



**Asia-Pacific
Economic Cooperation**

APEC

ENERGY HANDBOOK

2019

**ENERGY WORKING GROUP
JULY 2022**

**ENERGY STATISTICS AND TRAINING OFFICE
ASIA PACIFIC ENERGY RESEARCH CENTRE**

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Preface

The APEC Energy Handbook 2019 is a handy, pocket-sized summary of key energy data and a supplement to APEC Energy Statistics 2019, which was released in June 2022.

This handbook consists of the following sections:

1. Primary Energy Supply
2. Transformation
3. Final Energy Consumption
4. Energy Balances
5. Energy Outlook
6. Energy Indicators

The supply section contains total primary energy supply by energy while the transformation section shows oil refining and power generation. The consumption section indicates both final energy consumption by sectors and by energy. The energy balances section includes regional energy balance tables while the outlook section shows projected energy demand until year 2050 taken from the APEC Energy Demand and Supply Outlook 7th Edition published by the Asia Pacific Energy Research Centre in May 2019. The energy indicators section contains several energy indicators based on population, GDP and energy consumption.

This handbook was derived from the APEC Energy Database, the purpose of which is to establish a comprehensive and consistent energy database within the APEC region. This database aims to assist in the identification of significant trends in energy supply and demand consistent with projects and priorities under the APEC Energy Working Group. It has been prepared in close cooperation with the twenty-one member economies.

Inquiries about figures and graphs in this handbook could be addressed to:

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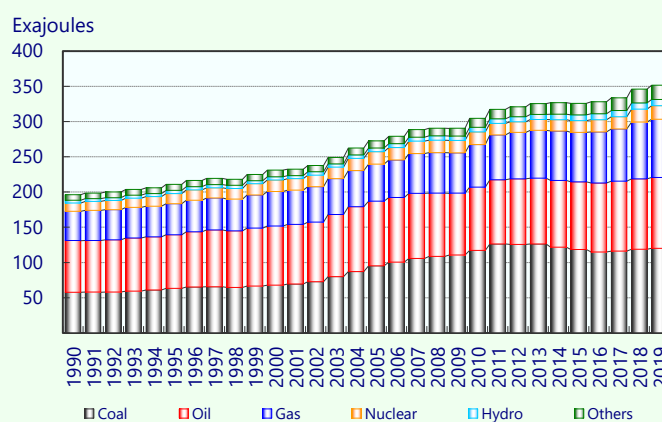
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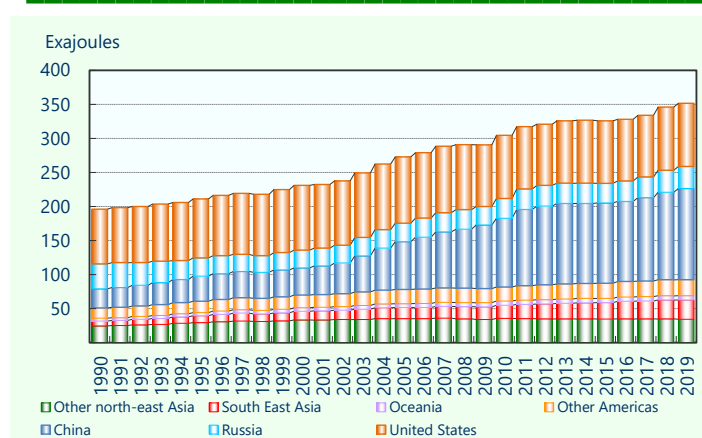
Total primary energy supply by energy APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	57.8	67.9	95.4	117.2	118.3	120.0
Oil	73.3	83.7	91.8	89.8	96.1	100.6
Gas	41.4	49.3	52.6	60.2	70.3	82.7
Nuclear	12.0	16.3	17.6	18.1	16.6	19.2
Hydro	3.9	4.5	5.2	6.4	8.1	9.0
Others	7.8	9.3	10.2	12.7	16.3	20.1
Total	196.1	231.0	272.7	304.5	325.7	351.5

