Department of Economic and Social Affairs

ENERGY STATISTICS POCKETBOOK 2019

United Nations

ST/ESA/STAT/SER.E/2

Department of Economic and Social Affairs
Statistics Division

Statistics Papers Series E No.2

2019
Energy Statistics Pocketbook

United Nations
New York, 2019

Department of Economic and Social Affairs

The Department of Economic and Social Affairs of the United Nations is a vital interface between global policies in the economic, social and environmental spheres and national action. The Department works in three main interlinked areas: (i) it compiles, generates and analyses a wide range of economic, social and environmental data and information on which United Nations Member States draw to review common problems and to take stock of policy options; (ii) it facilitates the negotiations of Member States in many intergovernmental bodies on joint courses of action to address ongoing or emerging global challenges; and (iii) it advises interested Governments on the ways and means of translating policy frameworks developed in United Nations conferences and summits into programmes at the country level and, through technical assistance, helps build national capacities.

Note

The designations employed and the presentation of the material in the present publication do not imply the expression of any opinion whatsoever on the part of the United Nations concerning the legal status of any country or of its authorities, or the delimitations of its frontiers. The term "country" as used in this report also refers, as appropriate, to territories or areas. The designations of country groups are intended solely for statistical or analytical convenience and do not necessarily express a judgement about the stage reached by a particular country, territory or area in the development process. Mention of the names of firms and commercial products does not imply endorsement by the United Nations. The symbols of United Nations documents are composed of capital letters and numbers.

ST/ESA/STAT/SER.E/2

UNITED NATIONS PUBLICATION
Sales number: E.19.XVII.8

ISBN 978-92-1-159120-0
eISBN 978-92-1-047681-2
print ISSN 2617-2828
online ISSN 2617-2836

Content

Introduction

This publication is the second in a series of pocketbook compilations on energy statistics designed to highlight the availability of data on various aspects of energy production, transformation and use and its linkages to other key statistics. Energy is central to the achievement of the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change, and sound energy statistics are the basis for the reliable measurement of progress, thereby assisting the formulation of policy measures to achieve international and national sustainable development goals.

The information in this publication is primarily based on the energy data collection carried out by the Energy Statistics Section of the United Nations Statistics Division (UNSD). The data are available in the 2016 editions of the Energy Statistics Yearbook, the Energy Balances, and the Electricity Profiles, three annual UNSD publications that present energy data in basic indicator formats, as well as formats that show a more detailed, yet number-heavy, picture of production, trade, transformation and consumption of energy products in more than 200 countries and territories.

The present publication aims at providing additional information by highlighting key indicators and using different visualizations to also show developments, dependencies and distributions in a way that standard data tables cannot convey.

More information about the data collection process, as well as the three publications underlying the information in this pocketbook, are available at https://unstats.un.org/unsd/energy.

Acknowledgements

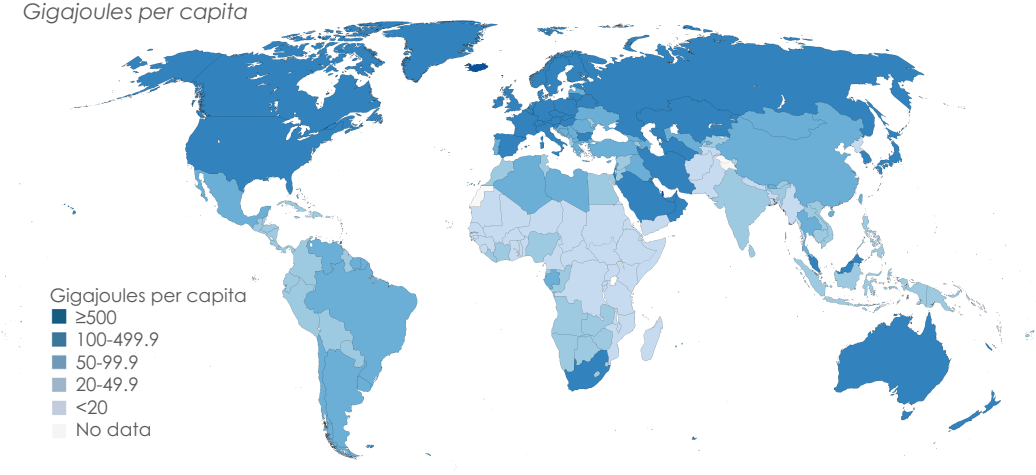
This publication has been compiled by the Energy Statistics Section of UNSD, which is headed by Mr. Leonardo Souza. The conceptual design of this pocketbook has been carried out by Mr. Souza, Ms. Agnieszka Koscielniak and Ms. Costanza Giovannelli, based on the original conceptual framework developed also with the contribution from Mr. Ralf Becker, former Chief of the Section. Ms. Giovannelli took the lead in the graphic design, supported by Mr. Graham Osborn and Ms. Peng Guo. The energy data used for the pocketbook have been collected and processed by the staff of the Energy Statistics Section.

Enquiries, comments and suggestions for improving this publication are welcome and should be addressed to: energy_stat@un.org.

Total energy supply

1. Total energy supply per capita, 2016

Gigajoules per capita



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

FACTS AND FIGURES

World total energy supply[1] (TES) increased by almost 60% from 1990 to 2016, reaching 568 EJ. This growth was driven by Asia, where Chinese total energy supply increased nearly fourfold during this period, accounting for 21% of world TES in 2016.

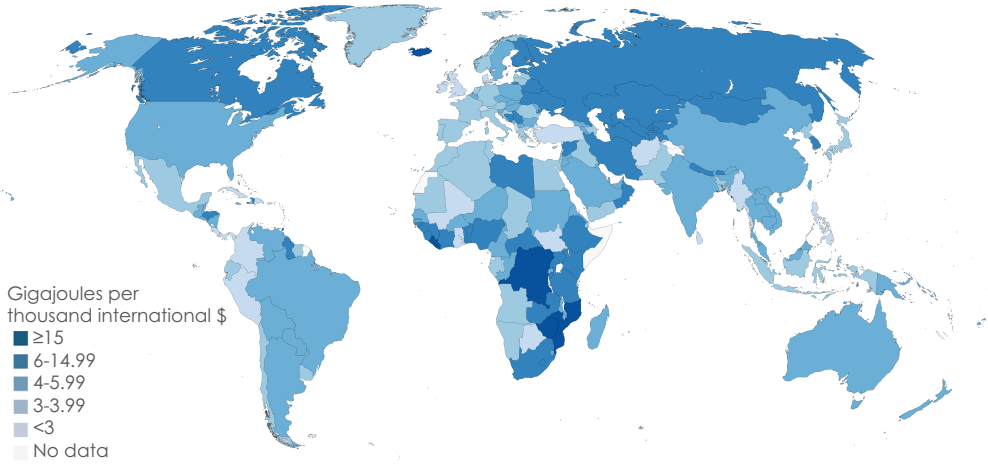
The European share of world TES fell from 35% in 1990 to 19% in 2016, with an absolute drop of 20.7 EJ. The United States, whose share of TES dropped by 6.5 percentage points since 1990 to reach 16% in 2016, showed an absolute increase in TES of 10 EJ during this period.

International bunkers were equal to 16.3 EJ in 2016 (accounting for 3% of world TES), almost doubling from 1990.

(1) World total energy supply includes international aviation and marine bunkers; conversely, bunkers are excluded from total energy supply calculated for countries and regions. For further explanations, please refer to the General notes.

2. Energy intensity[2], 2016

Gigajoules per thousand international $



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

3. Energy supply (total, per capita and energy intensity[2]), major countries, 2016

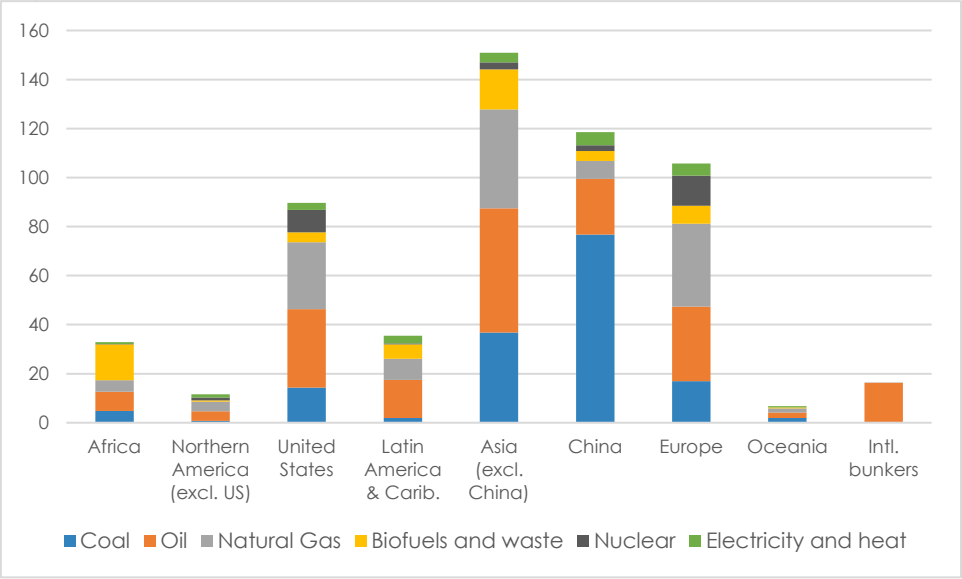
Exajoules, gigajoules per capita and gigajoules per thousand international $

Country	TES	Country	TES per capita	Country	Energy intensity[2]
China	118.5	Iceland	995.6	Liberia	27.9
United States	89.7	Qatar	686.0	Iceland	21.6
India	36.9	Trinidad and Tobago	562.4	Dem. Rep. Congo	19.6
Russian Federation	30.5	Curaçao	502.6	Trinidad and Tobago	19.0
Japan	17.8	Bahrain	391.0	Mozambique	17.1
Germany	12.9	Kuwait	372.5	Zimbabwe	15.4
Brazil	12.2	United Arab Emirates	369.8	Togo	14.2
Republic of Korea	11.8	Canada	317.6	Turkmenistan	13.1
World	**567.9**	**World**	**76.1**	**World**	**5.1**

(2) Energy intensity is calculated by dividing the total energy supply by GDP, PPP (constant 2011 international $).

4. Total energy supply by region and source, 2016

Exajoules



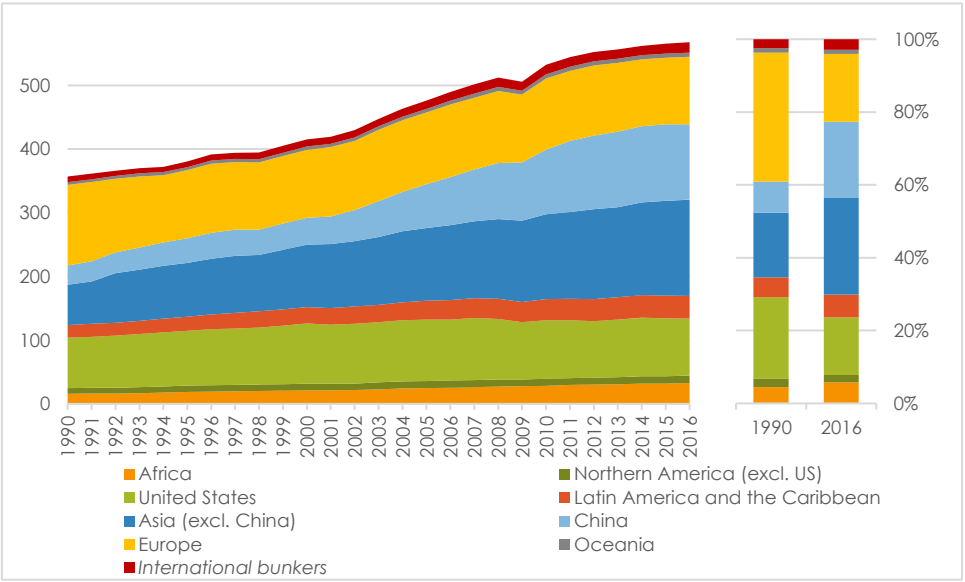
5. Total energy supply by region and source, 2016

Exajoules

Region	Coal	Oil	Natural gas	Biofuels & waste	Nuclear	Electricity and heat	TES
Africa	4.9	7.8	4.7	14.6	0.2	0.7	32.8
Northern America (excl. US)	0.7	4.0	4.0	0.5	1.1	1.3	11.5
United States	14.3	32.0	27.3	4.0	9.1	3.0	89.7
Latin America and the Caribbean	1.9	15.5	8.7	5.8	0.4	3.2	35.5
Asia (exc. China)	36.8	50.6	40.3	16.4	2.9	3.9	151.0
China	76.7	22.8	7.4	4.0	2.3	5.3	118.5
Europe	16.9	30.5	33.8	7.3	12.3	5.0	105.8
Oceania	1.9	2.3	1.7	0.3	-	0.5	6.7
International bunkers	-	*16.3*	*0⁺*	-	-	-	*16.3*
World	**154.3**	**181.7**	**127.8**	**53.0**	**28.2**	**22.9**	**567.9**

6. Total energy supply by region, 1990 – 2016

Exajoules



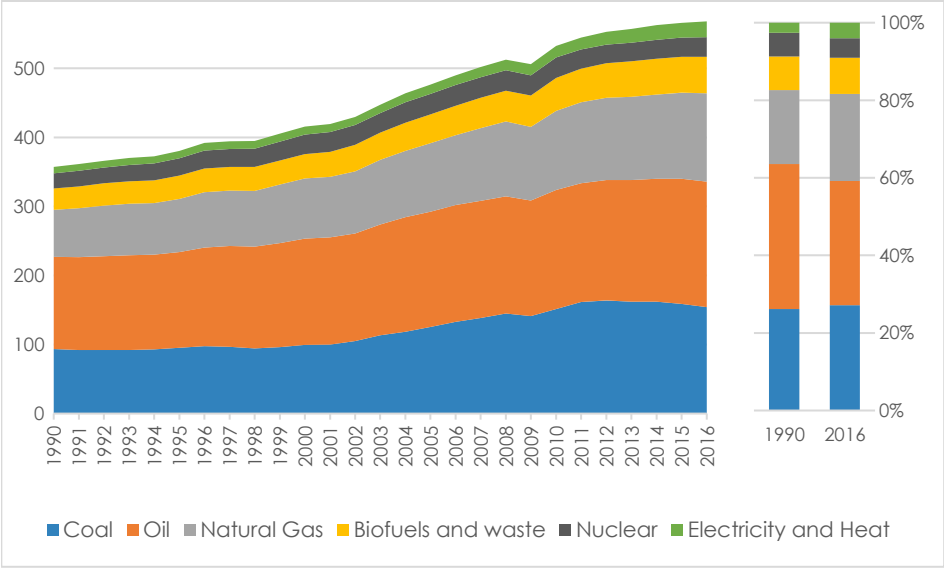
7. Total energy supply by region, 1990, 2000, 2010 and 2016

Exajoules

Region	1990	2000	2010	2016
Africa	15.8	21.1	28.5	32.8
Northern America (excl. US)	8.8	10.5	10.8	11.5
United States	79.5	94.5	92.1	89.7
Latin America and the Caribbean	19.6	25.7	33.1	35.5
Asia (excl. China)	63.3	97.8	133.2	151.0
China	30.4	42.5	101.6	118.5
Europe	126.5	106.7	111.7	105.8
Oceania	4.4	5.5	6.5	6.7
International bunkers	*8.8*	*11.1*	*14.9*	*16.3*
World	**357.1**	**415.5**	**532.4**	**567.9**

8. World total energy supply by source, 1990 – 2016

Exajoules



9. World total energy supply by source, 1990, 2000, 2010 and 2016

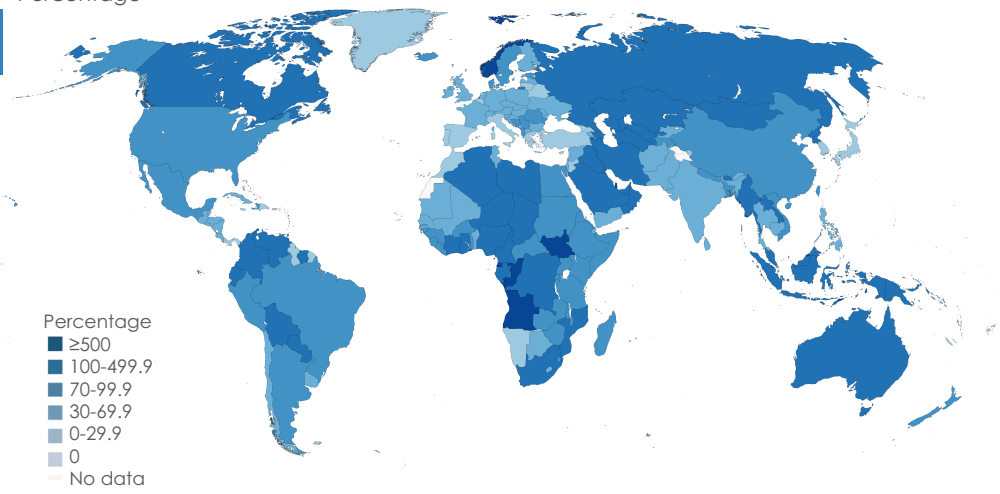
Exajoules

Source	1990	2000	2010	2016
Coal	93.5	99.4	151.5	154.3
Oil	133.3	153.9	172.1	181.7
Natural gas	68.2	87.1	114.6	127.8
Biofuels and waste	31.0	35.5	47.6	53.0
Nuclear	21.8	28.0	29.8	28.2
Electricity and heat	9.3	11.7	16.7	22.9
Total	**357.1**	**415.5**	**532.4**	**567.9**

Primary energy production

10. Energy self-sufficiency[3], 2016

Percentage



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

FACTS AND FIGURES

World primary energy production reached 569 EJ in 2016, showing a 58% increase compared to 1990. Unlike TES, primary energy production decreased (by 0.35%) from 2015 to 2016, mainly due to a 5.6% drop in coal production. Oil, coal and natural gas, in this order, are the largest energy sources, together representing 82% of total primary energy production.

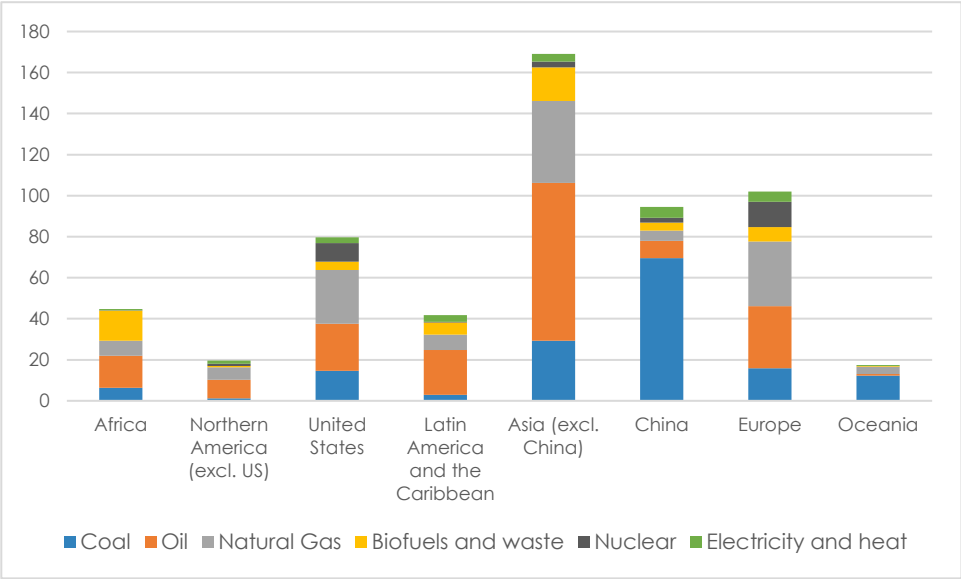
A significant share of 2016 primary energy production occurred in a handful of countries:

- China and the United States produced more than half of all primary coal (55%), with China alone producing 46% of the world coal;
- The six biggest producers of oil (Saudi Arabia, Russian Federation, United States, Iraq, Iran and Canada) produced more than half of all primary oil (53%);
- Five natural gas producers (United States, Russian Federation, Iran, Qatar and Canada) produced more than half of all natural gas (53%).

(3) Energy self-sufficiency is calculated as the ratio between primary energy production and total energy supply expressed in percentage.

