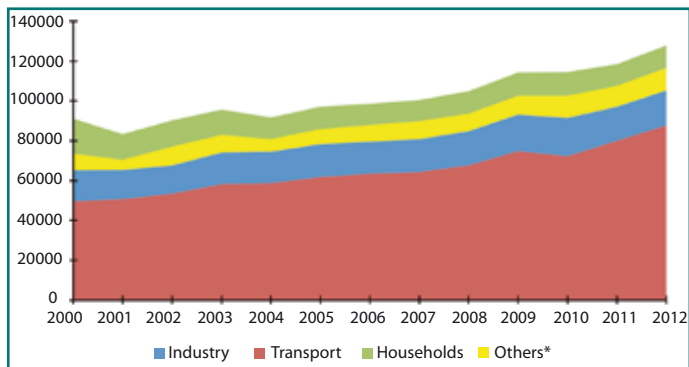
* Includes agriculture, commercial, public service, and non-specified other

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

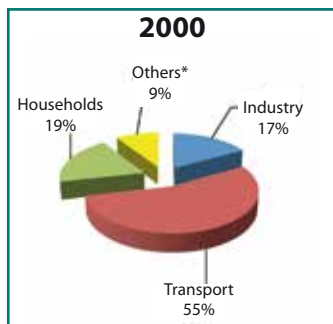
TOTAL FINAL CONSUMPTION BY SECTOR

Oil

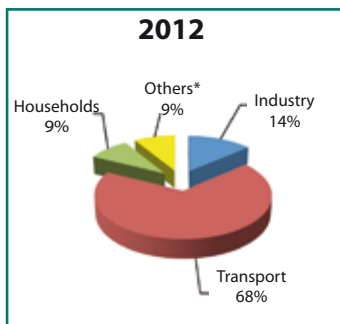
Total Final Consumption from 2000 to 2012
by sector (ktoe)



2000 and 2012 Shares of Africa Oil Consumption



49 699 ktoe



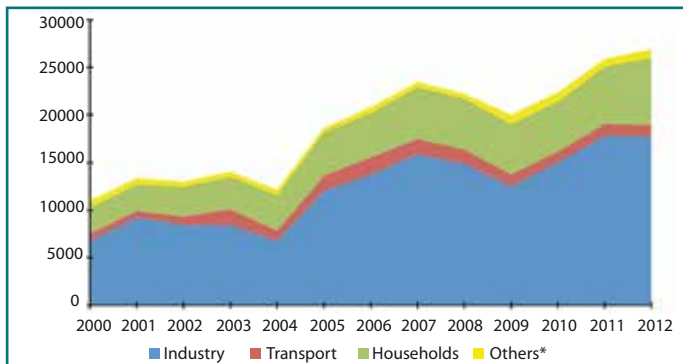
77 822 ktoe

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

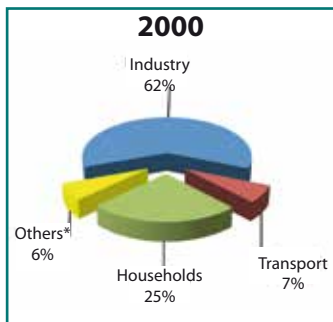
TOTAL FINAL CONSUMPTION BY SECTOR

Natural gas

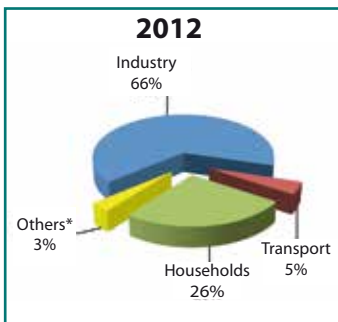
Total Final Consumption from 2000 to 2012
by sector (ktoe)



2000 and 2012 Shares of Africa Natural Gas Consumption



6 373 ktoe



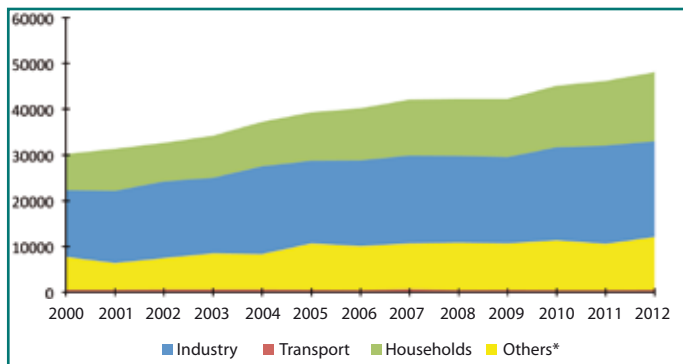
17 711 ktoe

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

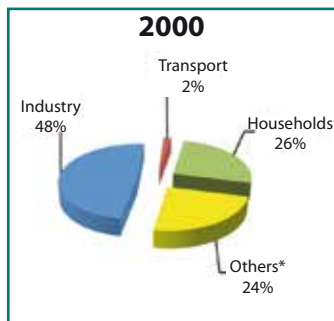
TOTAL FINAL CONSUMPTION BY SECTOR

Electricity

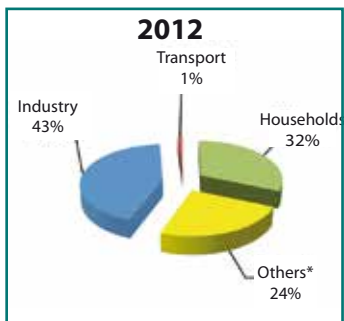
Total Final Consumption from 2000 to 2012
by sector (ktoe)