	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	29.5	29.4	35.0	38.5	36.3	34.1
Oil	37.4	36.2	33.7	29.5	29.5	28.6
Gas	21.1	21.3	19.3	19.8	21.6	23.5
Nuclear	6.1	7.1	6.4	5.9	5.1	5.5
Hydro	2.0	1.9	1.9	2.1	2.5	2.6
Others	4.0	4.0	3.7	4.2	5.0	5.7

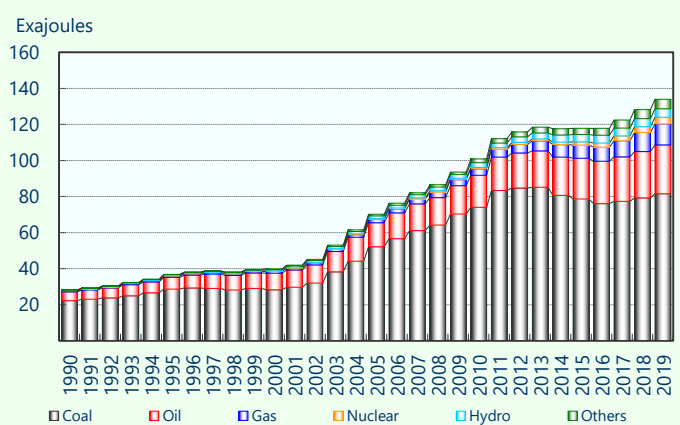
Total primary energy supply by region APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Other north-east Asia	24.5	33.5	35.3	35.9	34.8	34.3
South East Asia	7.3	12.6	16.4	19.3	24.1	28.5
Oceania	4.1	5.4	5.6	6.2	6.3	6.4
Other Americas	15.0	18.6	20.9	20.4	22.1	23.4
China	28.1	39.9	70.2	100.9	117.9	133.9
Russia	36.8	25.9	27.3	29.0	29.0	32.3
United States	80.2	95.2	97.0	92.8	91.5	92.6
Total	196.1	231.0	272.7	304.5	325.7	351.5

	Share (%)					
	1990	2000	2005	2010	2015	2019
Other north-east Asia	12.5	14.5	13.0	11.8	10.7	9.8
South East Asia	3.7	5.5	6.0	6.3	7.4	8.1
Oceania	2.1	2.3	2.1	2.0	1.9	1.8
Other Americas	7.7	8.1	7.7	6.7	6.8	6.7
China	14.3	17.3	25.7	33.1	36.2	38.1
Russia	18.8	11.2	10.0	9.5	8.9	9.2
United States	40.9	41.2	35.6	30.5	28.1	26.4

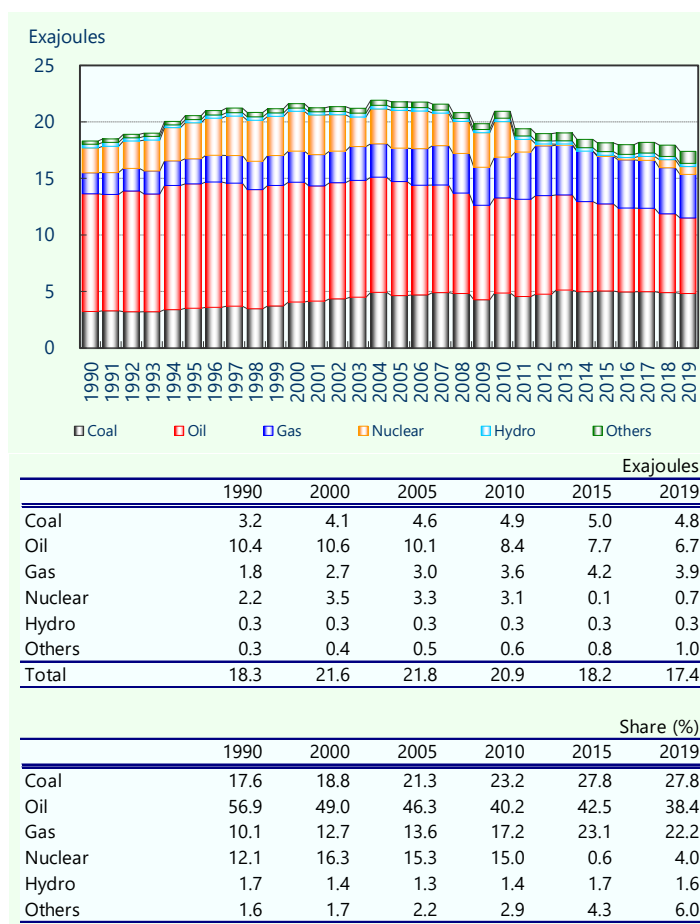
Total primary energy supply by energy China