11. Primary energy production by region and source, 2016

Exajoules



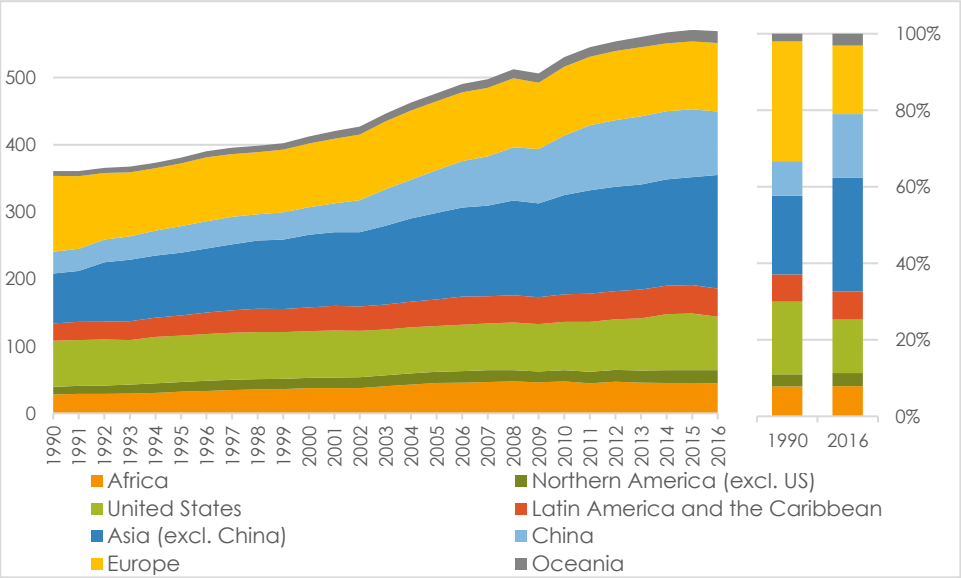
12. Primary energy production by region and source, 2016

Exajoules

Source	Coal	Oil	Natural gas	Biofuels and waste	Nuclear	Electricity & heat	Total
Africa	6.3	15.6	7.4	14.6	0.2	0.7	44.7
Northern America (excl. US)	1.3	9.0	6.1	0.5	1.1	1.5	19.5
United States	14.6	23.0	26.3	4.0	9.1	2.8	79.7
Latin America and the Caribbean	3.0	21.8	7.5	5.9	0.4	3.2	41.7
Asia (excl. China)	29.3	76.9	39.9	16.4	2.9	3.8	169.2
China	69.6	8.4	5.0	4.0	2.3	5.4	94.6
Europe	15.8	30.4	31.5	7.1	12.3	5.0	102.1
Oceania	12.3	0.8	3.5	0.3	-	0.5	17.5
World	**152.1**	**185.9**	**127.1**	**52.8**	**28.2**	**22.9**	**569.0**

13. Total primary energy production by region, 1990 – 2016

Exajoules



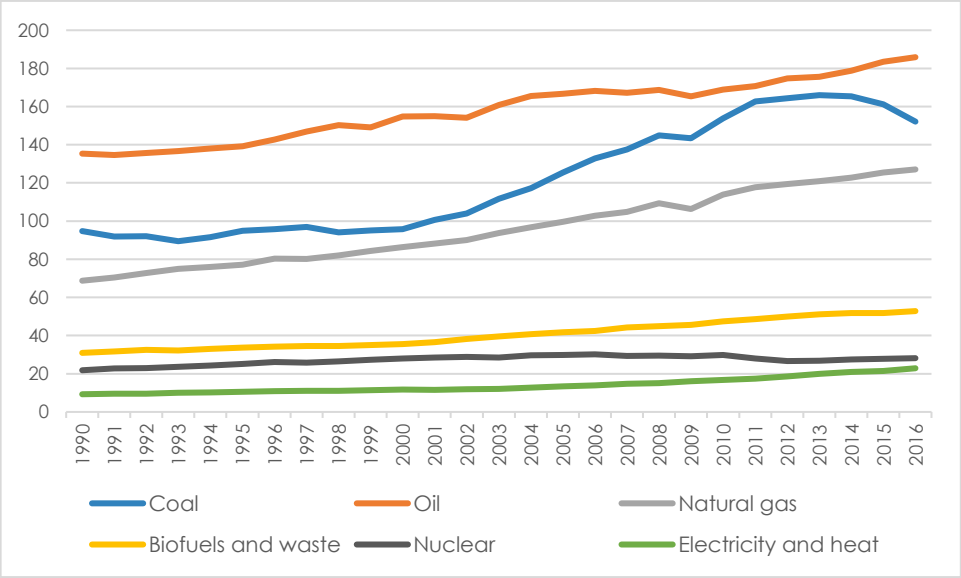
14. Total primary energy production by region, 1990, 2000, 2010 and 2016

Exajoules

Region	1990	2000	2010	2016
Africa	28.0	37.3	47.7	44.7
Northern America (excl. US)	11.5	15.5	16.5	19.5
United States	68.6	69.3	71.9	79.7
Latin America and the Caribbean	25.7	35.4	41.3	41.7
Asia (excl. China)	74.2	108.5	147.6	169.2
China	32.7	40.8	88.6	94.6
Europe	112.8	94.7	102.5	102.1
Oceania	7.3	10.6	14.5	17.5
World	**360.9**	**412.2**	**530.6**	**569.0**

15. World primary energy production by source, 1990 – 2016

Exajoules

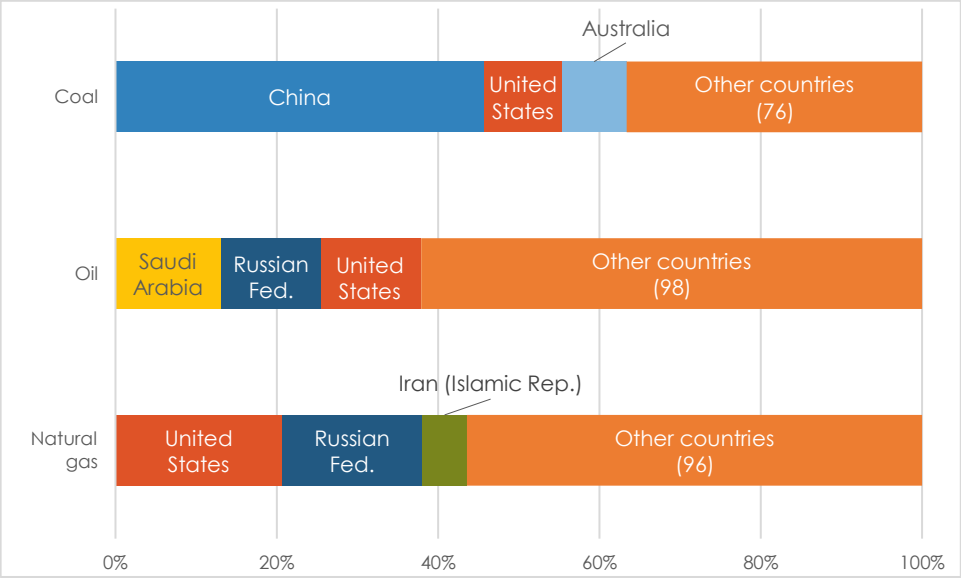


16. World primary energy production by source, 1990, 2000, 2010 and 2016

Percentage

Source	1990	2000	2010	2016
Coal	26.3%	23.2%	29.0%	26.7%
Oil	37.5%	37.6%	31.8%	32.7%
Natural gas	19.1%	21.0%	21.5%	22.3%
Biofuels and waste	8.6%	8.6%	9.0%	9.3%
Nuclear	6.0%	6.8%	5.6%	5.0%
Electricity and heat	2.6%	2.8%	3.2%	4.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

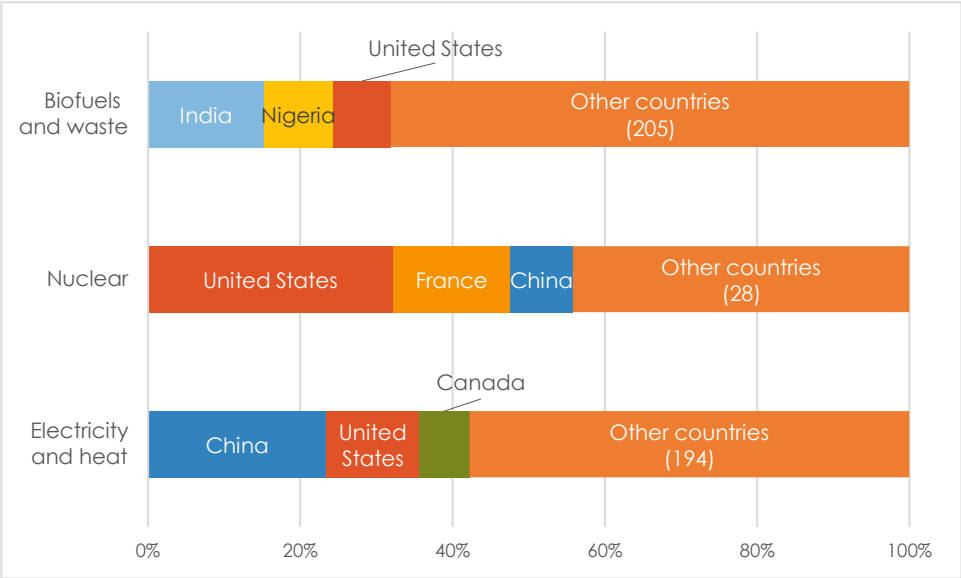
17. Primary production of coal, oil, and natural gas, major countries, 2016
Percentage



18. Primary production of coal, oil, and natural gas, major countries, 2016
Exajoules

Coal		Oil		Natural gas	
China	69.6	Saudi Arabia	24.2	United States	26.3
United States	14.6	Russian Federation	23.2	Russian Federation	22.0
Australia	12.2	United States	23.0	Iran (Islamic Rep.)	7.1
Indonesia	11.8	Iraq	9.4	Qatar	6.3
India	11.4	Iran (Islamic Rep.)	9.1	Canada	6.1
Russian Federation	8.8	Canada	9.0	China	5.0
South Africa	6.1	UAE	8.4	Norway	4.3
Colombia	2.5	China	8.4	Saudi Arabia	3.9
Others	15.3	Others	71.2	Others	46.1
World	**152.1**	**World**	**185.9**	**World**	**127.1**

19. Primary production of biofuels and waste, nuclear, and electricity and heat, major countries, 2016 - *Percentage*

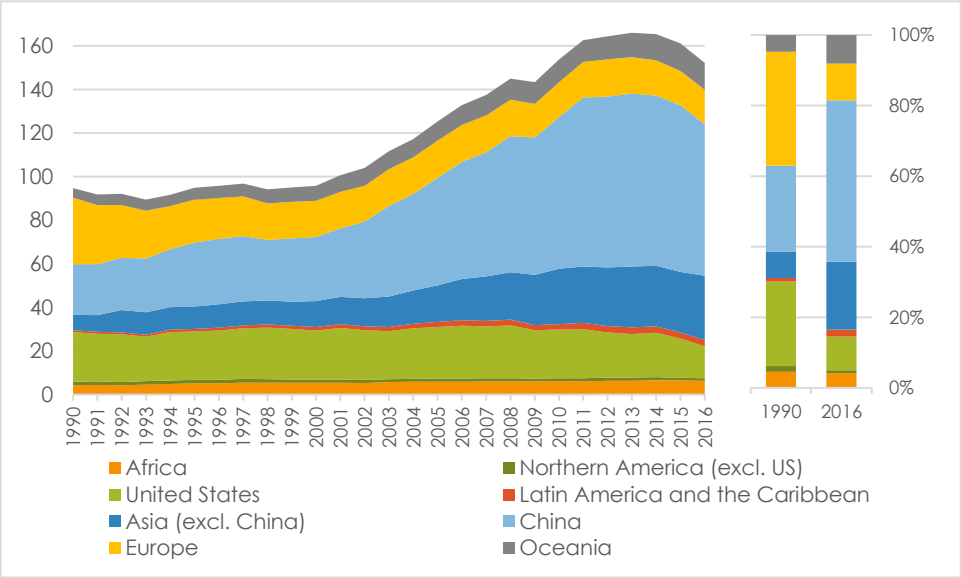


20. Primary production of biofuels and waste, nuclear and electricity and heat, major countries, 2016 – *Exajoules*

Biofuels and waste		Nuclear		Electricity and heat	
India	8.1	United States	9.1	China	5.4
Nigeria	4.8	France	4.4	United States	2.8
United States	4.0	China	2.3	Canada	1.5
China	4.0	Russian Federation	2.1	Brazil	1.5
Brazil	3.5	Republic of Korea	1.7	Russian Federation	0.7
Indonesia	2.4	Canada	1.1	India	0.6
Ethiopia	1.3	Germany	0.9	Japan	0.6
Germany	1.3	Ukraine	0.9	Turkey	0.6
Others	23.4	Others	5.7	Others	9.2
World	**52.8**	**World**	**28.2**	**World**	**22.9**

21. Primary production of coal by region, 1990 – 2016

Exajoules



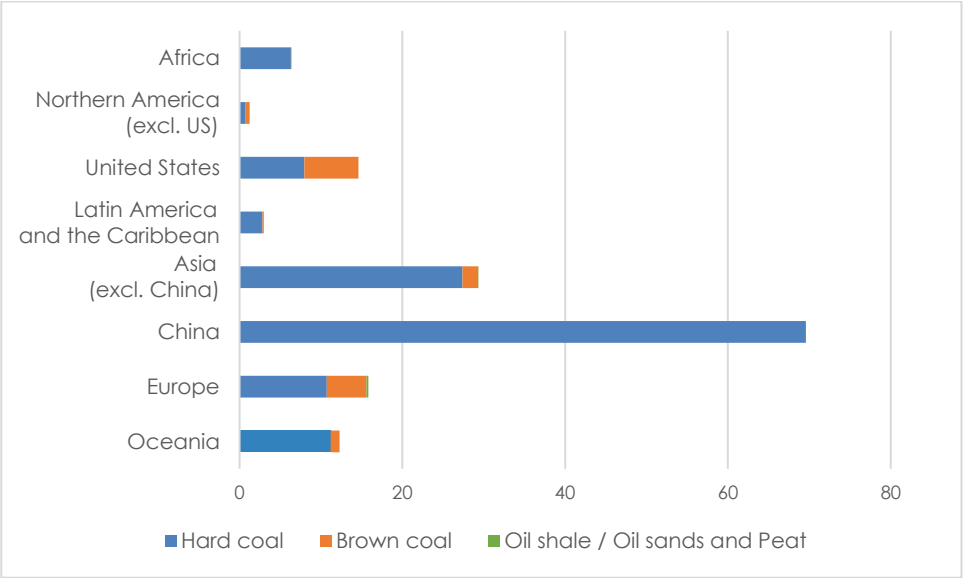
22. Primary production of coal by region, 1990, 2000, 2010 and 2016

Exajoules

Region	1990	2000	2010	2016
Africa	4.3	5.5	6.1	6.3
Northern America (excl. US)	1.6	1.4	1.4	1.3
United States	22.7	22.5	22.3	14.6
Latin America and the Caribbean	0.9	1.6	2.6	3.0
Asia (excl. China)	7.1	11.8	25.3	29.3
China	23.1	29.5	69.7	69.6
Europe	30.6	16.5	15.9	15.8
Oceania	4.5	7.0	10.6	12.3
World	**94.8**	**95.8**	**153.9**	**152.1**

23. Primary production of coal by region and type of fuel, 2016

Exajoules



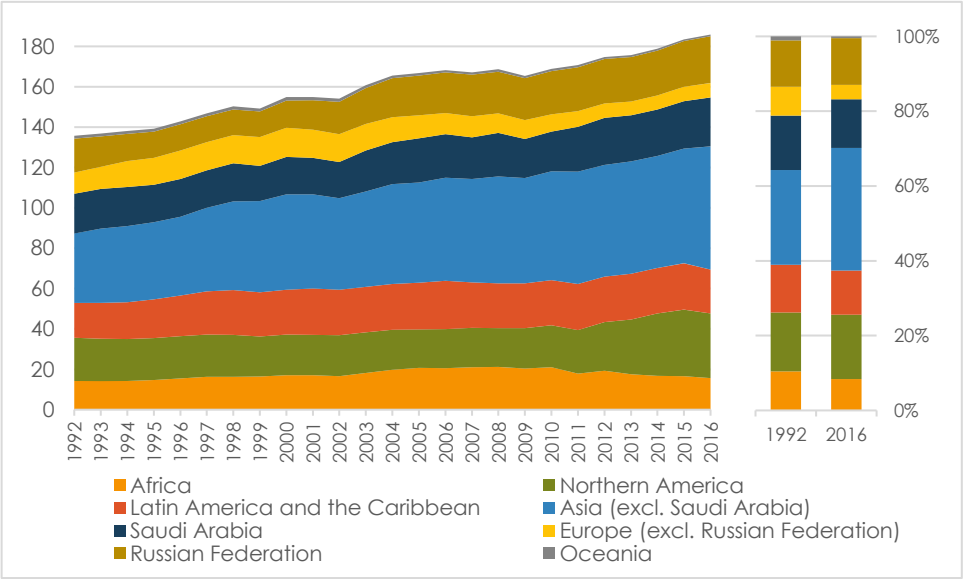
24. Primary production of coal by region and type of fuel, 2016

Exajoules

Region	Hard coal	Brown coal	Oil shale/ peat	Total
Africa	6.3	0+	0+	6.3
Northern America (excl. US)	0.7	0.6	-	1.3
United States	8.0	6.6	-	14.6
Latin America and the Caribbean	2.8	0.2	0+	3.0
Asia (excl. China)	27.4	1.9	0+	29.3
China	69.6	-	-	69.6
Europe	10.7	4.9	0.2	15.8
Oceania	11.2	1.1	-	12.3
World	**136.6**	**15.3**	**0.2**	**152.1**

25. Primary production of oil by region, 1992 – 2016

Exajoules



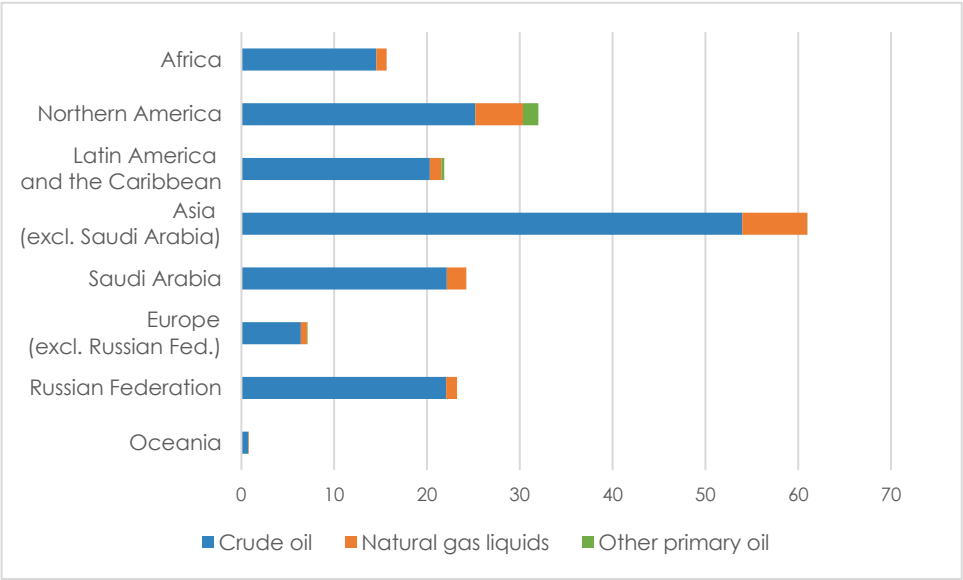
26. Primary production of oil by region, 1992, 2000, 2010 and 2016

Exajoules

Region	1992	2000	2010	2016
Africa	14.2	17.1	21.0	15.6
Northern America	21.3	20.1	20.7	32.0
Latin America and the Caribbean	17.3	22.3	22.5	21.8
Asia (excl. Saudi Arabia)	34.4	47.2	54.0	61.0
Saudi Arabia	19.7	18.7	19.6	24.2
Europe (excl. Russian Federation)	10.5	14.3	8.6	7.1
Russian Federation	16.8	13.6	21.4	23.2
Oceania	1.5	1.6	1.2	0.8
World	**135.8**	**154.8**	**168.9**	**185.9**