2000 and 2012 shares of Africa electricity consumption



14 585 ktoe



20 868 ktoe

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

SIMPLIFIED ENERGY BALANCE TABLE AFRICA 2000

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	0	116 021	114 822	3 390	6 607	394	274 756	0	872 357
	Imports	31 549	27 002	3 926	6912	0	0	0	0	1 162	70 550
	Exports	-270 377	-40 488	-38 798	-78 983	0	0	0	0	-1 124	-429 669
	Intl. Marine Bunkers	0	0	0	0	0	0	0	0	0	0
	Intl. Aviation Bunkers	0	0	0	0	0	0	0	0	0	0
	Stock Changes	-1 457	728	931	0	0	0	0	0	0	202
	TPES	116 081	-12 758	82 081	42 752	3 390	6 607	394	274 756	38	513 340
	Transfers	0	0	0	0	0	0	0	0	0	0
	.Statistical diff	71	-193	-84	-748	0	0	0	29 639	676	29 360
TRANSFORMATION	Transformation	-114 906	115 366	-67 268	-21 983	-3 390	-6 607	-394	-161 083	37 840	-222 425
	Electricity Producers	-233	-12 429	-67 268	-21 983	-3 390	-6 607	-394	-1 391	37 840	-75 856
	Petroleum Refineries	-114 672	127 795	0	0	0	0	0	0	0	13 123
	Charcoal Plants	0	0	0	0	0	0	0	-159 693	0	-159 693
	Gas-To-Liquids	0	0	0	0	0	0	0	0	0	0
	Coal-To-Liquids	0	0	0	0	0	0	0	0	0	0
	Blast Furnaces	0	0	0	0	0	0	0	0	0	0
	.Other Transf	0	0	0	0	0	0	0	0	0	0
	Energy Ind. Own Use	-434	-1 976	-28	-9 994	0	0	0	0	-3 726	-16 158
	Losses	-756	0	0	-143	0	0	0	0	-4 643	-5 542
FINAL CONSUMPTION	TFC	56	100 439	14 701	9 884	0	0	0	143 311	30 186	298 576
	Industry	56	16 989	11 555	6 095	0	0	0	2 584	14 585	51 864
	Transport	0	54 778	10	663	0	0	0	0	522	55 972
	Households	0	19 454	805	2 484	0	0	0	115 641	7 883	146 267
	Com. & Public	0	1 039	568	41	0	0	0	0	3 810	5 458
	Agriculture/Forestry	0	3 337	0	0	0	0	0	0	0	3 337
	(Others (Non Specified	0	4 835	750	600	0	0	0	25 086	3 386	34 658
	Non-Energy Use	0	6	1014	0	0	0	0	0	0	1 019

SIMPLIFIED ENERGY BALANCE TABLE AFRICA 2012

Thousand Tonnes of Oil Equivalent (ktoe)		Crude Oil	Oil Products	Coal / Peat	Natural Gas	Nucléaire	Hydro	Wind & Geothermal & Solar PV	Biofuels and Waste	Electricity	Total
PRIMARY SUPPLY	Production	429 150	0	136 161	187 244	3 700	10 136	2 575	436 435	0	1 205 402
	Imports	37 256	73 836	3 926	6 912	0	0	0	0	1 347	123 277
	Exports	-335 993	-18 175	-38 798	-78 983	0	0	0	0	-793	-472 741
	Intl. Marine Bunkers	0	0	0	0	0	0	0	0	0	0
	Intl. Aviation Bunkers	0	0	0	0	0	0	0	0	0	0
	Stock Changes	2 195	2 757	-1 260	-364	0	0	0	0	0	3 328
	TPES	132 607	58 418	100 030	114 809	3 700	10 136	2 575	436 435	553	859 265
Transfers	0	0	0	0	0	0	0	0	0	0	
Statistical diff.	-2 482	-536	-1 055	-578	0	0	0	76 952	-813	7 1487	
TRANSFORMATION	Transformation	-129 402	101 631	-82 985	-67 308	-3 700	-10 136	-2 575	-178 824	61 146	-312 153
	Electricity Producers	-844	-21 174	-82 985	-67 308	-3 700	-10 136	-2 575	0	61 146	-127 576
	Petroleum Refineries	-128 558	122 805	0	0	0	0	0	0	0	-5 753
	Charcoal Plants	0	0	0	0	0	0	0	-178 824	0	-178 824
	Gas-To-Liquids	0	0	0	0	0	0	0	0	0	0
	Coal-To-Liquids	0	0	0	0	0	0	0	0	0	0
	Blast Furnaces	0	0	0	0	0	0	0	0	0	0
	Other Transf.	0	0	0	0	0	0	0	0	0	0
Energy Ind. Own Use	-1 596	-9 343	-21	-21 275	0	0	0	0	-5 169	-37 404	
Losses	-473	-28	-1	-555	0	0	0	0	-7 603	-8 660	
FINAL CONSUMPTION	TFC	249	150 141	15 969	25 094	0	0	0	334 563	48 114	574 130
	Industry	249	19 333	7 855	15 940	0	0	0	9 072	20 868	73 317
	Transport	0	96 797	13	1 107	0	0	0	0	513	98 430
	Households	0	12 542	2 715	6 366	0	0	0	265 558	15 132	302 313
	Com. & Public	0	1 752	1 556	173	0	0	0	0	9 190	12 670
	Agriculture/Forestry	0	6 564	655	36	0	0	0	0	1 617	8 872
	Others (Non Specified)	0	10 594	3 175	823	0	0	0	59 933	794	75 318
	Non-Energy Use	0	2 559	0	650	0	0	0	0	0	3 209

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}
Mtep	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

(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.



(Source: IEA)

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 plan 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.



(Source: IEA)

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.



(Source: IEA)

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].



(Source: IEA)

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.