	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	22.3	28.3	52.2	74.0	78.6	81.5
Oil	4.8	9.3	13.3	17.8	22.7	27.1
Gas	0.6	0.9	1.7	3.6	7.2	11.6
Nuclear	0.0	0.2	0.6	0.8	1.9	3.8
Hydro	0.5	0.8	1.4	2.6	4.1	4.7
Others	0.0	0.5	0.9	2.1	3.5	5.2
Total	28.1	39.9	70.2	100.9	117.9	133.9

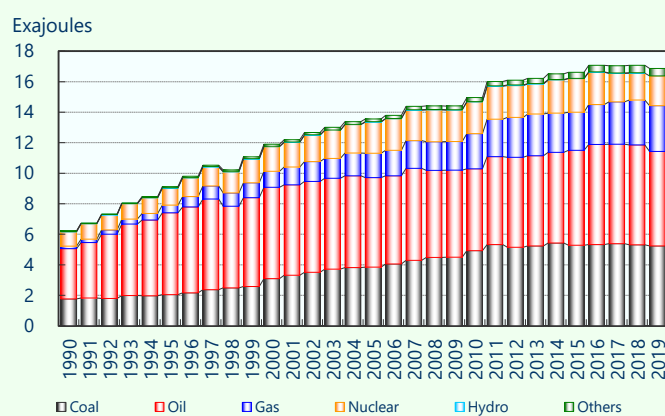
	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	79.2	70.9	74.4	73.4	66.7	60.9
Oil	17.1	23.3	19.0	17.6	19.2	20.2
Gas	2.0	2.2	2.5	3.5	6.1	8.7
Nuclear	-	0.5	0.8	0.8	1.6	2.8
Hydro	1.6	2.0	2.0	2.6	3.5	3.5
Others	0.0	1.2	1.3	2.1	3.0	3.9