27. Primary production of oil by region and type of fuel, 2016

Exajoules



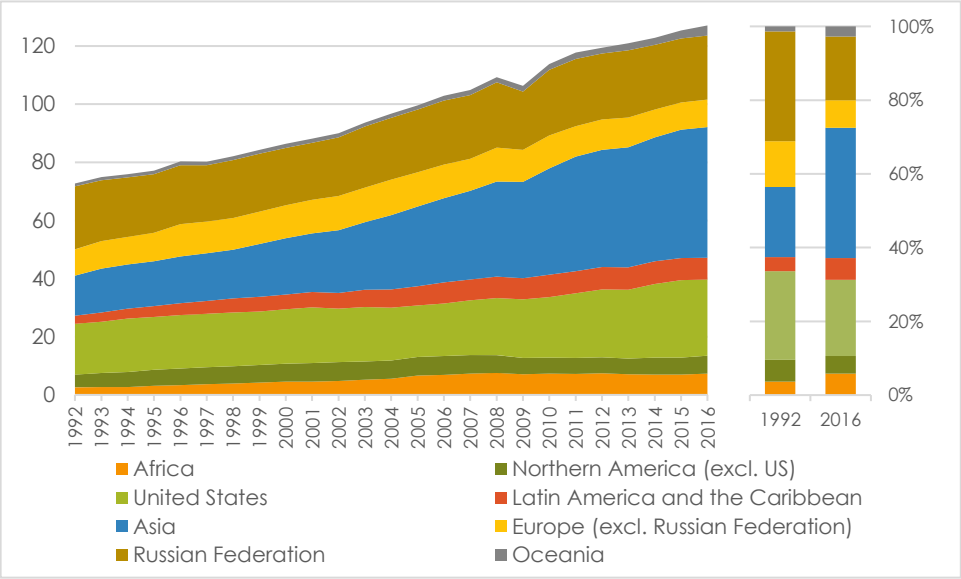
28. Primary production of oil by region and type of fuel, 2016

Exajoules

Region	Crude oil	Natural gas liquids	Other primary	Total
Africa	14.5	1.1	-	15.6
Northern America	25.2	5.1	1.6	32.0
Latin America and the Caribbean	20.3	1.2	0.3	21.8
Asia (excl. Saudi Arabia)	54.0	7.0	0.02	61.0
Saudi Arabia	22.1	2.1	-	24.2
Europe (excl. Russian Federation)	6.4	0.7	0.1	7.1
Russian Federation	22.1	1.2	-	23.2
Oceania	0.8	0.1	-	0.8
World	**165.4**	**18.5**	**2.0**	**185.9**

29. Production of natural gas by region, 1992 – 2016

Exajoules



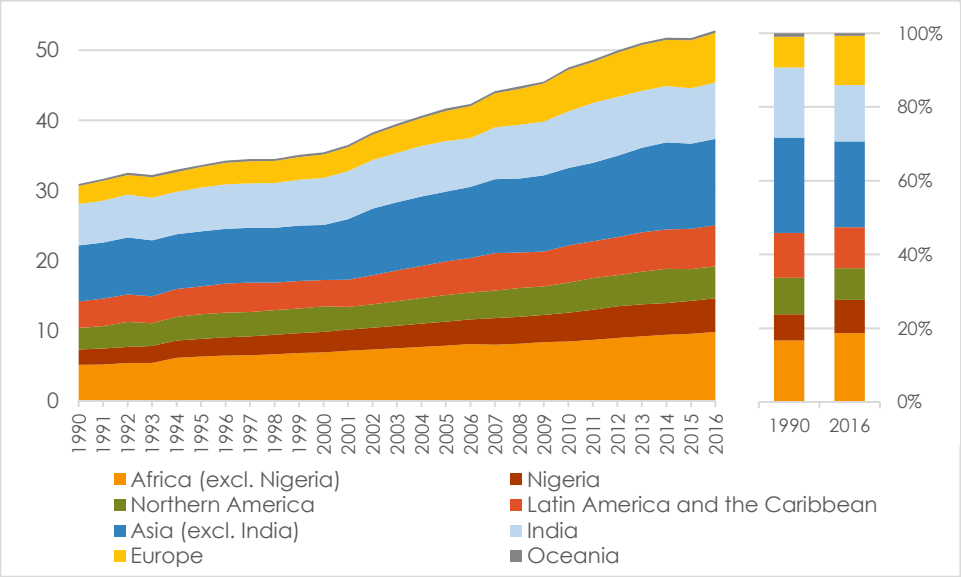
30. Production of natural gas by region, 1992, 2000, 2010 and 2016

Exajoules

Region	1992	2000	2010	2016
Africa	2.6	4.5	7.3	7.4
Northern America (excl. United States)	4.3	6.2	5.5	6.1
United States	17.5	18.7	20.7	26.3
Latin America and the Caribbean	2.8	5.1	7.7	7.5
Asia	13.8	19.4	36.6	44.9
Europe (excl. Russian Federation)	9.0	11.4	11.3	9.4
Russian Federation	21.7	19.7	22.6	22.0
Oceania	1.0	1.4	2.0	3.5
World	**72.7**	**86.4**	**113.8**	**127.1**

31. Primary production of biofuels and waste by region, 1990 – 2016

Exajoules

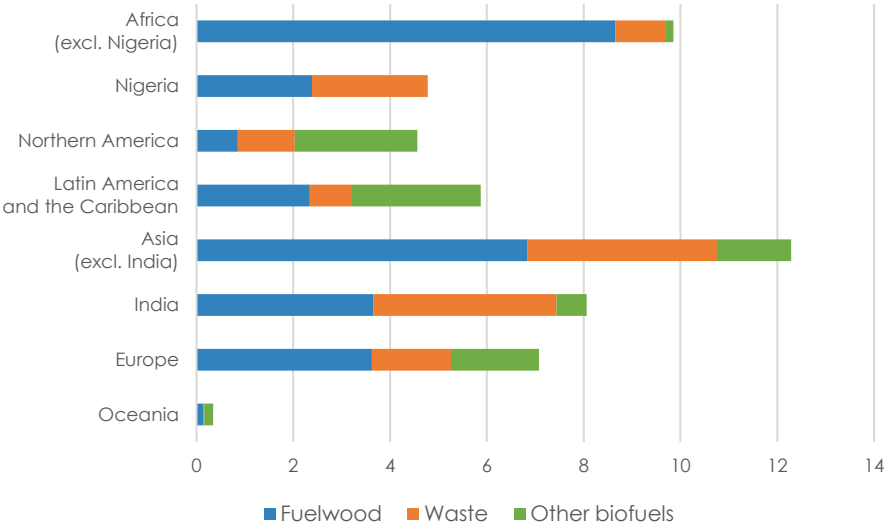


32. Primary production of biofuels and waste by region, 1990, 2000, 2010 and 2016

Exajoules

Region	1990	2000	2010	2016
Africa (excl. Nigeria)	5.2	6.9	8.5	9.9
Nigeria	2.2	2.9	4.1	4.8
Northern America	3.1	3.6	4.3	4.6
Latin America and the Caribbean	3.8	3.8	5.3	5.9
Asia (excl. India)	8.0	7.8	11.1	12.3
India	5.9	6.7	8.1	8.1
Europe	2.6	3.3	5.9	7.1
Oceania	0.3	0.3	0.3	0.3
World	**30.9**	**35.5**	**47.5**	**52.8**

33. Primary production of biofuels and waste by region and type of fuel, 2016
Exajoules



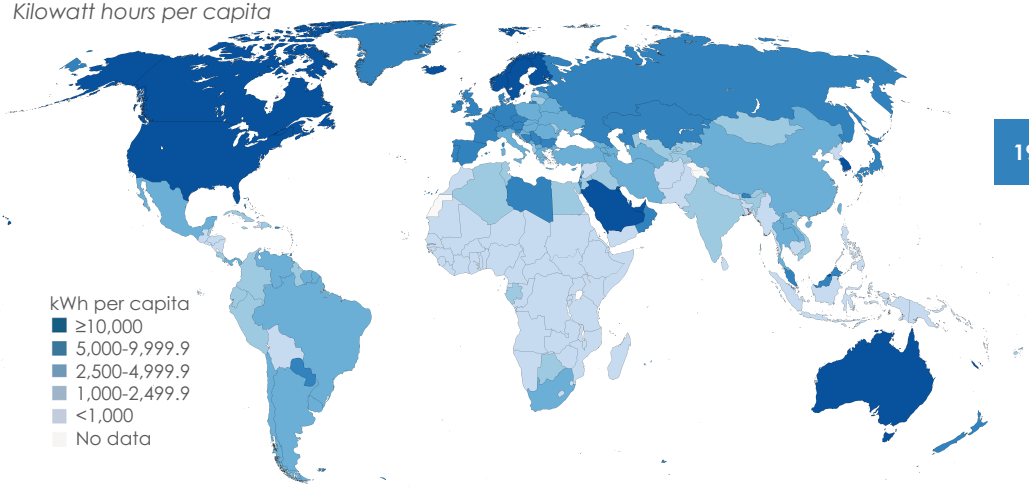
34. Primary production of biofuels and waste by region and type of fuel, 2016
Exajoules

Region	Fuelwood	Waste	Other biofuels	Total
Africa (excl. Nigeria)	8.7	1.0	0.2	9.9
Nigeria	2.4	2.4	0+	4.8
Northern America	0.9	1.2	2.5	4.6
Latin America and the Caribbean	2.3	0.9	2.7	5.9
Asia (excl. India)	6.8	3.9	1.5	12.3
India	3.7	3.8	0.6	8.1
Europe	3.6	1.6	1.8	7.1
Oceania	0.1	0.01	0.2	0.3
World	**28.5**	**14.8**	**9.5**	**52.8**

Electricity

35. Electricity generation per capita, 2016

Kilowatt hours per capita



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

FACTS AND FIGURES

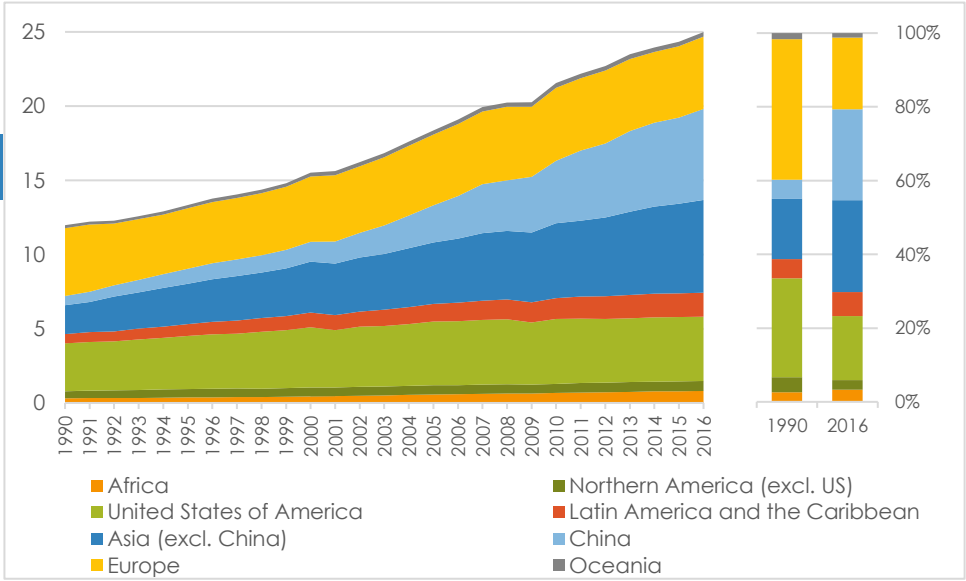
World electricity generation more than doubled from 1990 to 2016, reaching almost 25,000 TWh in 2016. The largest absolute growth from 1990 to 2016 was observed for electricity generated from coal (around 5,300 TWh or +116%) and natural gas (around 3,500 TWh or +213%) while the fastest growth was visible for electricity generated from solar, wind and other sources[4] (+2,224% or 1,370 TWh).

More than 75% of electricity in 2016 was generated from non-renewable sources, mainly from non-renewable thermal (65% or 16,186 TWh) and nuclear sources (10% or 2,608 TWh)[5]. However, renewable electricity accounted for over 50% of global electricity capacity additions over the past six years, reaching 2,137 GW in 2016 (32% of total electricity capacity).

(4) "Solar, wind and other sources" refers to solar, wind, geothermal, chemical heat, tide, wave and marine and other non-specified sources.
(5) Non-renewable sources also include chemical heat and other non-specified sources.

36. Total electricity generation by region, 1990 – 2016

Petawatt hours



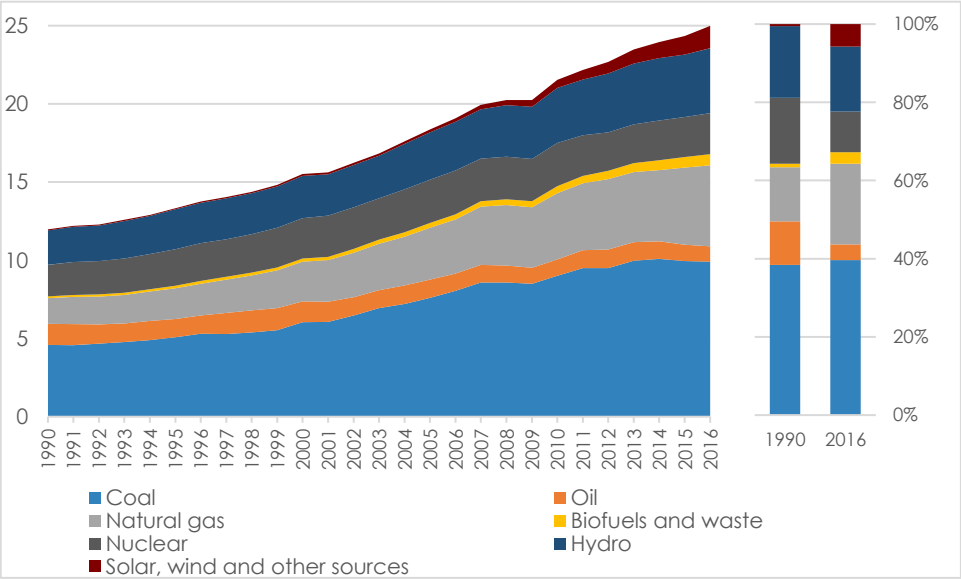
37. Total electricity generation by region, 2016

Terawatt hours

Region	1990	2000	2010	2016
Africa	312.3	436.8	676.9	814.3
Northern America (excl. US)	482.9	606.7	605.6	668.6
United States	3,218.6	4,052.7	4,378.4	4,322.0
Latin America and the Caribbean	624.3	1,005.7	1,407.2	1,627.5
Asia (excl. China)	1,947.4	3,408.6	5,046.9	6,243.4
China	621.2	1,355.6	4,207.2	6,142.5
Europe	4,570.9	4,386.5	4,916.6	4,858.1
Oceania	192.5	257.7	307.7	311.8
World	**11,970.1**	**15,510.2**	**21,546.3**	**24,988.2**

38. World electricity generation by source, 1990 – 2016

Petawatt hours



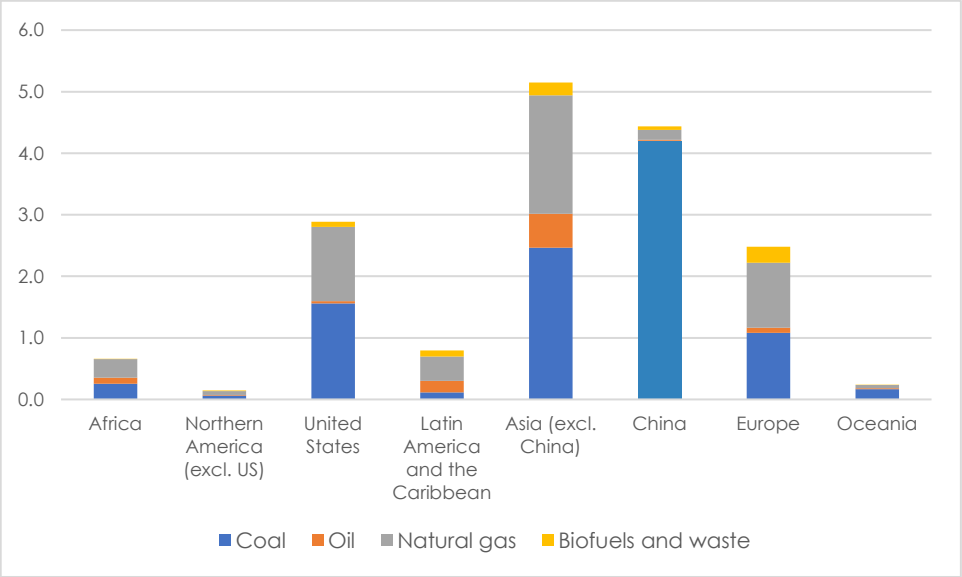
39. World electricity generation by source, 1990, 2000, 2010 and 2016

Terawatt hours

Source	1990	2000	2010	2016
Thermal	7,696.7	10,110.7	14,747.8	16,796.5
- Coal	4,597.5	6,039.6	9,009.2	9,914.2
- Oil	1,333.8	1,324.9	1,036.6	986.2
- Natural gas	1,652.0	2,539.5	4,245.1	5,169.8
- Biofuels and waste	113.3	206.6	457.0	726.3
Nuclear	2,019.8	2,589.0	2,756.3	2,608.1
Hydro	2,192.1	2,706.6	3,528.4	4,152.2
Solar, wind and other sources	61.6	103.9	513.8	1,431.3
Total	**11,970.1**	**15,510.2**	**21,546.3**	**24,988.2**

40. Thermal electricity generation by region and source, 2016

Petawatt hours



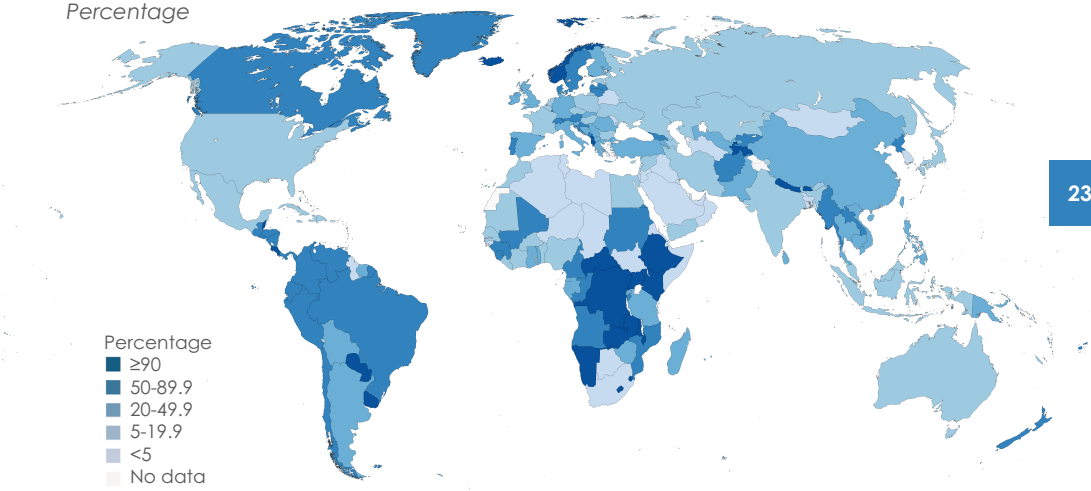
41. Thermal electricity generation by region and source, 2016

Terawatt hours

Region	Coal	Oil	Natural gas	Biofuels and waste	Total
Africa	255.7	99.8	299.7	3.5	658.7
Northern America (excl. US)	60.6	10.0	62.7	12.6	145.9
United States	1,558.7	37.3	1,209.0	80.9	2,886.0
Latin America and the Caribbean	116.4	185.0	396.3	99.8	797.4
Asia (excl. China)	2,467.8	548.3	1,927.3	208.0	5,151.4
China	4,203.9	12.0	163.6	57.5	4,437.1
Europe	1,082.8	80.9	1,056.9	259.3	2,480.0
Oceania	168.4	12.8	54.2	4.5	239.9
World	**9,914.2**	**986.2**	**5,169.8**	**726.3**	**16,796.5**

42. Renewable electricity share in total electricity generation, 2016

Percentage



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

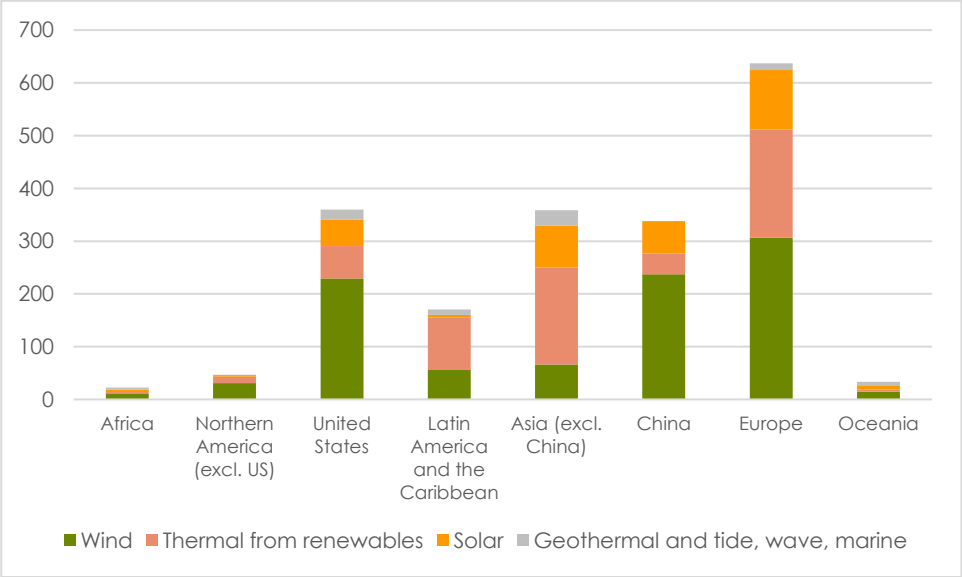
43. Renewable electricity generation by type, major countries, 2016

Terawatt hours

Country	Hydro	Country	Wind	Country	Total renewables
China	1,193.4	China	237.1	China	1,531.4
Canada	387.2	United States	229.5	United States	651.9
Brazil	380.9	Germany	78.6	Brazil	470.7
United States	292.1	Spain	48.9	Canada	433.4
Russian Federation	186.6	United Kingdom	37.4	India	270.1
Norway	144.0	India	35.5	Germany	193.8
Others	1,568.0	Others	283.1	Others	2,567.4
World	**4,152.2**	**World**	**950.1**	**World**	**6,118.7**

44. Electricity from non-hydro renewable sources by region and type, 2016

Terawatt hours



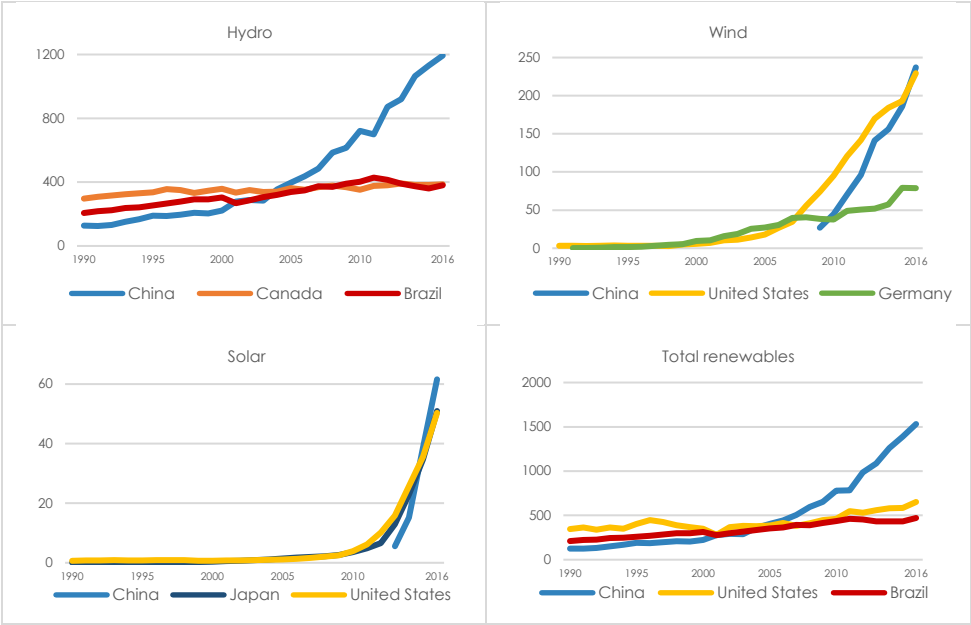
45. Electricity from non-hydro renewable sources by region and type, 2016

Terawatt hours

Region	Wind	Thermal (ren.).	Solar	Geothermal and tide	Total
Africa	10.3	3.5	4.2	4.5	22.6
Northern America (excl. US)	30.8	12.4	3.0	0.02	46.2
United States	229.5	61.4	50.3	18.6	359.8
Latin America and the Caribbean	55.7	99.7	5.0	10.1	170.5
Asia (excl. China)	65.9	184.1	79.2	29.6	358.8
China	237.1	39.4	61.6	-	338.0
Europe	306.3	205.2	113.0	12.7	637.1
Oceania	14.6	4.5	6.4	7.8	33.3
World	**950.1**	**610.3**	**322.8**	**83.3**	**1,966.5**

46. Renewable electricity by type, major countries in 2016, 1990 – 2016

Terawatt hours



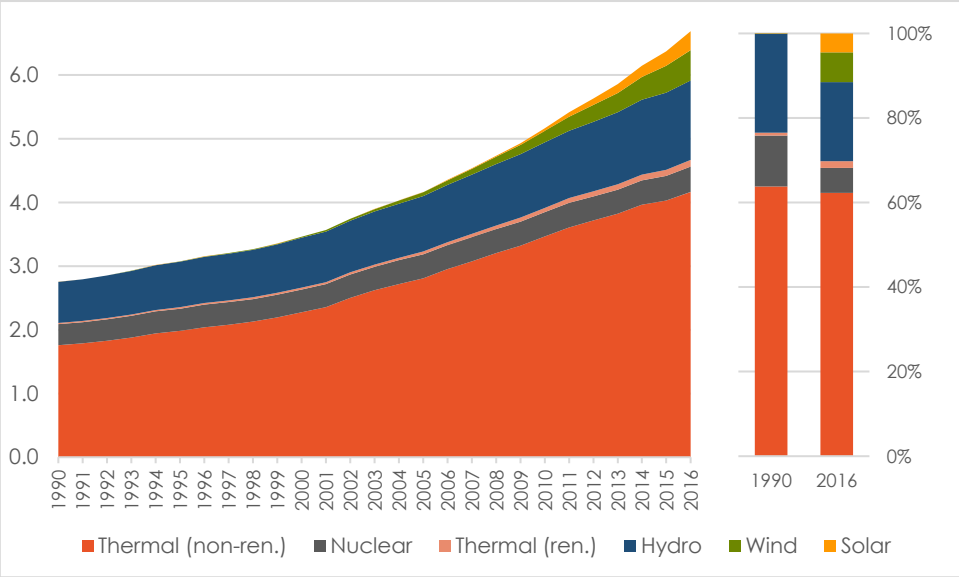
47. Renewable electricity by type, major countries in 2016, 1990 and 2016, and share in total electricity generation, 2016

Gigawatt hours and percentage

Hydro	1990	2016	%2016	Wind	1990	2016	%2016
China	126,720	1,193,374	19%	China	0	237,071	4%
Canada	296,848	387,208	58%	United States	3,066	229,471	5%
Brazil	206,708	380,911	66%	Germany	215[1991]	78,598	12%
Solar	**1990**	**2016**	**%2016**	**Total renewables**	**1990**	**2016**	**%2016**
China	0	61,586	1%	China	126,720	1,531,408	25%
Japan	67	50,952	5%	United States	346,434	651,937	15%
United States	666	50,334	1%	Brazil	210,246	470,722	81%

48. World electricity capacity by type[6], 1990 – 2016

Terawatt



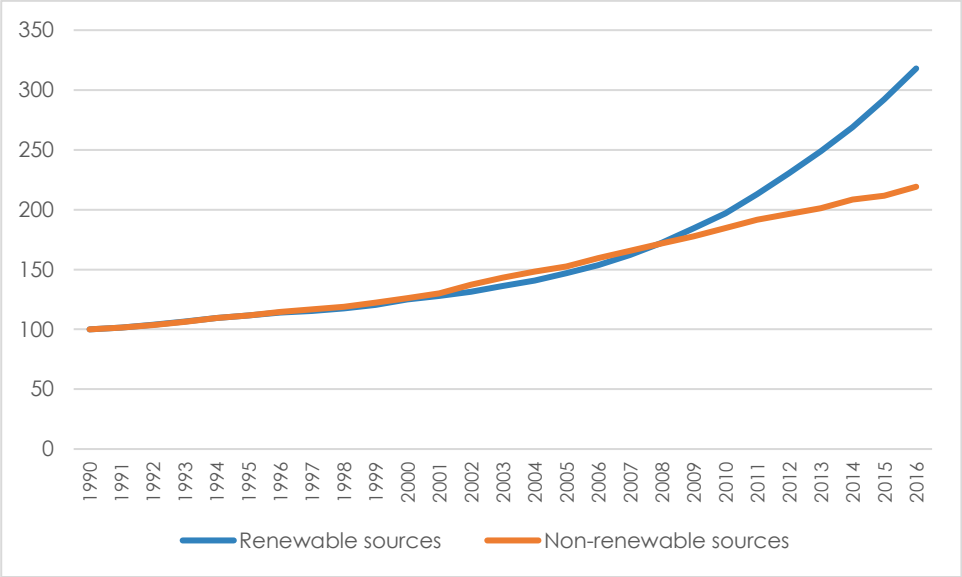
49. World electricity capacity by type[6], 1990, 2000, 2010 and 2016

Gigawatt

Type	1990	2000	2010	2016
Non-renewable *of which*	2,088.9	2,632.4	3,856.0	4,578.1
- Thermal (non-ren.)	1,758.5	2,273.9	3,466.5	4,162.8
- Nuclear	330.4	358.3	381.8	399.9
Renewable *of which*	672.0	839.6	1,324.0	2,136.8
- Thermal (ren.)	19.0	29.0	66.9	103.7
- Hydro	644.2	783.8	1,026.5	1,248.3
- Wind	2.4	17.2	180.5	474.6
- Solar	0.4	1.2	39.9	297.8
Total	**2,760.9**	**3,472.1**	**5,180.0**	**6,714.9**

(6) Non-renewables sources refer to thermal from non-renewable fuels, nuclear and other non-specified capacities. Renewable sources refer to thermal from renewable fuels, hydro, wind, solar, geothermal and tide, wave and marine capacities. Sources not shown in tables 49 and 51 have negligible values for capacity (less than 28 GW in 2016) and are not included in chart 48.

50. World electricity capacity by type[6], 1990 – 2016
Index number (1990=100)

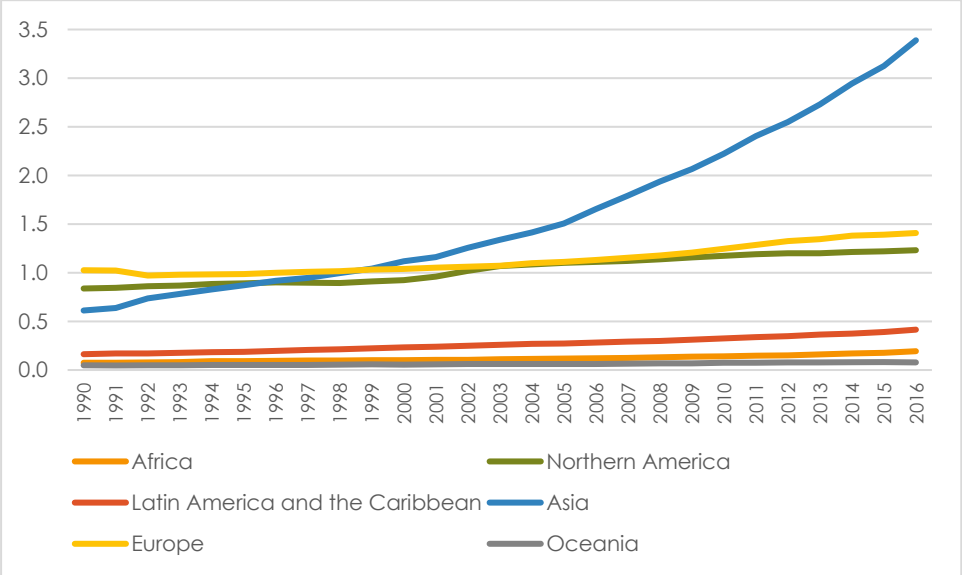


51. World electricity capacity by type[6], 1990, 2000, 2010 and 2016, and share in 2016
Index numbers (1990=100) and percentage

Type	1990	2000	2010	2016	% 2016
Non-renewable *of which*	100	126	185	219	68.2%
- Thermal (non-ren.)	100	129	197	237	62.0%
- Nuclear	100	108	116	121	6.0%
Renewable *of which*	100	125	197	318	31.8%
- Thermal (ren.)	100	153	352	546	1.5%
- Hydro	100	122	159	194	18.6%
- Wind	100	728	7,664	20,152	7.1%
- Solar	100	342	11,333	84,604	4.4%
Total	**100**	**126**	**188**	**243**	**100.0%**

52. Total electricity capacity by region, 1990 – 2016

Terawatt

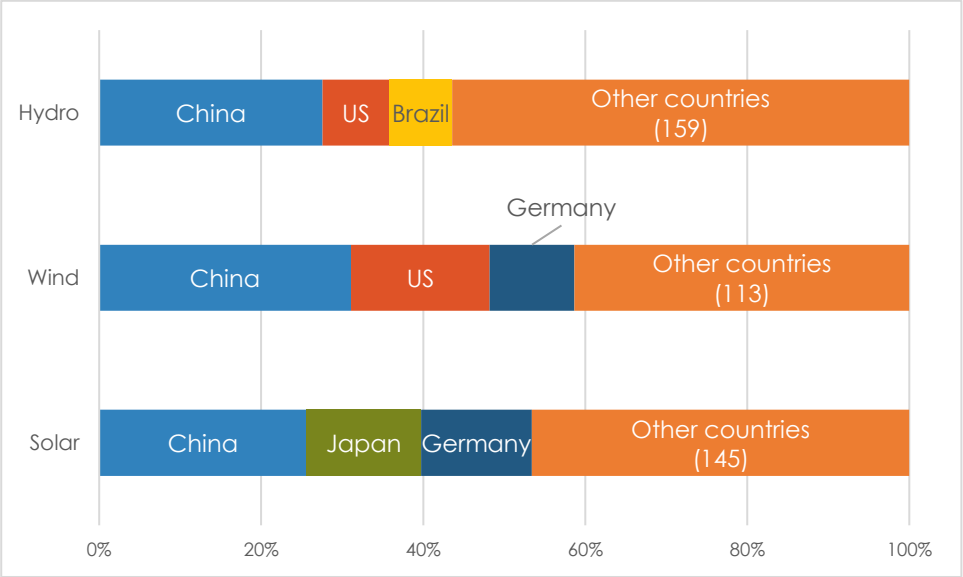


53. Total electricity capacity by region, 1990, 2000, 2010 and 2016

Gigawatt

Region	1990	2000	2010	2016
Africa	74.7	101.4	141.2	193.1
Northern America	838.0	923.0	1,173.8	1,231.3
Latin America and the Caribbean	162.4	231.2	324.2	414.7
Asia	611.8	1,119.4	2,221.9	3,389.4
Europe	1,026.9	1,040.4	1,245.5	1,408.2
Oceania	47.1	56.7	73.4	78.2
World	**2,760.9**	**3,472.1**	**5,180.0**	**6,714.9**

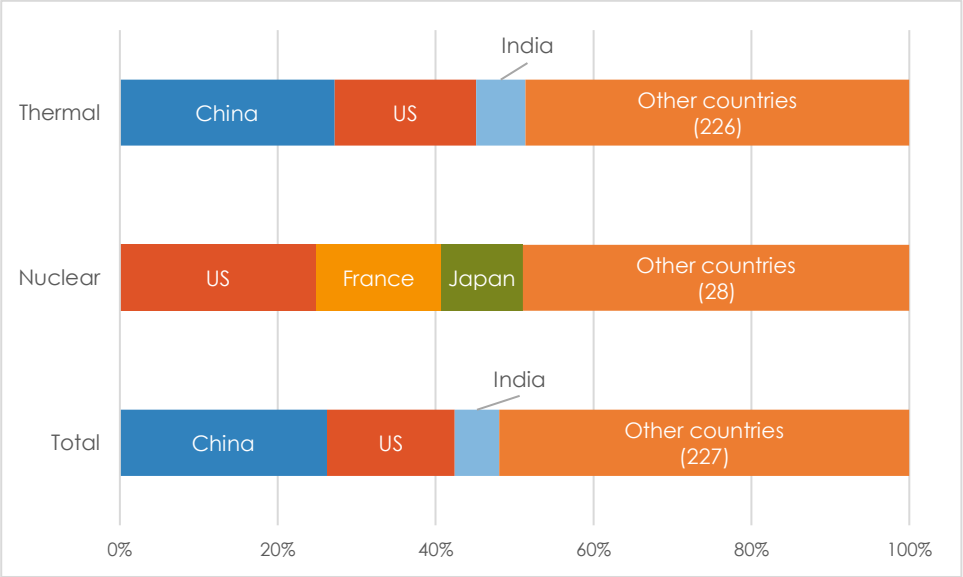
54. Electricity capacity by type (hydro, wind and solar), major countries, 2016
Percentage



55. Electricity capacity by type (hydro, wind and solar), major countries, 2016
Gigawatt

Country	Hydro	Country	Wind	Country	Solar
China	344.4	China	147.5	China	76.3
United States	102.7	United States	81.3	Japan	42.0
Brazil	96.9	Germany	49.6	Germany	40.7
Canada	80.3	India	35.5	United States	34.7
Russian Federation	51.0	Spain	23.0	Italy	19.3
Japan	50.1	United Kingdom	16.2	India	12.5
Others	523.0	Others	121.5	Others	72.2
World	**1,248.3**	**World**	**474.6**	**World**	**297.8**

56. Electricity capacity by type (thermal, nuclear, total) major countries, 2016
Percentage

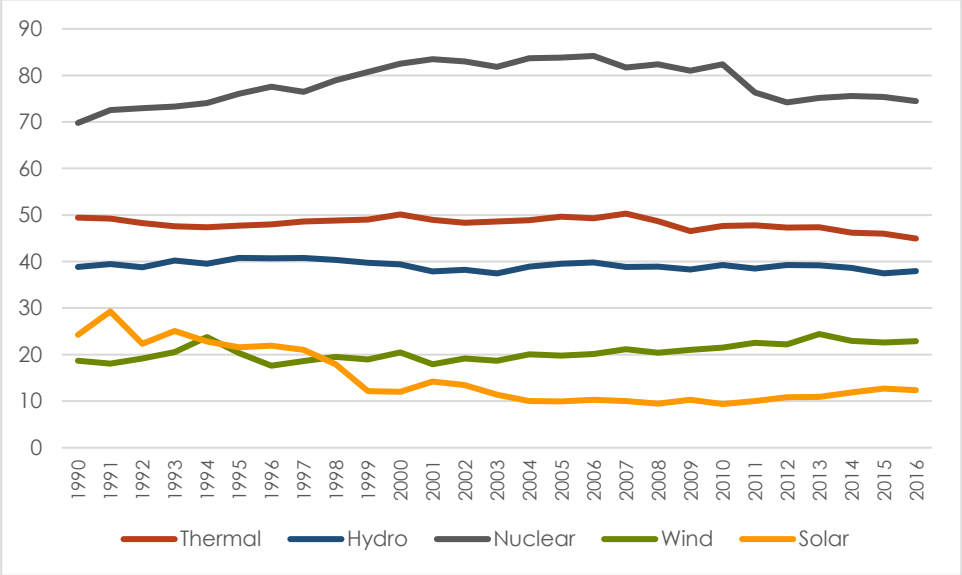


57. Electricity capacity by type (thermal, nuclear, total) major countries, 2016
Gigawatt

Country	Thermal	Country	Nuclear	Country	Total
China	1,160.3	United States	99.6	China	1,762.1
United States	764.8	France	63.1	United States	1,086.8
India	267.1	Japan	41.5	India	377.1
Japan	198.2	China	33.6	Japan	335.6
Russian Federation	187.6	Russian Federation	27.2	Russian Federation	266.5
Germany	95.7	Republic of Korea	23.1	Germany	208.5
Others	1,592.8	Others	111.8	Others	2,678.1
World	**4,266.5**	**World**	**399.9**	**World**	**6,714.9**