Total primary energy supply by energy Japan



Primary Energy Supply

Total primary energy supply by energy Other north-east Asia*

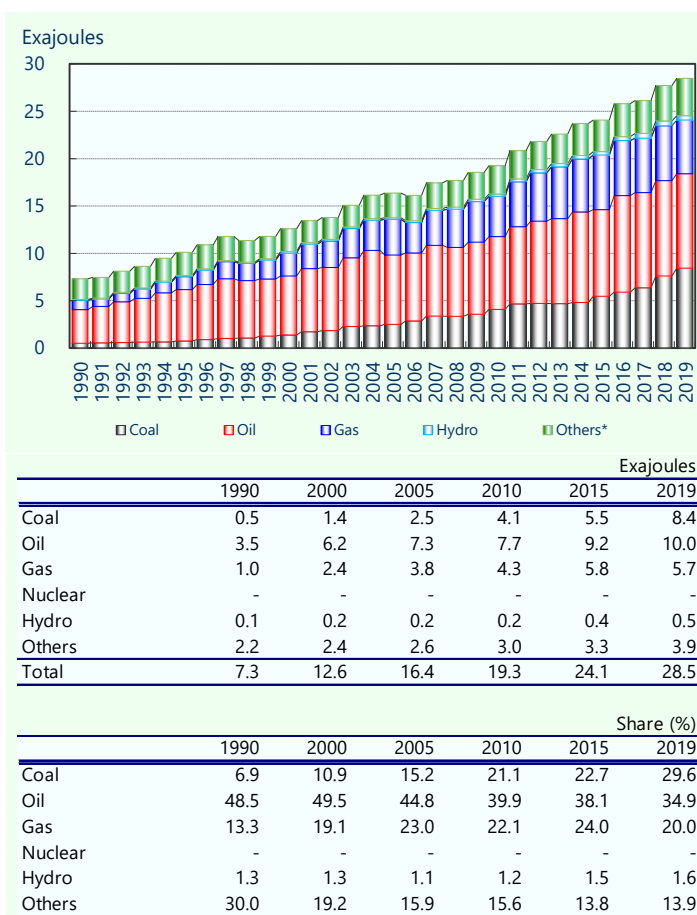


	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	1.8	3.1	3.8	4.9	5.3	5.2
Oil	3.3	6.0	5.9	5.4	6.2	6.2
Gas	0.2	1.1	1.6	2.3	2.5	3.0
Nuclear	0.9	1.6	2.0	2.1	2.2	1.9
Hydro	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.1	0.2	0.3	0.4	0.5
Total	6.2	11.9	13.6	15.0	16.6	16.9

	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	28.4	26.0	28.4	33.0	31.8	31.0
Oil	52.8	50.3	43.2	35.8	37.5	36.6
Gas	2.6	8.9	11.8	15.4	15.0	17.7
Nuclear	15.0	13.5	15.0	13.9	13.2	11.5
Hydro	0.7	0.3	0.2	0.2	0.1	0.2
Others	0.4	1.1	1.3	1.8	2.4	2.9

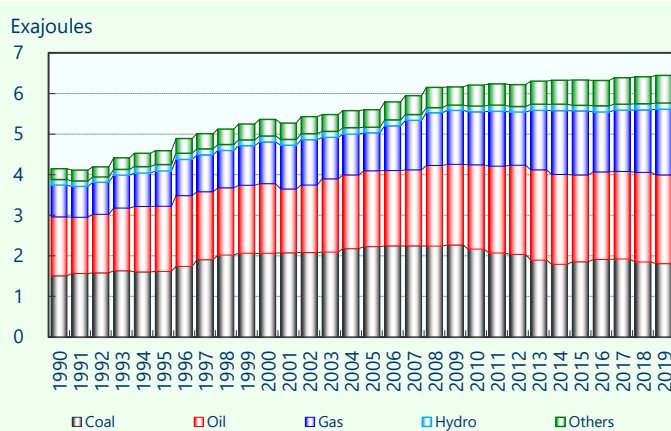
*In this page, Other north-east Asia includes Hong Kong, China; Republic of Korea and Chinese Taipei

Total primary energy supply by energy South-East Asia



Primary Energy Supply

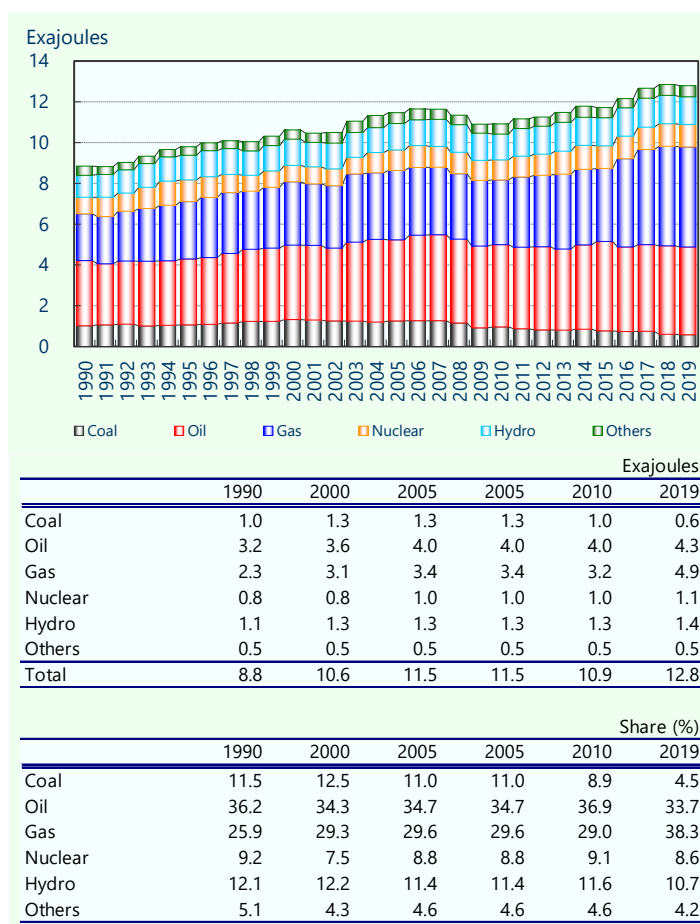
Total primary energy supply by energy Oceania