58. Utilization of electricity capacity by type, 1990 – 2016

Percentage



59. Utilization of electricity capacity by type, 1990, 2000, 2010 and 2016

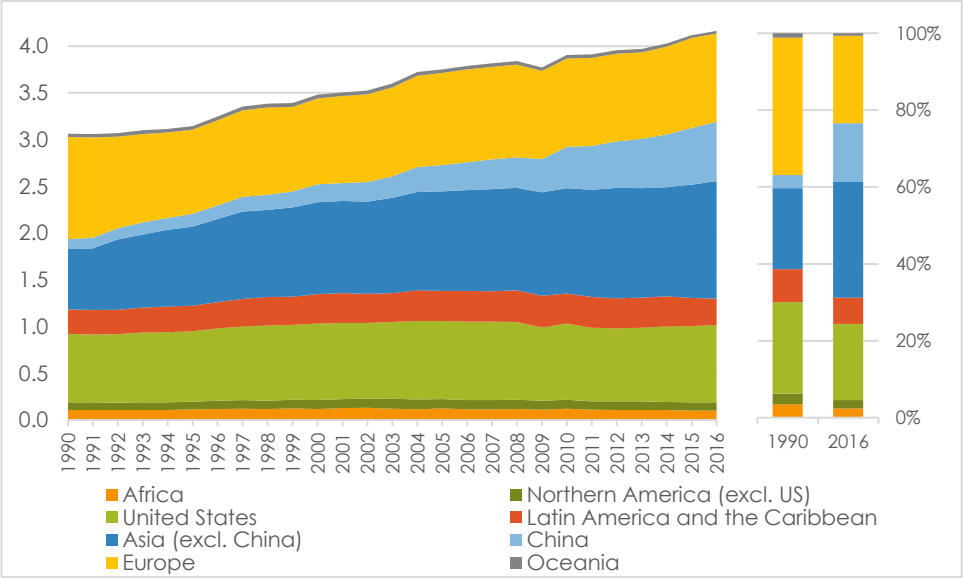
Percentage

Type	1990	2000	2010	2016
Thermal	49%	50%	48%	45%
Hydro	39%	39%	39%	38%
Nuclear	70%	82%	82%	74%
Wind	19%	20%	22%	23%
Solar	24%	12%	9%	12%
Total	**49%**	**51%**	**47%**	**42%**

Refinery output

60. Total refinery output by region, 1990 – 2016

Billion metric tons



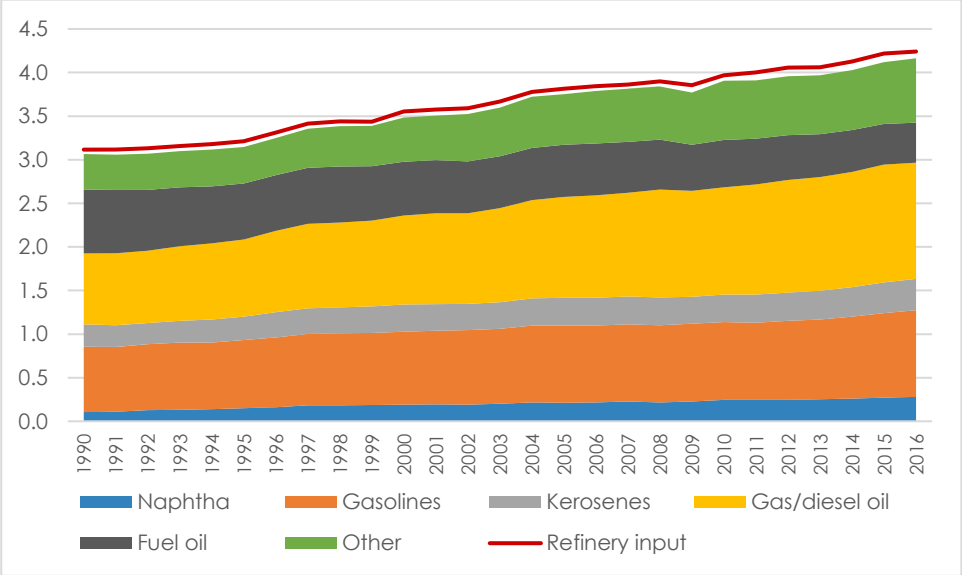
61. Total refinery output by region, 1990, 2000, 2010 and 2016

Million metric tons

Region	1990	2000	2010	2016
Africa	106.3	118.5	119.1	101.7
Northern America (excl. US)	84.2	93.7	96.1	88.7
United States	730.6	817.9	815.8	827.0
Latin America and the Caribbean	261.8	315.2	321.9	280.8
Asia (excl. China)	645.9	983.8	1,127.6	1,258.4
China	106.0	191.8	440.5	633.8
Europe	1,094.3	919.8	947.5	944.8
Oceania	35.5	41.8	36.8	28.3
World	**3,064.4**	**3,482.4**	**3,905.3**	**4,163.5**

62. World total refinery input and refinery output by type of fuel, 1990 – 2016

Billion metric tons



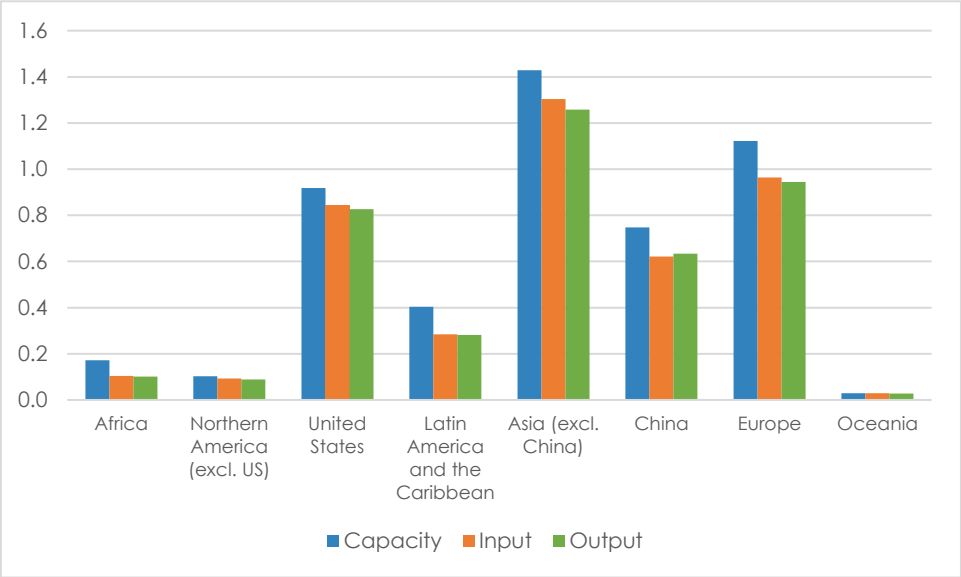
63. World total refinery input and refinery output by type, 1990, 2000, 2010 and 2016

Million metric tons

Refinery input and output	1990	2000	2010	2016
Total refinery input	**3,115.7**	**3,555.3**	**3,969.5**	**4,240.9**
Total refinery output	**3,064.4**	**3,482.4**	**3,905.3**	**4,163.5**
- Naphtha	104.7	192.3	244.3	280.3
- Gasolines	749.0	834.3	893.9	993.8
- Kerosenes	258.1	311.4	316.3	359.0
- Gas/diesel oil	813.2	1,022.8	1,230.6	1,333.9
- Fuel oil	732.1	615.0	540.7	457.7
- Other	407.4	506.7	679.5	738.7

64. Total refinery capacity, input and output by region, 2016

Billion metric tons

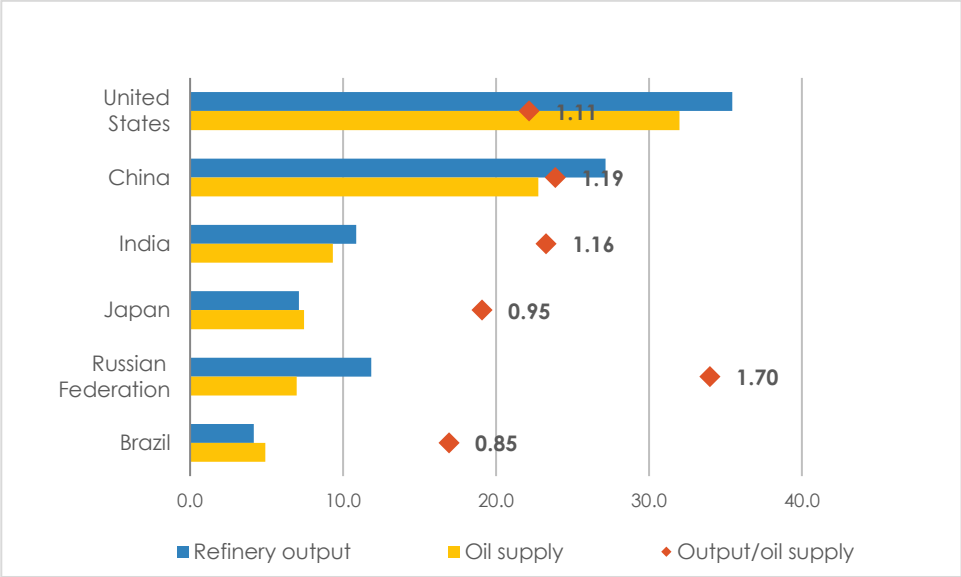


65. Total refinery capacity, input and output by region, 2016

Million metric tons

Region	Capacity	Input	Output
Africa	171.6	104.0	101.7
Northern America (excl. US)	102.6	92.8	88.7
United States	917.8	842.8	827.0
Latin America and the Caribbean	402.9	283.7	280.8
Asia (excl. China)	1,428.6	1,303.4	1,258.4
China	748.1	621.5	633.8
Europe	1,122.3	964.1	944.8
Oceania	29.3	28.6	28.3
World	**4,923.1**	**4,240.9**	**4,163.5**

66. Total refinery output and total oil supply, countries with the largest total oil supply, 2016
Exajoules and ratio between total refinery output and total oil supply



67. Total refinery output and total oil supply[7], countries with the largest total oil supply, 2016
Exajoules and ratio between total refinery output and total oil supply

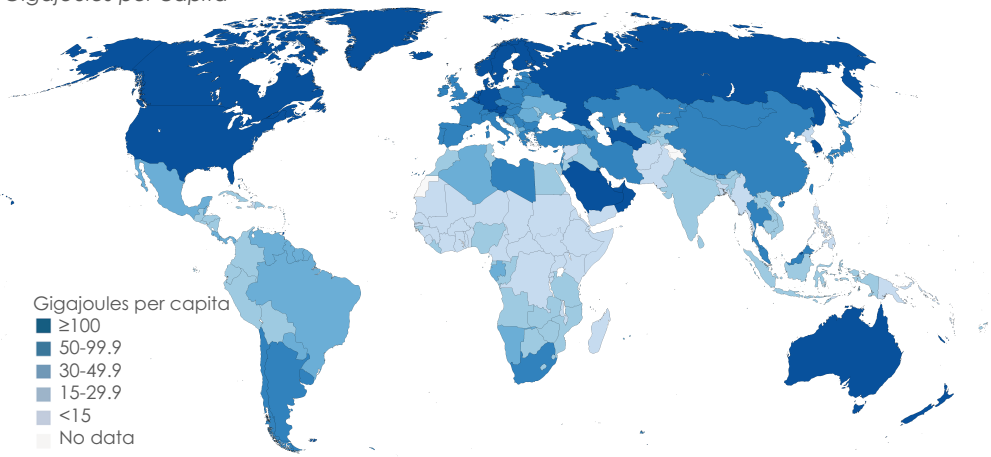
Country	Refinery output	Oil supply	Output/ oil supply
United States	35.5	32.0	1.11
China	27.2	22.8	1.19
India	10.9	9.3	1.16
Japan	7.1	7.5	0.95
Russian Federation	11.9	7.0	1.70
Brazil	4.2	4.9	0.85
Others	82.4	82.0	1.01
World	**179.0**	**181.7**	**-**

(7) World oil energy supply includes international aviation and marine bunkers; conversely, bunkers are excluded from oil energy supply calculated for countries. For further explanations, please refer to the General notes.

Total final consumption

68. Total final consumption per capita, 2016

Gigajoules per capita



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

FACTS AND FIGURES

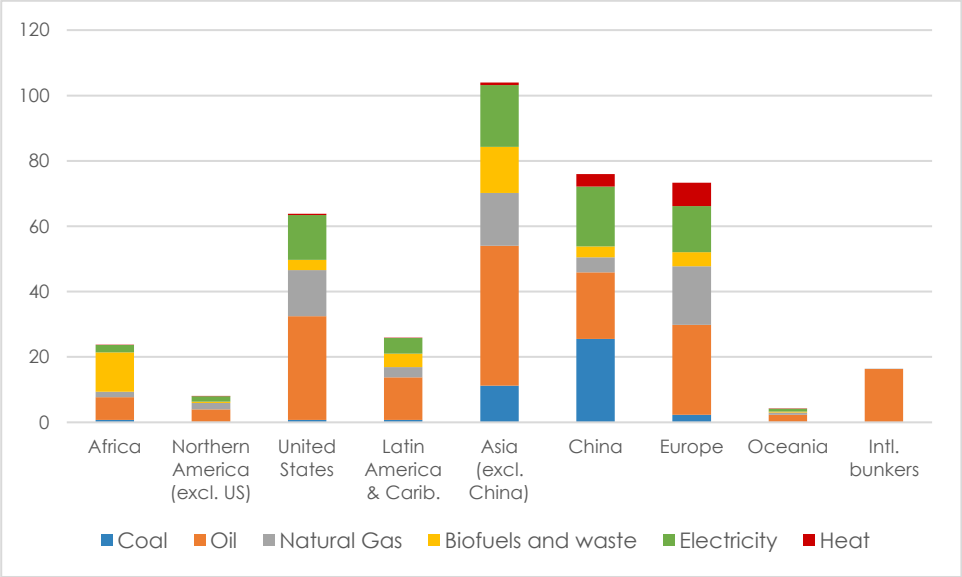
World total final consumption[8] (TFC) exceeded 395 EJ in 2016, showing an increase of 56% compared to 1990. Energy use in the industry and transport sectors dominated TFC in 2016, accounting in total for almost 60% of TFC. Annual energy use in industry decreased for the first time since the crisis in 2009 (almost 2% compared to 2015), whereas transport was the fastest growing consuming sector over the same period. Year-to-year, households and transport consumption increased the most in 2016, respectively by 2.9% and by 2.6% compared to 2015.

In 2016, more than 79% of coal TFC (or 33 EJ) occurred in the industry sector, while 63% of oil TFC (almost 104 EJ) was used for transportation. Most of natural gas TFC happened in industry (more than 37% or 22 EJ) and households (almost 30% or 18 EJ). The largest share of electricity end use was accounted for by the industry sector (42% of all electricity).

(8) Fuels used for electricity generation are not accounted here, but indirectly as electricity TFC. World TFC includes international aviation and marine bunkers. For further explanations, please refer to the General notes.

69. Total final consumption by region and source, 2016

Exajoules



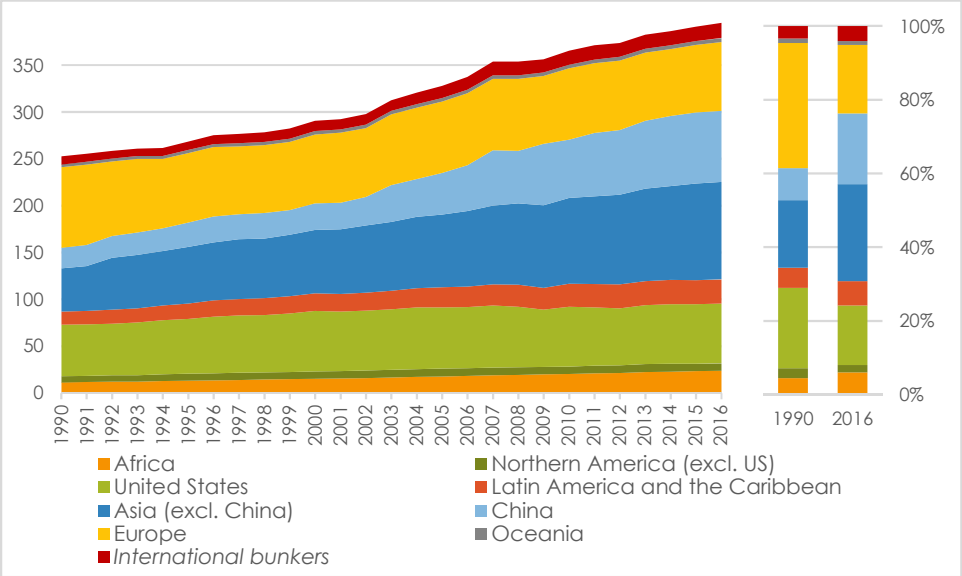
70. Total final consumption by region and source, 2016

Exajoules

Region	Coal	Oil	Natural gas	Biofuels and waste	Elec -tricity	Heat	Total
Africa	0.7	6.9	1.6	12.1	2.3	0.02	23.7
Northern America (excl. US)	0.1	3.9	1.9	0.4	1.7	0.03	8.0
United States	0.7	31.7	14.1	3.2	13.7	0.4	63.8
Latin America and the Caribbean	0.8	13.0	3.1	4.1	4.8	0.01	25.8
Asia (excl. China)	11.2	42.9	16.1	14.1	18.9	0.9	104.0
China	25.5	20.4	4.6	3.3	18.4	3.8	75.9
Europe	2.3	27.5	17.9	4.3	14.1	7.2	73.4
Oceania	0.1	2.2	0.7	0.3	0.9	0.02	4.2
International bunkers	-	*16.3*	*0+*	-	-	-	*16.3*
World	**41.5**	**164.8**	**60.1**	**41.7**	**74.8**	**12.3**	**395.1**

71. Total final consumption by region, 1990 – 2016

Exajoules



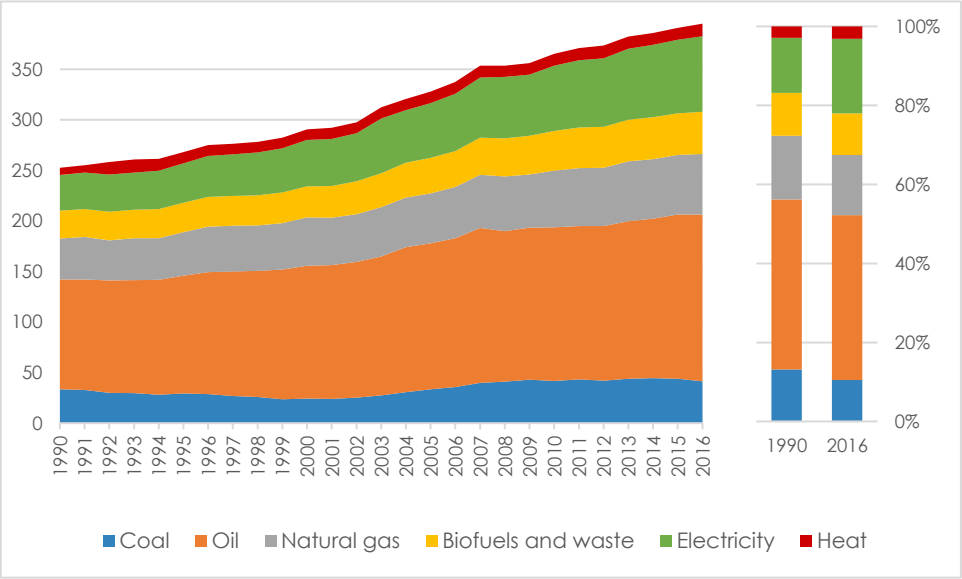
72. Total final consumption by region, 1990, 2000, 2010 and 2016

Exajoules

Region	1990	2000	2010	2016
Africa	11.2	15.0	20.2	23.7
Northern America (excl. US)	6.8	8.0	8.0	8.0
United States	55.0	64.6	63.7	63.8
Latin America and the Caribbean	14.0	18.9	24.7	25.8
Asia (excl. China)	46.1	67.7	91.3	104.0
China	22.0	28.2	62.2	75.9
Europe	85.8	73.5	76.3	73.4
Oceania	2.9	3.6	3.9	4.2
International bunkers	*8.8*	*11.1*	*14.9*	*16.3*
World	**252.7**	**290.6**	**365.3**	**395.1**

73. World total final consumption by source, 1990 – 2016

Exajoules



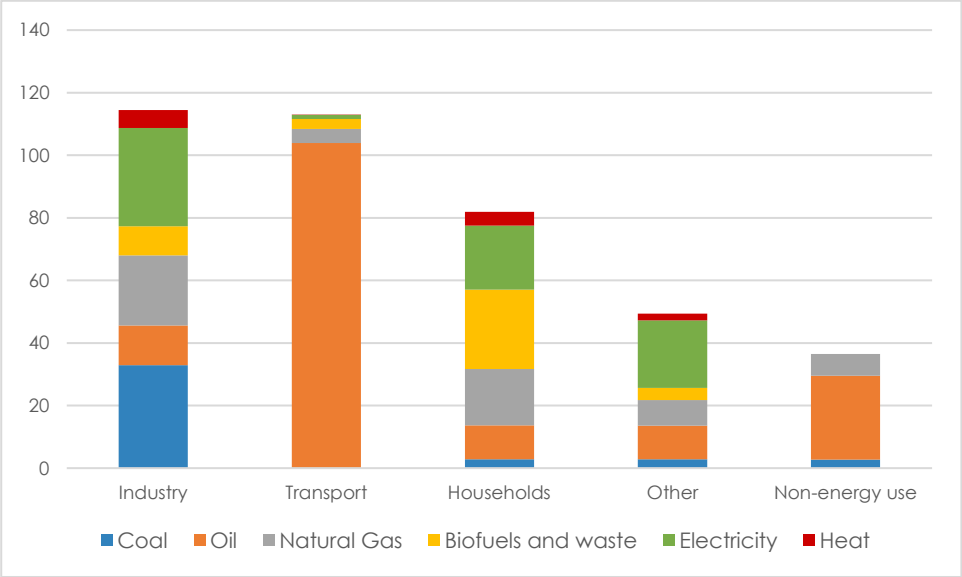
74. World total final consumption by source, 1990, 2000, 2010 and 2016

Exajoules

Source	1990	2000	2010	2016
Coal	33.3	24.4	41.7	41.5
Oil	108.7	131.1	152.1	164.8
Natural gas	40.7	48.0	55.9	60.1
Biofuels and waste	27.4	30.8	39.3	41.7
Electricity	35.3	45.8	64.4	74.8
Heat	7.2	10.5	11.9	12.3
Total	**252.7**	**290.6**	**365.3**	**395.1**

75. World total final consumption by sector and source, 2016

Exajoules



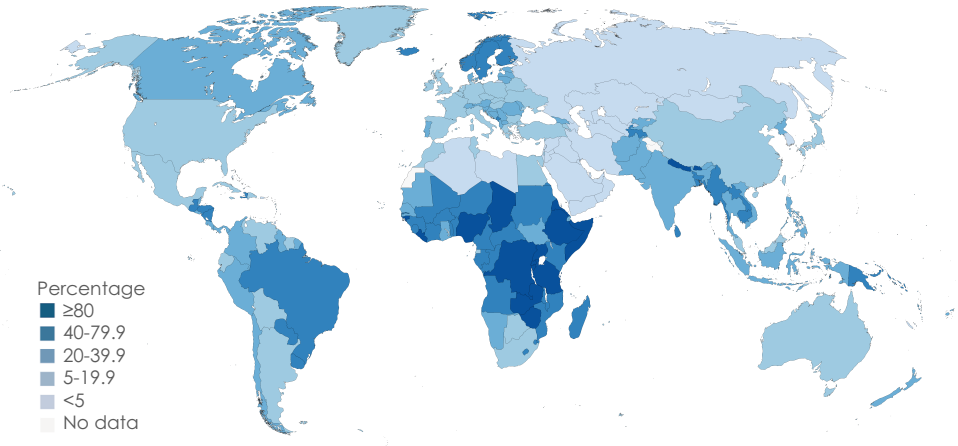
76. World total final consumption by sector and source, 2016

Exajoules

Sector	Coal	Oil	Natural gas	Biofuels and waste	Elec-tricity	Heat	Total
Total final consumption	**41.5**	**164.8**	**60.1**	**41.7**	**74.8**	**12.3**	**395.1**
- Total energy consumption	38.7	138.0	53.1	41.7	74.8	12.3	358.7
- Industry	32.9	12.7	22.5	9.2	31.4	5.7	114.4
- Transport	0.1	103.9	4.5	3.2	1.3	0.03	112.9
-of which Intl. bunkers	-	16.3	0+	-	-	-	16.3
- Households	2.8	10.8	18.0	25.4	20.5	4.4	81.9
- Other	2.9	10.7	8.2	3.9	21.6	2.2	49.4
- Non-energy use	2.8	26.8	6.9	-	-	-	36.5

77. Renewable energy share in total final energy consumption (TFEC), 2016

Percentage



Source: United Nations Energy Database.
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

78. Final consumption (total and per capita) and renewable energy share in TFEC, major countries, 2016

Exajoules, gigajoules per capita and percentage

Country	TFC	Country	TFC per capita	Country	% REN in TFEC
China	75.9	Trinidad and Tobago	394.6	Dem.Rep.Congo	97.0%
United States	63.8	Iceland	378.1	Somalia	94.7%
India	26.7	Qatar	291.5	Ethiopia	89.6%
Russian Fed.	19.8	Luxembourg	262.3	Burundi	89.2%
Japan	12.3	United Arab Emirates	253.8	Uganda	88.6%
Brazil	9.8	S. Maarten (Dutch part)	245.8	Zambia	87.9%
Germany	9.4	Gibraltar	237.0	Guinea-Bissau	86.4%
Canada	8.0	Falkland Isl. (Malvinas)	230.4	U.Rep.Tanzania	86.2%
Others	153.2	Others	50.3	Others	16.7%
World	**395.1**	**World**	**52.9**	**World**	**16.8%**

Energy balance, 2016 *(Exajoules)*				
World	Primary coal	Coal products	Primary oil	Oil products
Primary production	152.1	-	185.9	-
Imports	31.7	0.8	96.7	58.7
Exports	-34.3	-0.8	-97.1	-61.1
Stock changes	4.4	0.5	-0.9	-0.4
Total energy supply	153.9	0.4	184.6	-2.8
Statistical difference	-1.2	-0.3	-0.2	-2.4
Transfers	-	-	-1.7	5.4
Transformation	-119.5	11.2	-181.7	168.5
Electricity plants	-83.9	-1.8	-1.6	-7.4
- CHP and heat plants	-13.0	-0.9	-0.04	-1.2
- Coke ovens	-19.9	21.4	-	-0.1
- Oil refineries	-	-	-171.2	170.8
- Other transformation	-2.6	-7.5	-8.8	6.4
- Energy industries own use	-4.8	-1.1	-0.5	-9.1
Losses	-0.1	-0.1	-0.4	-0.02
Final consumption	30.8	10.7	0.5	164.3
- Final energy consumption	28.9	9.8	0.3	137.8
- Industry	23.3	9.6	0.3	12.4
- Iron and steel	3.8	8.0	0+	0.3
- Chemical and petrochem.	2.3	0.4	0.1	2.4
- Non-ferrous metals	0.1	0.02	0+	0.2
- Non-metallic minerals	1.5	0.1	0+	1.4
- Other industries	15.6	1.1	0.1	8.2
- Transport[9]	0.1	0+	0+	103.9
- of which Road	-	-	-	77.9
- of which Aviation	-	-	-	13.0
- Households	2.7	0.2	-	10.8
- Commerce, public services	0.4	0.02	-	2.8
- Other energy use	2.4	0.04	0+	7.9
- Non-energy use	1.9	0.9	0.3	26.5

(9) Including international bunkers.

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
127.1	52.8	28.2	19.2	3.7	569.0	73.9
37.8	1.0	-	2.6	0+	229.2	0.9
-37.9	-0.8	-	-2.6	0-	-234.7	-0.8
0.8	0-	-	-	-	4.4	0-
127.8	53.0	28.2	19.2	3.7	567.9	74.1
1.2	0-	-	0.4	0.03	-2.5	19.6
-	-0.1	-	-	-	3.6	-0.1
-52.9	-10.8	-28.2	70.4	11.1	-131.8	-12.3
-36.4	-5.0	-27.9	62.9	-3.6	-104.7	-6.9
-15.0	-2.5	-0.3	7.5	14.7	-10.8	-2.1
0-	0-	-	-	-	1.3	-
-0.02	-	-	-	-	-0.4	-
-1.5	-3.2	-	-	-	-17.2	-3.2
-12.4	-0.5	-	-7.4	-1.5	-37.4	-0.5
-1.1	-0.01	-	-7.0	-0.9	-9.7	-0.01
60.1	41.7	-	74.8	12.3	395.1	41.6
53.1	41.7	-	74.8	12.3	358.7	41.6
22.5	9.2	-	31.4	5.7	114.4	8.9
2.3	0.2	-	4.1	0.6	19.2	0.2
4.9	0.1	-	4.2	2.2	16.6	0.1
0.5	0.01	-	1.7	0.02	2.6	0.01
1.9	0.2	-	0.9	0.1	6.1	0.1
12.8	8.7	-	20.6	2.8	69.9	8.6
4.5	3.2	-	1.3	0.03	112.9	3.2
1.7	3.2	-	0.1	-	82.8	3.2
-	-	-	-	-	13.0	-
18.0	25.4	-	20.5	4.4	81.9	25.6
7.3	1.1	-	15.3	1.6	28.5	1.2
0.9	2.8	-	6.2	0.6	20.9	2.8
6.9	-	-	-	-	36.5	-

(10) See General notes.

Energy balance, 2016 *(Petajoules)*				
Africa	Primary coal	Coal products	Primary oil	Oil products
Primary production	6,313.2	-	15,631.3	-
Imports	330.3	10.7	1,619.8	5,118.0
Exports	-1,879.2	-7.4	-12,134.6	-1,728.3
International bunkers	-	-	-	-546.5
Stock changes	94.4	-2.2	-108.4	-16.2
Total energy supply	4,858.6	1.1	5,008.1	2,827.0
Statistical difference	-44.1	0+	-5.3	62.0
Transfers	-	-	-194.7	237.0
Transformation	-3,777.9	121.4	-4,750.6	4,075.0
- Electricity plants	-3,230.8	-	-67.1	-829.3
- CHP and heat plants	-1.1	-	-	-
- Coke ovens	-98.6	91.0	-	-
- Oil refineries	-	-	-4,382.3	4,340.6
- Other transformation	-447.3	30.4	-301.2	563.7
Energy industries own use	-501.1	-0.7	-33.9	-124.6
Losses	-	-	-34.3	-7.5
Final consumption	623.7	121.8	-	6,944.9
- Final energy consumption	567.6	121.8	-	6,550.1
- Industry	375.1	120.2	-	765.8
. Iron and steel	58.1	65.5	-	0.1
. Chemical and petrochem.	0.1	37.4	-	3.4
. Non-ferrous metals	43.1	-	-	3.3
. Non-metallic minerals	84.1	5.0	-	83.1
. Other industries	189.7	12.4	-	675.9
- Transport	0.1	-	-	4,776.7
. of which Road	-	-	-	4,608.3
- Households	118.0	0.1	-	610.7
- Commerce, public services	58.5	1.4	-	77.1
- Other energy use	15.9	0.1	-	319.8
- Non-energy use	56.1	-	-	394.8

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
7,357.4	14,629.6	162.3	467.6	182.9	44,744.2	15,273.3
641.1	4.5	-	151.7	-	7,876.1	4.5
-3,342.2	-14.4	-	-134.8	-	-19,241.0	-14.4
-	-	-	-	-	-546.5	-
18.0	-	-	-	-	-14.3	-
4,674.2	14,619.8	162.3	484.5	182.9	32,818.5	15,263.4
-195.8	-2.7	-	67.2	0-	-118.7	485.2
-	-	-	-	-	42.3	-
-2,638.2	-2,569.7	-162.3	2,450.4	-163.3	-7,415.1	-2,721.4
-2,481.8	-41.9	-162.3	2,446.8	-174.9	-4,541.2	-193.6
-1.5	-21.5	-	3.6	11.6	-9.0	-21.5
-	-	-	-	-	-7.6	-
-	-	-	-	-	-41.8	-
-154.9	-2,506.3	-	-	-	-2,815.5	-2,506.2
-575.3	-0.01	-	-197.5	0+	-1,433.2	-0.01
-21.1	-1.3	-	-371.4	-	-435.6	-1.3
1,635.4	12,051.4	-	2,298.8	19.6	23,695.7	12,055.5
1,280.4	12,051.4	-	2,298.8	19.6	22,889.8	12,055.5
815.4	874.6	-	916.4	11.5	3,879.1	871.5
73.2	-	-	20.4	-	217.4	-
61.8	0.4	-	51.8	-	154.9	0.1
5.8	-	-	124.3	-	176.6	-
102.9	5.7	-	36.4	-	317.2	3.0
571.7	868.5	-	683.5	11.5	3,013.1	868.4
50.2	1.4	-	20.0	-	4,848.4	1.4
11.9	1.4	-	0.1	-	4,621.8	1.4
366.2	10,299.0	-	800.0	3.0	12,196.9	10,301.0
6.5	369.8	-	389.7	0.1	903.1	369.9
42.1	506.6	-	172.7	5.1	1,062.3	511.7
355.0	-	-	-	-	805.9	-

(10) See General notes.

Energy balance, 2016 *(Petajoules)*				
Northern America	Primary coal	Coal products	Primary oil	Oil products
Primary production	15,846.6	-	31,984.8	-
Imports	376.1	32.9	18,636.6	4,973.3
Exports	-2,209.0	-27.4	-8,562.0	-9,133.6
International bunkers	-	-	-	-1,771.0
Stock changes	1,003.1	17.1	-197.4	15.0
Total energy supply	15,016.8	22.5	41,862.1	-5,916.3
Statistical difference	-141.3	2.9	-72.6	-1,621.6
Transfers	-	-	-831.3	1,028.4
Transformation	-14,548.9	268.6	-40,984.1	40,901.9
- Electricity plants	-13,615.3	-3.8	-	-329.2
- CHP and heat plants	-331.4	-21.5	-	-89.7
- Coke ovens	-475.3	450.8	-	-
- Oil refineries	-	-	-38,076.5	37,905.6
- Other transformation	-126.9	-157.0	-2,907.6	3,415.2
Energy industries own use	-1.4	-48.9	-	-2,153.6
Losses	-	-	-	-0.1
Final consumption	607.8	239.4	119.3	35,481.9
- Final energy consumption	606.5	238.5	0+	29,921.0
- Industry	584.0	238.5	0+	1,096.3
. Iron and steel	18.1	206.4	-	7.6
. Chemical and petrochem.	111.5	-	-	130.2
. Non-ferrous metals	6.9	-	-	21.4
. Non-metallic minerals	208.9	1.9	-	77.5
. Other industries	238.6	30.2	0+	859.7
- Transport	-	-	-	26,616.6
. of which Road	-	-	-	23,138.0
- Households	0.3	-	-	677.6
- Commerce, public services	22.2	-	-	716.8
- Other energy use	-	-	-	813.7
- Non-energy use	1.3	0.9	119.3	5,560.9

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
32,378.6	4,561.2	10,163.5	3,481.5	805.1	99,221.3	8,641.0
3,623.4	161.8	-	284.1	-	28,088.0	161.8
-5,084.6	-156.1	-	-298.0	-	-25,470.8	-156.1
-	-	-	-	-	-1,771.0	-
384.9	-11.2	-	-	-	1,211.5	-11.2
31,302.2	4,555.6	10,163.5	3,467.5	805.1	101,279.0	8,635.5
417.1	0.04	-	48.8	-	-1,366.7	3,561.8
-	-	-	-	-	197.1	-
-11,254.3	-981.6	-10,163.5	14,403.7	-174.4	-22,532.5	-1,438.8
-9,179.2	-754.7	-10,163.5	13,217.6	-709.0	-21,537.1	-1,245.4
-1,813.3	-72.7	-	1,186.2	534.5	-607.9	-39.2
-	-	-	-	-	-24.5	-
-	-	-	-	-	-170.9	-
-261.7	-154.2	-	-	-	-192.2	-154.2
-3,646.4	-5.2	-	-1,322.4	-169.5	-7,347.2	-5.2
-	-	-	-1,079.8	-61.2	-1,141.1	-
15,984.4	3,568.9	-	15,420.3	399.9	71,822.0	3,629.7
15,071.4	3,568.9	-	15,420.3	399.9	65,226.6	3,629.7
5,742.9	1,256.0	-	3,476.8	242.1	12,636.6	1,230.2
383.3	0.1	-	176.3	8.1	799.9	0.1
1,996.9	10.0	-	525.8	145.4	2,919.9	1.8
184.2	0.04	-	426.9	4.3	643.7	0.04
400.9	6.7	-	157.6	0.2	853.5	0.6
2,777.6	1,239.1	-	2,190.3	84.2	7,419.6	1,227.7
879.9	1,435.8	-	63.1	-	28,995.4	1,435.8
42.9	1,423.0	-	16.6	-	24,620.5	1,423.0
4,831.2	674.3	-	5,667.8	22.6	11,873.8	696.5
3,520.6	30.8	-	5,314.7	132.6	9,737.7	93.5
96.9	171.9	-	898.0	2.6	1,983.0	173.7
913.1	-	-	-	-	6,595.5	-

(10) See General notes.

Energy balance, 2016 *(Petajoules)*				
Latin America and the Caribbean	Primary coal	Coal products	Primary oil	Oil products
Primary production	2,958.2	-	21,845.5	-
Imports	1,231.7	72.5	1,968.8	5,896.9
Exports	-2,304.8	-41.3	-10,815.1	-2,425.8
International bunkers	-	-	-	-1,153.9
Stock changes	30.2	-0.1	109.0	53.9
Total energy supply	1,915.3	31.1	13,108.3	2,371.2
Statistical difference	5.5	2.3	-36.7	-388.7
Transfers	-	-	-282.9	303.1
Transformation	-1,546.7	428.8	-12,842.3	10,742.8
- Electricity plants	-1,113.2	-21.8	-24.6	-1,699.0
- CHP and heat plants	-3.7	-	-	-27.2
- Coke ovens	-429.8	492.1	-	-70.1
- Oil refineries	-	-	-11,890.1	11,626.5
- Other transformation	-	-41.5	-927.6	912.7
Energy industries own use	-	-31.9	-18.9	-775.9
Losses	-1.2	-3.1	-0.1	-9.9
Final consumption	362.0	422.5	0.8	13,020.0
- Final energy consumption	361.8	419.9	0.8	12,005.6
- Industry	359.0	416.4	0.6	1,669.0
. Iron and steel	120.2	401.4	-	18.5
. Chemical and petrochem.	14.4	0.1	-	209.8
. Non-ferrous metals	0.1	-	-	-
. Non-metallic minerals	55.7	-	-	142.2
. Other industries	168.6	15.0	0.6	1,298.6
- Transport	-	-	0.2	8,530.0
. of which Road	-	-	-	8,122.4
- Households	2.8	2.3	-	855.4
- Commerce, public services	-	0.1	-	188.0
- Other energy use	0.05	1.1	-	763.2
- Non-energy use	0.1	2.6	-	1,014.3

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
7,478.3	5,873.0	374.9	2,824.2	381.1	41,735.3	9,077.3
2,517.7	32.9	-	205.9	-	11,926.5	32.9
-1,320.4	-102.0	-	-201.9	-	-17,211.2	-102.0
0⁻	-	-	-	-	-1,153.9	-
8.6	-0.5	-	-	-	201.2	-0.5
8,684.3	5,803.5	374.9	2,828.2	381.1	35,497.9	9,007.7
266.9	-18.3	-	-30.5	0⁺	-199.6	2,843.3
-	-121.1	-	-	-	-100.9	-121.1
-3,602.1	-1,158.4	-374.9	3,033.2	-367.7	-5,687.5	-1,487.8
-3,384.2	-807.3	-374.9	2,934.1	-367.7	-4,858.8	-1,136.7
-227.6	-195.3	-	99.1	-	-354.7	-195.3
-	-	-	-	-	-7.8	-
-	-	-	-	-	-263.6	-
9.7	-155.9	-	-	-	-202.6	-155.9
-1,649.6	-443.7	-	-275.4	-	-3,195.4	-443.7
-69.1	-5.4	-	-843.0	-	-931.7	-5.4
3,096.5	4,093.2	-	4,773.6	13.3	25,781.9	4,106.5
2,602.3	4,093.2	-	4,773.6	13.3	24,270.6	4,106.5
1,665.9	1,871.6	-	2,006.1	0.5	7,989.1	1,872.2
333.7	136.7	-	172.9	0⁺	1,183.3	136.7
284.9	5.8	-	122.0	-	636.9	5.8
21.1	-	-	22.6	-	43.9	-
133.4	0.6	-	51.6	-	383.5	0.6
892.8	1,728.5	-	1,637.0	0.5	5,741.5	1,729.1
280.0	665.9	-	19.5	-	9,495.7	665.9
212.0	665.9	-	1.7	-	9,002.0	665.9
530.5	1,387.3	-	1,382.4	6.8	4,167.5	1,394.1
92.6	25.9	-	1,047.2	4.6	1,358.4	30.4
33.3	142.4	-	318.4	1.4	1,259.9	143.8
494.2	-	-	-	-	1,511.3	-

(10) See General notes.