	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	1.5	2.1	2.2	2.2	1.9	1.8
Oil	1.5	1.7	1.9	2.1	2.1	2.2
Gas	0.8	1.0	0.9	1.3	1.6	1.6
Nuclear	-	-	-	-	-	-
Hydro	0.1	0.1	0.1	0.1	0.1	0.2
Others	0.3	0.4	0.4	0.5	0.6	0.7
Total	4.1	5.4	5.6	6.2	6.3	6.4

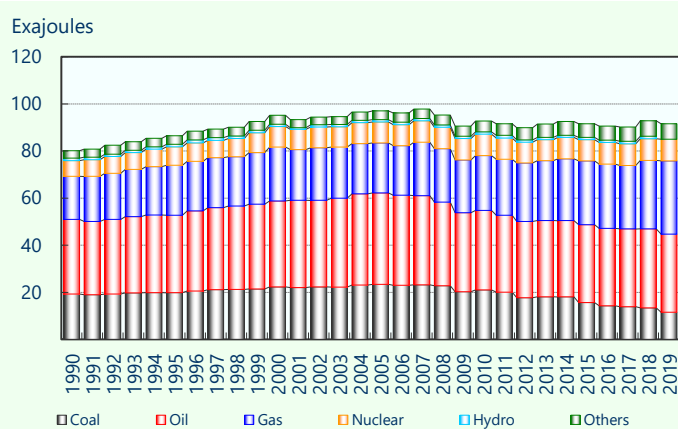
	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	36.4	38.5	39.8	34.9	29.3	28.0
Oil	35.1	32.1	33.3	33.5	33.8	33.9
Gas	18.9	19.1	16.7	21.1	24.9	25.1
Nuclear	-	-	-	-	-	-
Hydro	3.2	2.8	2.5	2.3	2.2	2.3
Others	6.4	7.6	7.7	8.3	9.9	10.6

Total primary energy supply by energy Canada



Primary Energy Supply

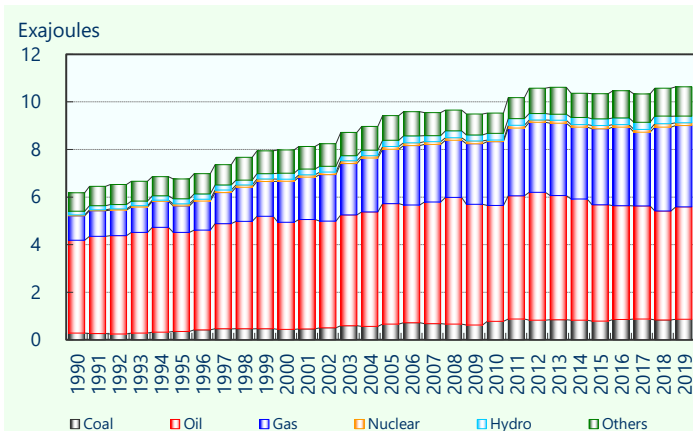
Total primary energy supply by energy United States



	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	19.2	22.3	23.3	21.0	15.7	11.5
Oil	31.7	36.5	38.9	33.8	33.1	33.2
Gas	18.4	22.9	21.2	23.3	27.1	31.1
Nuclear	6.7	8.7	8.8	9.2	9.1	9.2
Hydro	1.0	0.9	1.0	0.9	0.9	1.0
Others	3.2	3.8	3.7	4.6	5.8	6.6
Total	80.2	95.2	97.0	92.8	91.5	92.6

	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	24.0	23.5	24.0	22.6	17.1	12.4
Oil	39.5	38.3	40.1	36.4	36.1	35.8
Gas	22.9	24.1	21.9	25.1	29.6	33.5
Nuclear	8.3	9.1	9.1	9.9	9.9	9.9
Hydro	1.2	1.0	1.0	1.0	1.0	1.1
Others	4.0	4.0	3.9	5.0	6.3	7.1