Energy balance, 2016 *(Petajoules)*

Asia	Primary coal	Coal products	Primary oil	Oil products
Primary production	98,897.1	-	85,215.9	-
Imports	23,355.6	283.0	48,778.9	23,653.3
Exports	-11,697.8	-332.2	-49,418.0	-25,597.7
International bunkers	-	-	-	-8,079.9
Stock changes	2,624.5	439.9	-760.1	-380.8
Total energy supply	113,179.3	390.8	83,816.7	-10,405.1
Statistical difference	-1,063.5	-329.0	-96.7	-321.9
Transfers	-	-	-239.3	3,447.0
Transformation	-82,071.8	8,776.4	-82,891.4	73,612.2
- Electricity plants	-58,558.9	-1,542.4	-1,534.1	-4,133.7
- CHP and heat plants	-6,848.9	-507.6	-	-354.4
- Coke ovens	-15,438.1	17,305.6	-	-20.6
- Oil refineries	-	-	-77,087.8	77,247.4
- Other transformation	-1,225.8	-6,479.3	-4,269.5	873.6
Energy industries own use	-4,216.7	-673.8	-437.3	-3,985.1
Losses	-111.0	-5.2	-54.4	-1.7
Final consumption	27,843.3	8,817.3	291.1	62,989.2
- Final energy consumption	26,061.6	7,998.3	250.1	49,223.3
- Industry	21,316.0	7,835.5	250.1	6,721.6
. Iron and steel	3,485.4	6,449.8	0.01	223.6
. Chemical and petrochem.	2,053.9	367.3	118.4	1,280.2
. Non-ferrous metals	36.0	9.4	0+	146.1
. Non-metallic minerals	908.8	13.5	0.1	759.3
. Other industries	14,831.8	995.5	131.6	4,312.5
- Transport	82.6	0.9	-	29,798.3
. of which Road	-	-	-	25,401.8
- Households	2,114.3	112.0	-	6,832.3
- Commerce, public services	204.6	15.6	-	967.6
- Other energy use	2,344.2	34.3	-	4,903.6
- Non-energy use	1,781.7	819.0	41.0	13,765.9

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
44,916.9	20,352.1	5,172.3	7,981.3	1,218.4	263,754.0	28,915.9
14,269.1	42.5	-	378.6	-	110,760.9	41.9
-11,584.3	-19.1	-	-336.0	-	-98,985.0	-19.1
-	-	-	-	-	-8,079.9	-
83.0	3.9	-	-	-	2,010.4	4.1
47,684.7	20,379.5	5,172.3	8,023.8	1,218.4	269,460.4	28,942.9
929.5	22.2	-	316.5	13.0	-529.9	8,110.1
-	-	-	-	-	3,207.7	-
-20,680.1	-3,008.7	-5,172.3	36,556.5	4,091.6	-70,787.6	-3,518.0
-18,432.7	-2,440.8	-5,172.3	35,610.9	-1,715.5	-57,919.5	-3,025.2
-1,336.4	-170.3	-	945.7	5,807.1	-2,464.9	-100.1
-	-4.8	-	-	-	1,842.0	-
-22.2	-	-	-	-	137.5	-
-888.8	-392.7	-	-	-	-12,382.6	-392.7
-4,634.4	-12.1	-	-3,604.9	-584.2	-18,148.4	-12.1
-693.6	-	-	-3,391.8	-86.6	-4,344.1	-
20,747.1	17,336.6	-	37,267.2	4,626.2	179,917.9	17,302.8
17,843.1	17,336.6	-	37,267.2	4,626.2	160,606.4	17,302.8
8,830.7	3,850.2	-	19,294.4	2,780.1	70,878.8	3,726.2
604.1	27.9	-	2,951.2	236.0	13,978.0	26.1
1,483.3	47.5	-	2,546.3	1,201.0	9,097.9	28.4
57.6	6.1	-	255.6	0.4	511.2	4.6
221.1	63.4	-	317.1	0.2	2,283.4	13.4
6,464.7	3,705.3	-	13,224.2	1,342.6	45,008.3	3,653.7
1,769.4	472.6	-	630.6	26.4	32,780.8	472.6
1,304.6	472.3	-	104.2	-	27,283.0	472.3
5,206.0	10,802.8	-	8,414.0	1,246.8	34,728.0	10,914.9
1,534.8	402.9	-	4,387.0	133.2	7,645.6	387.6
502.1	1,808.2	-	4,541.1	439.7	14,573.2	1,801.5
2,904.0	-	-	-	-	19,311.5	-

(10) See General notes.

Energy balance, 2016 *(Petajoules)*

Europe	Primary coal	Coal products	Primary oil	Oil products
Primary production	15,819.9	-	30,363.1	-
Imports	6,379.7	377.3	24,741.6	17,583.6
Exports	-5,698.5	-418.4	-15,623.3	-22,128.4
International bunkers	-	-	-	-4,510.9
Stock changes	461.6	-4.2	89.3	-26.3
Total energy supply	16,962.8	-45.3	39,570.7	-9,082.1
Statistical difference	6.1	33.4	-9.9	-111.2
Transfers	-	-	-123.7	239.2
Transformation	-15,655.3	1,559.1	-39,031.1	38,029.8
- Electricity plants	-5,656.9	-213.1	-	-320.3
- CHP and heat plants	-5,820.8	-382.8	-35.4	-702.2
- Coke ovens	-3,373.1	2,926.6	-	-15.1
- Oil refineries	-	-	-38,639.7	38,506.6
- Other transformation	-804.5	-771.7	-356.0	560.8
Energy industries own use	-76.8	-319.6	-12.7	-1,917.3
Losses	-2.6	-76.5	-298.1	-2.2
Final consumption	1,222.0	1,084.3	115.0	27,378.6
- Final energy consumption	1,186.4	1,021.1	2.0	21,770.6
- Industry	605.8	967.2	1.2	1,942.7
. Iron and steel	133.3	823.8	-	38.4
. Chemical and petrochem.	122.8	33.3	1.0	754.2
. Non-ferrous metals	14.9	3.0	-	15.8
. Non-metallic minerals	208.1	76.2	0.04	295.2
. Other industries	126.7	30.8	0.1	839.1
- Transport	1.0	0.01	-	16,218.8
. of which Road	-	-	-	15,249.1
- Households	429.4	48.8	-	1,839.9
- Commerce, public services	100.0	3.8	-	810.1
- Other energy use	50.3	1.3	0.8	959.2
- Non-energy use	35.5	63.2	113.0	5,608.0

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
31,483.5	7,074.2	12,321.3	4,232.7	769.1	102,063.8	11,149.4
16,507.6	723.7	-	1,610.4	0.2	67,924.3	707.5
-14,558.0	-476.4	-	-1,652.5	-0.2	-60,555.7	-475.1
-2.0	-	-	-	-	-4,512.9	-
352.9	6.0	-	-	-	879.2	6.6
33,784.0	7,327.5	12,321.3	4,190.6	769.1	105,798.7	11,388.5
-134.6	-3.7	-	35.6	13.3	-171.0	4,338.1
-	-	-	-	-	115.4	-
-14,202.7	-2,987.5	-12,321.3	13,105.6	8,011.8	-23,491.6	-2,808.7
-2,504.2	-930.2	-12,006.4	7,878.5	-365.4	-14,118.1	-1,049.1
-11,536.1	-2,026.8	-314.9	5,227.1	8,377.3	-7,214.6	-1,729.2
-1.1	-	-	-	-	-462.7	-
-	-	-	-	-	-133.1	-
-161.3	-30.4	-	-	-	-1,563.1	-30.4
-1,467.7	-39.0	-	-1,857.1	-767.5	-6,457.7	-27.8
-334.5	-1.0	-	-1,280.4	-785.8	-2,781.1	-1.0
17,913.6	4,303.7	-	14,123.2	7,214.3	73,354.7	4,212.9
15,758.9	4,303.7	-	14,123.2	7,214.3	65,380.3	4,212.9
5,054.8	1,208.2	-	5,388.9	2,661.2	17,829.8	1,011.3
921.7	19.3	-	751.5	331.7	3,019.8	0.8
1,001.5	49.5	-	888.5	852.5	3,703.3	19.1
152.6	0.6	-	694.2	17.1	898.1	0.1
947.5	164.2	-	330.7	105.1	2,127.2	50.7
2,031.5	974.5	-	2,723.9	1,354.8	8,081.4	940.5
1,460.2	597.7	-	572.3	-	18,850.0	597.7
83.5	595.7	-	7.1	-	15,935.4	595.7
6,896.9	2,130.5	-	3,957.8	3,110.7	18,413.8	2,221.4
2,099.5	264.4	-	3,903.6	1,293.7	8,475.2	273.2
247.5	103.0	-	300.5	148.7	1,811.4	109.4
2,154.7	-	-	-	-	7,974.4	-

(10) See General notes.

Energy balance, 2016 *(Petajoules)*				
Oceania	Primary coal	Coal products	Primary oil	Oil products
Primary production	12,295.3	-	831.9	-
Imports	38.6	6.0	925.5	1,443.6
Exports	-10,541.1	-19.2	-564.4	-119.0
International bunkers	-	-	-	-259.2
Stock changes	155.7	-0.4	4.0	-5.5
Total energy supply	1,948.5	-13.6	1,197.0	1,059.9
Statistical difference	-10.9	-	-5.2	-23.2
Transfers	-	-	0.3	139.5
Transformation	-1,854.2	72.9	-1,199.5	1,121.8
- Electricity plants	-1,717.3	-0.5	-	-114.1
- CHP and heat plants	-21.7	-7.2	-	-1.0
- Coke ovens	-113.5	112.3	-	-
- Oil refineries	-	-	-1,123.9	1,150.9
- Other transformation	-1.6	-31.6	-75.6	85.9
Energy industries own use	-2.4	-39.3	-2.4	-179.7
Losses	-	-0.3	-	-
Final consumption	102.8	19.7	0.6	2,164.6
- Final energy consumption	96.5	19.7	0.6	1,991.0
- Industry	93.5	19.6	0.6	203.6
. Iron and steel	1.0	13.4	-	0.7
. Chemical and petrochem.	5.9	0.5	-	4.1
. Non-ferrous metals	35.8	3.8	-	17.0
. Non-metallic minerals	19.5	0.1	-	12.1
. Other industries	31.2	1.8	0.6	169.6
- Transport	-	-	-	1,604.2
. of which Road	-	-	-	1,364.9
- Households	0.3	0.02	-	22.1
- Commerce, public services	1.5	0.04	-	40.8
- Other energy use	1.1	0^{+}	-	120.4
- Non-energy use	6.3	-	-	173.6

Natural gas	Biofuels and waste	Nuclear	Electricity	Heat	Total	of which: renewables[10]
3,463.9	343.5	-	229.5	305.5	17,469.6	874.6
214.6	0.01	-	-	-	2,628.3	0.01
-2,025.6	-0.1	-	-	-	-13,269.3	-0.1
-	-	-	-	-	-259.2	-
-0.9	-	-	-	-	152.9	-
1,652.1	343.5	-	229.5	305.5	6,722.3	874.5
-38.1	0.03	-	1.0	-	-76.4	257.7
-	-	-	-	-	139.8	-
-559.0	-46.1	-	892.1	-282.5	-1,854.4	-300.3
-454.2	-14.7	-	836.0	-281.5	-1,746.3	-266.8
-99.7	-30.7	-	56.1	-1.0	-105.2	-32.8
-	-	-	-	-	-1.3	-
-	-	-	-	-	26.9	-
-5.0	-0.7	-	-	-	-28.6	-0.7
-458.4	-	-	-116.6	-	-798.8	-
-0.6	-	-	-62.7	-	-63.5	-
672.3	297.5	-	941.2	23.0	4,221.7	316.6
588.5	297.5	-	941.2	23.0	3,958.0	316.6
358.1	176.3	-	348.5	4.5	1,204.7	176.9
14.9	-	-	16.8	-	46.9	-
94.0	4.2	-	15.9	-	124.6	0.5
116.2	1.9	-	149.4	-	324.3	1.9
50.8	2.5	-	17.3	-	102.3	2.5
82.2	167.7	-	149.1	4.5	606.7	172.0
11.9	6.9	-	22.8	-	1,645.8	6.9
3.9	6.9	-	-	-	1,375.6	6.9
154.9	68.3	-	266.9	15.1	527.7	83.4
59.8	2.6	-	284.2	2.8	391.8	5.4
3.7	43.4	-	18.7	0.6	187.9	44.0
83.8	-	-	-	-	263.7	-

(10) See General notes.

Energy indicators, 2016

Region	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	*GJ*	*MJ/ INTL $*	*%*	*%*	*kWh*
WORLD	**567,900**	**76.1**	**5.1**	**100.2**	**16.8**	**2,783.5**
Africa	**32,819**	**26.8**	**5.9**	**136.3**	**54.6**	**521.2**
Northern Africa	8,648	37.7	3.9	135.5	11.9	1,254.2
Sub-Saharan Africa	24,170	24.3	7.1	136.6	68.6	352.4
Americas	**136,777**	**137.1**	**4.9**	**103.1**	**15.1**	**5,622.7**
Latin America and the Caribbean	35,498	55.5	3.9	117.6	27.4	2,075.0
Northern America	101,279	282.4	5.4	98.0	10.4	11,945.1
Asia	**269,460**	**60.4**	**5.1**	**97.9**	**15.4**	**2,319.7**
Central Asia	6,394	91.6	8.6	192.6	5.2	2,126.8
Eastern Asia	153,969	93.8	5.7	65.3	10.1	4,196.3
South-eastern Asia	26,912	41.9	3.9	120.2	31.6	1,350.0
Southern Asia	53,985	29.2	4.7	82.4	26.2	801.8
Western Asia	28,201	107.3	4.4	262.8	4.1	3,677.5
Europe	**105,799**	**142.7**	**4.5**	**96.5**	**14.0**	**5,291.1**
Eastern Europe	45,269	154.6	7.1	146.4	6.6	4,159.6
Northern Europe	14,348	138.4	3.3	120.9	25.4	6,995.9
Southern Europe	15,105	99.3	3.3	30.1	18.6	4,637.4
Western Europe	31,077	161.2	3.7	44.6	15.3	6,610.1
Oceania	**6,722**	**167.6**	**5.2**	**259.9**	**14.0**	**6,517.0**
Australia and New Zealand	6,400	222.3	5.1	266.9	12.8	8,695.4
Melanesia	293	28.9	7.2	131.9	38.8	792.8
Micronesia	10	18.8	8.0	9.9	6.8	4,043.8
Polynesia	20	29.0	11.2	10.6	13.7	1,442.2

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	*GJ*	*MJ/ INTL $*	*%*	*%*	*kWh*
Afghanistan	143	4.1	2.3	48.8	20.7	126.0
Albania	92	31.5	2.8	88.8	38.6	1,741.2
Algeria	2,211	54.5	3.9	284.1	0.1	1,287.7
American Samoa[11]	0.01	0.1	-	-	1.0	2,697.9
Andorra	9	116.1	-	6.2	19.3	6,357.1
Angola	655	22.7	3.8	626.0	54.6	310.2
Anguilla	2	149.3	-	0.1	0.1	6,163.6
Antigua and Barbuda	8	78.9	3.8	0	0	2,505.9
Argentina	3,621	82.6	4.4	87.8	10.2	3,009.2
Armenia	131	44.7	5.5	33.9	17.9	1,821.7
Aruba[12]	13	119.6	3.3	4.1	6.7	7,525.1
Australia	5,451	225.9	5.1	299.5	9.4	8,781.1
Austria	1,396	160.2	3.6	37.1	34.6	7,099.5
Azerbaijan	598	61.5	3.8	406.0	1.9	1,811.5
Bahamas	26	65.9	2.4	1.2	1.4	5,022.6
Bahrain	557	391.0	9.0	168.7	0.2	19,472.8
Bangladesh	1,864	11.4	3.4	85.7	43.7	324.9
Barbados	17	59.0	3.5	15.4	2.8	3,326.0
Belarus	1,060	111.8	6.7	15.7	7.5	3,098.7
Belgium	2,358	207.6	4.9	27.0	9.7	7,206.0
Belize	14	37.4	4.7	58.9	30.3	1,592.9
Benin	186	17.1	8.5	56.2	50.3	105.7

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	*GJ*	*MJ/ INTL $*	*%*	*%*	*kWh*
Bermuda[12]	9	146.6	2.7	6.7	2.1	9,499.6
Bhutan	66	82.5	10.0	119.6	84.8	2,518.2
Bolivia (Plurinational State of)	373	34.3	5.1	246.5	18.2	753.2
Bonaire, Sint Eustatius and Saba	5	213.6	-	2.4	2.6	4,024.9
Bosnia and Herzegovina	282	80.1	7.1	70.5	23.0	3,152.9
Botswana	92	40.8	2.6	55.1	7.3	1,546.0
Brazil	12,194	58.7	4.2	99.9	41.2	2,367.4
British Virgin Islands	3	97.5	-	0.7	1.0	5,903.3
Brunei Darussalam	124	292.6	4.1	510.9	0.3	7,625.3
Bulgaria	757	106.1	6.0	62.5	18.0	4,052.2
Burkina Faso	176	9.4	5.7	72.7	72.3	73.0
Burundi	63	6.0	8.3	89.3	89.2	20.5
Cabo Verde	9	17.3	2.8	19.3	25.2	584.7
Cambodia	317	20.1	5.8	60.2	62.7	384.0
Cameroon	388	16.5	4.9	128.8	78.6	274.1
Canada	11,527	317.6	7.4	169.6	21.4	13,080.2
Cayman Islands[12]	8	128.5	2.5	0	0.01	10,318.4
Central African Republic	23	5.0	7.8	81.7	76.3	35.3
Chad	84	5.8	3.1	410.7	85.3	15.1
Chile	1,577	88.0	3.9	33.3	29.6	3,918.0
China	118,484	84.4	6.0	79.8	11.6	3,635.0
China, Hong Kong SAR	590	80.8	1.5	0	0.03	6,028.9

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	GJ	MJ/ INTL $	%	%	kWh
China, Macao SAR	41	67.7	0.7	3.1	4.5	8,291.9
Colombia	1,750	36.0	2.7	299.6	30.8	1,236.3
Comoros	6	7.1	5.0	49.9	41.9	50.3
Congo	112	21.9	4.2	552.2	63.4	157.0
Cook Islands	1	51.2	-	1.5	1.9	1,910.4
Costa Rica	214	44.1	2.9	50.9	37.1	2,014.5
Côte d'Ivoire	522	22.0	6.4	107.6	62.6	279.2
Croatia	353	83.7	3.9	52.4	32.4	3,631.4
Cuba	435	37.9	1.7	44.3	11.4	1,418.9
Curaçao	80	502.6	-	1.0	2.6	4,141.3
Cyprus	91	77.7	3.4	5.9	9.8	3,759.4
Czechia	1,742	164.2	5.3	65.6	14.9	5,282.3
Democratic People's Rep. of Korea	374	14.7	3.4	238.6	22.8	498.5
Democratic Rep. of the Congo	1,240	15.7	19.6	101.3	97.0	88.9
Denmark	687	120.2	2.6	90.9	31.7	5,454.3
Djibouti[12]	11	11.6	3.5	32.5	28.5	323.7
Dominica	3	36.7	3.6	7.4	10.7	1,947.8
Dominican Republic	341	32.0	2.3	5.2	7.0	1,464.1
Ecuador	630	38.4	3.7	209.8	15.9	1,433.7
Egypt	3,752	39.2	3.8	82.8	9.4	1,695.9
El Salvador	183	28.8	4.0	46.3	23.1	901.9
Equatorial Guinea	44	35.8	1.5	1,854.8	12.7	588.6

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	*GJ*	*MJ/ INTL $*	*%*	*%*	*kWh*
Eritrea[12]	39	7.8	4.6	78.0	80.0	68.2
Estonia	234	178.0	6.3	83.8	27.5	5,561.4
Eswatini	43	32.3	4.2	76.4	59.8	939.7
Ethiopia	1,498	14.6	9.1	90.2	89.6	86.0
Falkland Islands (Malvinas)	1	257.5	-	14.2	5.6	6,096.2
Faroe Islands	9	187.2	-	6.2	6.3	5,933.4
Fiji	33	36.9	4.4	17.1	24.4	936.7
Finland	1,414	257.0	6.5	52.2	41.4	14,688.0
France	10,164	157.0	4.0	53.7	15.3	6,831.0
French Guiana	14	50.2	-	24.1	30.2	3,028.5
French Polynesia	12	41.7	-	7.9	11.1	2,078.5
Gabon	113	57.0	3.4	493.4	60.9	1,018.3
Gambia	14	7.0	4.5	48.1	51.3	114.5
Georgia	204	51.9	5.9	29.5	29.1	2,671.4
Germany	12,942	158.0	3.5	37.3	14.7	6,316.0
Ghana	335	11.9	3.0	100.4	38.7	404.8
Gibraltar	10	284.6	-	0	0.01	7,004.2
Greece	965	86.3	3.7	29.1	16.0	4,771.5
Greenland	9	156.2	-	17.4	15.7	7,271.9
Grenada	4	38.3	2.9	7.9	11.2	1,761.5
Guadeloupe	33	74.4	-	16.6	7.6	3,458.0
Guam[11]	0.2	1.2	-	-	3.0	9,662.6

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	*GJ*	*MJ/ INTL $*	*%*	*%*	*kWh*
Guatemala	531	32.0	4.3	66.6	62.6	597.4
Guernsey[11]	1	17.0	-	0	0	5,833.5
Guinea	156	12.6	6.7	74.5	75.1	113.3
Guinea-Bissau	31	17.0	11.3	83.7	86.4	20.7
Guyana	37	48.1	6.6	17.9	21.6	1,068.7
Haiti	181	16.7	10.1	77.6	75.9	38.4
Honduras	244	26.8	6.1	49.7	55.4	774.6
Hungary	1,076	110.3	4.3	44.5	15.5	3,805.7
Iceland	331	995.6	21.6	91.2	77.9	52,043.2
India	36,886	27.9	4.6	63.2	30.4	805.2
Indonesia	10,021	38.4	3.6	188.5	38.5	826.4
Iran (Islamic Republic of)	10,405	129.6	7.0	157.7	1.9	3,001.5
Iraq	2,309	62.1	3.8	418.7	0.9	1,041.1
Ireland	584	123.6	1.9	30.1	8.9	5,411.3
Isle of Man[11]	1	8.5	-	75.1	4.3	4,323.1
Israel	953	116.4	3.4	36.3	3.9	6,861.6
Italy	6,334	106.5	3.0	22.2	16.3	4,810.2
Jamaica	117	40.6	5.0	7.3	10.3	1,084.2
Japan	17,845	139.7	3.7	8.3	6.1	7,572.3
Jersey[11]	3	29.0	-	26.9	14.1	6,110.5
Jordan	362	38.3	4.6	2.7	2.1	1,777.1
Kazakhstan	3,335	185.4	8.0	202.0	1.9	3,663.5

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	GJ	MJ/ INTL $	%	%	kWh
Kenya	938	19.4	6.6	78.4	66.0	172.2
Kiribati	1	12.6	6.5	38.0	45.4	214.2
Kosovo	113	62.3	6.6	74.6	26.5	2,131.4
Kuwait	1,510	372.5	5.4	482.5	0.2	11,279.5
Kyrgyzstan	162	27.2	8.0	47.3	21.8	1,705.9
Lao People's Democratic Republic	244	36.1	5.9	109.6	51.9	689.5
Latvia	179	90.6	3.8	57.4	39.5	3,289.5
Lebanon	317	52.9	4.0	2.3	3.5	2,824.5
Lesotho	61	27.5	10.1	51.3	51.0	347.1
Liberia	97	21.0	27.9	81.2	82.9	59.6
Libya	623	98.9	6.9	202.7	2.1	2,221.4
Liechtenstein[11]	3	79.2	-	32.2	62.9	10,582.5
Lithuania	299	102.6	3.7	25.9	32.0	3,352.5
Luxembourg	156	270.9	2.8	4.3	17.5	11,058.7
Madagascar	185	7.4	5.3	72.8	68.1	47.3
Malawi	82	4.5	4.2	82.6	78.5	87.2
Malaysia	3,527	113.1	4.4	107.4	5.6	4,618.0
Maldives	21	48.5	3.4	0.8	1.1	1,386.3
Mali	95	5.3	2.7	59.9	59.4	82.7
Malta	25	59.1	1.6	3.0	8.7	4,923.6
Marshall Islands	2	41.8	11.2	8.9	11.8	1,435.9
Martinique	31	80.8	-	5.7	6.2	3,754.6

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	GJ	MJ/ INTL $	%	%	kWh
Mauritania	52	12.2	3.4	56.4	34.6	218.9
Mauritius	67	53.1	2.7	15.9	10.1	2,027.2
Mayotte	5	21.1	-	5.9	9.9	1,224.4
Mexico	7,795	61.1	3.6	96.6	9.6	2,119.9
Micronesia (Federates States of)	2	20.6	6.3	1.5	1.6	439.0
Mongolia	294	97.1	8.5	326.3	2.4	1,798.8
Montenegro	41	64.8	4.2	68.5	43.9	4,249.0
Montserrat	0.4	81.1	-	0	0	3,493.8
Morocco	831	23.2	3.2	10.8	12.7	867.3
Mozambique	556	19.3	17.1	134.0	79.1	394.9
Myanmar	836	15.8	3.0	140.5	65.9	292.7
Namibia	83	33.3	3.4	24.1	27.9	1,576.4
Nauru	1	61.4	4.1	0.1	0.2	2,035.8
Nepal	536	18.5	8.1	78.7	80.0	169.9
Netherlands	3,060	180.2	3.8	62.9	6.4	6,218.0
New Caledonia	67	247.4	-	1.9	3.7	11,147.3
New Zealand	949	203.6	5.7	79.9	32.8	8,251.7
Nicaragua	165	26.9	5.2	54.6	48.4	543.1
Niger	96	4.6	5.1	109.4	77.0	47.2
Nigeria	6,270	33.7	6.2	159.5	82.5	136.1
Niue	0.1	61.3	-	16.9	22.1	1,884.2
North Macedonia	116	55.8	4.3	43.8	26.4	2,975.8

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	GJ	MJ/ INTL $	%	%	kWh
Northern Mariana Islands[11]	-	-	-	-	-	5,466.8
Norway	1,136	216.3	3.4	767.2	58.8	21,627.3
Oman	1,069	241.7	6.1	316.0	0.1	6,861.2
Other Asia	4,579	194.4	-	9.9	2.9	10,037.4
Pakistan	3,597	18.6	3.8	67.8	25.6	494.4
Palau	3	144.3	10.4	0	0.02	3,297.2
Panama	169	42.0	2.0	23.3	21.7	2,171.6
Papua New Guinea	184	22.7	6.0	204.4	50.3	493.7
Paraguay	265	39.4	4.4	129.8	59.2	1,637.4
Peru	1,012	31.8	2.6	96.2	25.0	1,428.5
Philippines	2,126	20.6	2.8	52.0	27.0	717.7
Poland	4,185	109.5	4.2	66.7	11.4	3,475.2
Portugal	916	88.3	3.3	27.7	31.1	4,469.2
Puerto Rico[11]	61	16.5	0.5	2.3	1.9	4,719.9
Qatar	1,763	686.0	5.8	539.9	0.1	14,450.1
Republic of Korea	11,762	231.6	6.6	18.0	2.7	10,184.1
Republic of Moldova	104	25.7	5.9	32.0	30.4	892.2
Réunion	60	69.1	-	14.8	18.0	3,113.5
Romania	1,334	67.4	3.1	78.4	24.7	2,187.1
Russian Federation	30,461	211.6	8.5	187.9	3.5	5,172.7
Rwanda	99	8.3	4.6	86.9	86.0	47.0
Saint Helena	0.2	37.2	-	10.6	14.2	2,337.1

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	GJ	MJ/ INTL $	%	%	kWh
Saint Kitts and Nevis	3	63.0	2.6	1.2	1.8	3,192.2
Saint Lucia	6	34.2	2.7	1.5	2.1	1,956.2
Saint Pierre and Miquelon	1	173.6	-	0.5	0.7	7,105.5
Saint Vincent and the Grenadines	3	30.4	2.9	4.8	6.3	1,313.4
Samoa	5	24.2	4.1	23.1	27.3	688.3
Sao Tome and Principe	3	13.8	4.6	38.3	39.2	343.2
Saudi Arabia	8,609	266.7	5.3	326.8	0.01	9,129.8
Senegal	180	11.7	4.9	36.6	37.5	242.3
Serbia	633	90.4	6.5	70.4	21.5	3,902.4
Seychelles	8	89.8	3.5	1.1	1.7	3,883.1
Sierra Leone	67	9.1	6.7	80.3	77.6	15.1
Singapore	910	161.9	2.0	3.0	1.5	8,648.6
Sint Maarten (Dutch part)[12]	12	302.4	9.3	0	0.05	8,655.2
Slovakia	687	126.3	4.3	38.8	13.2	4,589.6
Slovenia	278	133.6	4.5	52.0	20.7	6,268.5
Solomon Islands	6	9.5	4.4	57.2	65.7	149.5
Somalia	145	10.1	-	93.8	94.7	22.0
South Africa	6,276	112.0	9.1	109.3	15.3	3,442.2
South Sudan	32	2.6	1.7	795.9	28.6	32.9
Spain	4,939	106.6	3.2	28.2	17.3	5,016.8
Sri Lanka	467	22.5	1.9	36.2	42.8	611.3
State of Palestine	77	16.0	3.6	12.4	10.1	1,104.0

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	GJ	MJ/ INTL $	%	%	kWh
Sudan	772	19.5	4.4	94.3	61.7	316.2
Suriname	29	52.2	3.8	134.7	19.5	3,180.9
Sweden	2,046	208.0	4.4	70.7	50.7	12,960.2
Switzerland	998	118.8	2.1	48.4	25.9	6,930.7
Syrian Arab Republic	418	22.7	11.9	42.4	1.1	712.6
Tajikistan	166	19.0	6.9	81.8	61.8	1,479.3
Thailand	5,794	84.1	5.4	56.7	25.1	2,820.8
Timor-Leste	8	6.1	0.8	1,556.3	19.2	262.2
Togo	150	19.7	14.2	77.9	68.2	155.8
Tonga	2	16.9	3.2	2.0	2.0	498.0
Trinidad and Tobago	768	562.4	19.0	183.3	0.1	7,393.6
Tunisia	460	40.3	3.7	54.7	12.4	1,365.3
Turkey	5,661	71.2	3.0	26.3	13.5	2,872.5
Turkmenistan	1,158	204.5	13.1	279.0	0.1	2,202.7
Turks and Caicos Islands	3	85.9	-	0.4	0.5	6,601.7
Tuvalu	0.1	13.2	3.8	7.4	11.8	729.9
Uganda	680	16.4	9.7	90.8	88.6	64.0
Ukraine	3,864	86.9	11.8	68.8	5.5	2,642.7
United Arab Emirates	3,428	369.8	5.5	307.6	0.1	12,290.6
United Kingdom	7,425	112.9	2.9	66.9	9.3	4,619.4
United Republic of Tanzania	1,108	19.9	8.0	89.5	86.2	99.4
United States	89,733	278.5	5.2	88.8	9.1	11,818.6

Country or area	Total energy supply	Energy use (TES) per capita	Energy intensity	Self-sufficiency	Renewable energy share in TFEC	Electricity consumption per capita
	PJ	*GJ*	*MJ/ INTL $*	*%*	*%*	*kWh*
United States Virgin Islands[11]	0.1	1.0	-	-	3.8	6,184.2
Uruguay	215	62.5	3.1	58.7	59.3	3,227.3
Uzbekistan	1,574	50.0	8.2	135.6	3.2	1,493.8
Vanuatu	3	11.4	4.0	29.5	33.7	241.5
Venezuela (Bolivarian Republic)[12]	2,300	72.9	5.7	293.5	14.3	2,543.0
Viet Nam	3,006	31.8	5.4	95.8	37.4	1,689.7
Wallis and Futuna Islands	0.4	29.8	-	0	0	1,378.3
Yemen	144	5.2	3.5	45.4	4.4	146.2
Zambia	468	28.2	7.7	89.2	87.9	654.4
Zimbabwe	466	28.9	15.4	81.5	82.8	450.9

(11) Energy statistics for this country are partially covered by another country (see country notes at: https://unstats.un.org/unsd/energy/yearbook/2016/06cn.pdf). Indicators, therefore, should be interpreted with caution.

(12) Energy intensity for this country is estimated based on the latest available GDP value.

General notes

Please note that all UN data are subject to the Terms and Conditions available at: http://data.un.org/Host.aspx?Content=UNdataUse.

Data sources

Data used in this publication derive from the Energy Statistics database maintained by the United Nations Statistics Division. For more information please refer to https://unstats.un.org/unsd/energy/edbase.htm.

Population data used to calculate the per capita indicators are from the United Nations Population Division and are available at: https://esa.un.org/unpd/wpp.

GDP data used to calculate energy intensity are primarily from the World Bank (GDP, PPP, constant 2011 international $) and are available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.KD. For some countries such data were not available from the World Bank, but estimates were available from the CHELEM database (http://www.cepii.fr/%5C/anglaisgraph/bdd/chelem/gpd/gdppresent.htm). For these countries, namely Cuba, the Democratic People's Republic of Korea and the Syrian Arab Republic, the estimates from the CHELEM database were used.

Geographical notes

The assignment of countries and areas follows the United Nations publication "Standard Country or Area Codes for Statistical Use" originally published as Series M, No. 49 and now commonly referred to as the M49 standard. For more information please refer to https://unstats.un.org/unsd/methodology/m49.

For a detailed description of the geographical coverage of the data please refer to https://unstats.un.org/unsd/energy/yearbook/2016/06cn.pdf.

The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

The expression *Other countries (x)* is used to represent all the countries that are not shown separately in a chart and indicates that x countries have positive values.

Products and flows

All the definitions of products and flows are based on the International Recommendations for Energy Statistics (IRES) available at: https://unstats.un.org/unsd/energy/ires. Particularly for products, the definitions come from the Standard International Energy Product Classification (SIEC) contained in IRES. A more concise version of these definitions can be found in the Energy Balances publication under the chapter "Concepts and Definitions". The Energy Balances publication is available at: https://unstats.un.org/unsd/energy/balance.

Please note that in the present publication the product coal includes peat unless otherwise specified; data for natural gas are expressed on an NCV basis; energy sources (i.e. coal, oil, biofuels and waste, and electricity and heat) generally refer to both primary and secondary products, with the exception of the chapter on primary energy production.

Chapter: Total energy supply

International aviation and marine bunkers are recorded separately due to their importance, e.g. for the estimation of greenhouse gas emissions. At the world level, bunkers are classified as part of transport final consumption and they are included in the world total energy supply; however, at the country and regional levels, bunkers are not accounted for as final consumption because they pertain to more than one country or region and are therefore subtracted from total energy supply.

Being excluded from regional TES, international bunkers are shown as a separate category in charts 4 and 6 and in tables 5 and 7 to provide a complete overview of the world total energy supply.

Total energy supply per capita is calculated by dividing total energy supply by population.

Energy intensity is calculated by dividing total energy supply by GDP, PPP (constant 2011 international $). It corresponds to SDG indicator 7.3.1.

Chapter: Primary energy production

Energy self-sufficiency is calculated as the ratio between primary energy production and total energy supply expressed in percentage.

At the global level, primary energy production and TES are expected to follow the same trend, given that what is produced will be available for use. However, stock changes and statistical imbalances between imports and exports may explain differences in short-term movements, as it happened in 2016 when global TES

increased by 0.38% compared to 2015, while world primary energy production declined by 0.35%.

The categories *other primary oil* (chart 27 and table 28) refer to additives and oxygenates, and other hydrocarbons.

The category *waste* (chart 33 and table 34) refers to other vegetable material and residues (vegetal waste), animal waste, industrial waste and municipal waste.

The category *other biofuels* (chart 33 and table 34) refers to biogasoline, biodiesel, biogases, bio jet kerosene, bagasse, black liquor and other liquid biofuels as defined in SIEC (for definitions, see section "Products and flows" above).

Chapter: Electricity

Electricity generation per capita is calculated by dividing electricity production by population.

Electricity capacity is the abbreviated form for the Net Maximum Electrical Capacity, which in turn is defined as the maximum active power that can be supplied continuously, with all plants running, at the point of outlet (i.e., after taking the power supplies for the station auxiliaries and allowing for the losses in those transformers considered integral to the station). For annual data, it is considered as measured at the end of the reference year.

Utilization of electricity capacity is calculated by dividing electricity production by electricity capacity and then by the total number of hours in a year. It shows a percentage of theoretical maximal utilization; since the capacity is measured on a net basis and the production on a gross basis, there is a small upwards bias in this utilization indicator.

The category *solar, wind and other sources* (Facts and figures box, chart 38 and table 39) refers to solar, wind, geothermal, chemical heat, tide, wave and marine and other non-specified sources.

Both the category *total renewables* (table 43 and 47 and chart 46) and the category *renewable sources* (tables 49 and 51 and chart 50) refer to hydro, wind, solar, geothermal, tide, wave, marine as well as thermal from combustible renewables.

The category *non-renewable sources* (tables 49 and 51 and chart 50) refers to thermal from non-renewable fuels, nuclear and other non-specified net installed capacities.

Chapter: Refinery output

R*efinery output* refers to total refinery output as reported. Note that this number is different from the one found in the energy balance, column Oil products and row Oil refineries. This is due to the principles of constructing balances, where what appears in the transformation block is the net output (output minus input). Since refinery feedstocks are not considered primary oil, they enter as input in the same cell as the output of all oil products and end up causing this difference.

Refinery input refers to the amount of oil (conventional crude oil, natural gas liquids, feedstocks, other hydrocarbons, and additives and oxygenates) that has entered the refinery process.

Refinery capacity is the theoretical maximum capacity of crude oil refineries available for operation at the end of the reference year.

The category *others* (chart 62 and table 63) refers to refinery gas, ethane, LPG, white spirit and SBP industrial spirits, lubricants, paraffin waxes, petroleum coke, bitumen, refinery feedstocks, and other oil products not elsewhere classified. The category *gasolines* refers to aviation gasoline, motor gasoline and gasoline-type jet fuel; the category *kerosenes* refers to kerosene-type jet fuel and other kerosene.

Fuel quantities used in *international aviation and marine bunkers* are included in the world oil supply (chart 66 and table 67); conversely, bunkers are excluded from the oil supply for the shown countries.

The different approach adopted in treating international bunkers at the world level as opposed to the country level determines a divergence between the world oil supply and the sum of the country values in table 67.

Chapter: Total final consumption

Total final consumption per capita is calculated by dividing total final consumption by population.

Total final consumption refers to the consumption of energy products by end users, which is the last stage of energy flows captured in energy statistics. As such, TFC excludes energy products that are transformed into secondary energy products. For example, fuels used for electricity generation are not accounted directly in TFC, but accounted for indirectly as final electricity consumption. For coal specifically, more than half of TES is used as input for electricity generation worldwide.

International aviation and marine bunkers are classified as part of final consumption at the world level but not at the country and regional levels. Not being included in the total final consumption at the regional level, international bunkers are shown as

a separate category in charts 69 and 71 and in tables 70 and 72 to provide a complete overview of world final energy consumption.

The different approach adopted in treating international bunkers at the world level as opposed to the country level determines a divergence between the world TFC and the sum of the country values in table 78.

The category *other* (chart 75 and table 76) refers to agriculture, forestry and fishing, commerce and public services, and to other non-specified consumers. The categories *industry, transport, households* and *other* do not include non-energy use in these sectors.

Renewable energy share in total final energy consumption (map 77 and table 78) refers to renewables directly consumed as energy products, as well as final consumption of electricity and heat attributed to renewable sources, including combustible renewables. It corresponds to SDG indicator 7.2.1.

Chapter: Energy balances

In the regional balances, the category *total energy supply* excludes international aviation and marine bunkers, whereas in the world balance international bunkers are treated as consumption for transportation purposes.

Country energy balances for 2015 and 2016 are available in the Energy Balances publication (https://unstats.un.org/unsd/energy/balance).

Note that the figure found in the column Oil products and row Oil refineries does not correspond to the total refinery output. This is due to the principles of constructing balances, where what appears in the transformation block is the net output (output minus input). Since refinery feedstocks are not considered primary oil, they enter as input in the same cell as the output of all oil products and end up causing this difference. For the total refinery output, the reader should refer to the respective chapter.

The category *of which: renewables* follows the convention used in the Energy Balances publication available at: https://unstats.un.org/unsd/energy/balance and therefore includes only directly identifiable renewable energy. As a result, no part of imports and exports of heat or electricity, nor their consumption, losses or own use, is considered as renewable, which may lead to differences with values presented in other chapters.

Chapter: Energy indicators

The category *total energy supply* excludes international aviation and marine bunkers at the country and regional levels, as defined by the international methodology set forth in IRES.

Energy statistics for American Samoa, Guam, Guernsey, Isle of Man, Jersey, Liechtenstein, Northern Mariana Islands, Puerto Rico, United States Virgin Islands are partially covered by another country (see country notes at: https://unstats.un.org/unsd/energy/yearbook/2016/06cn.pdf). Indicators for these areas, therefore, should be interpreted with caution.

Energy use (TES) per capita is calculated by dividing total energy supply by population.

Energy intensity is calculated by dividing total energy supply by GDP, PPP (constant 2011 international $). It corresponds to SDG indicator 7.3.1.

Self-sufficiency is calculated as the ratio between primary energy production and total energy supply expressed in percentage.

Renewable energy share in total final energy consumption refers to renewables directly consumed as energy products, as well as final consumption of electricity and heat attributed to renewable sources, including combustible renewables. It corresponds to SDG indicator 7.2.1.

Electricity consumption per capita is calculated by dividing electricity consumption by population.