Total primary energy supply by energy Other Americas*

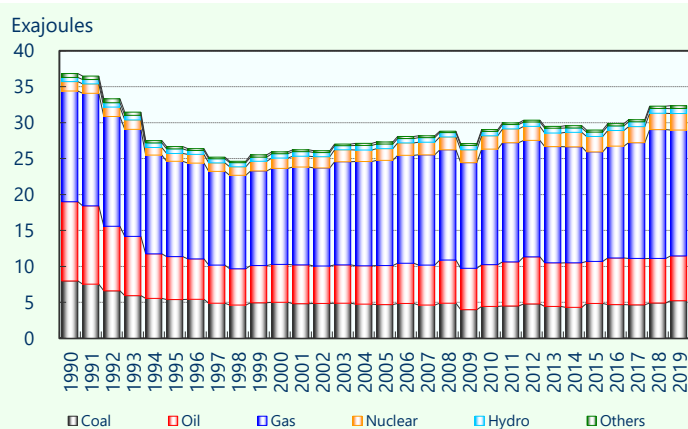


	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	0.3	0.4	0.7	0.8	0.8	0.9
Oil	3.9	4.5	5.1	4.9	4.9	4.7
Gas	1.0	1.7	2.3	2.7	3.2	3.4
Nuclear	0.0	0.1	0.1	0.1	0.1	0.1
Hydro	0.2	0.2	0.3	0.3	0.3	0.3
Others	0.8	1.0	1.0	0.8	1.1	1.2
Total	6.2	8.0	9.4	9.5	10.3	10.6

	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	4.6	5.6	7.0	8.1	7.6	8.2
Oil	63.0	56.4	53.8	51.1	47.2	44.4
Gas	16.7	21.6	24.2	28.2	31.0	32.1
Nuclear	0.5	1.1	1.3	0.7	1.2	1.1
Hydro	2.5	3.1	2.8	3.0	2.7	2.6
Others	12.6	12.3	11.0	8.9	10.2	11.5

* In this page, Other Americas comprise Chile, Mexico, and Peru.

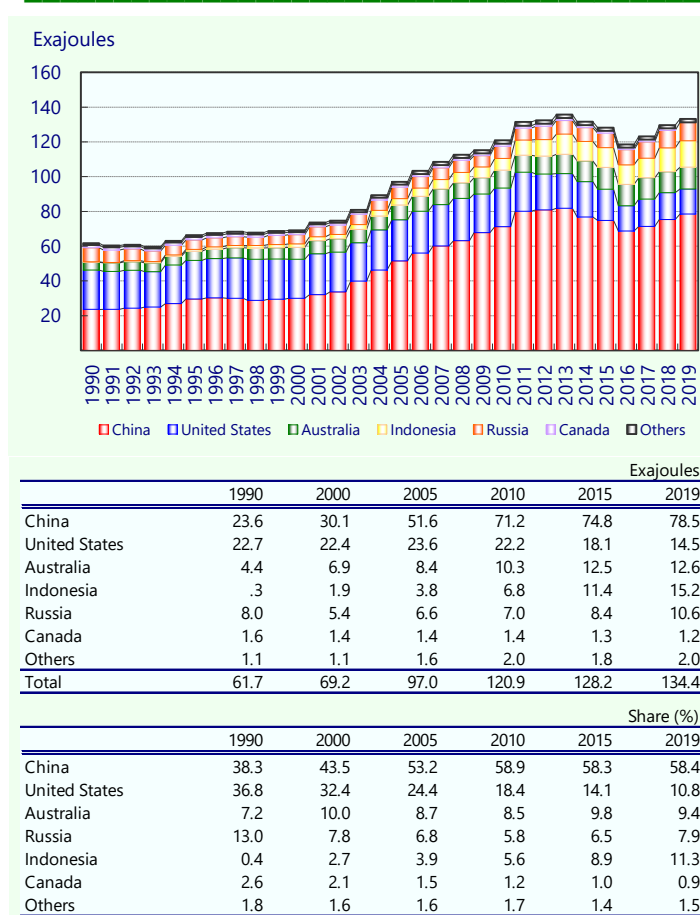
Total primary energy supply by energy Russia



	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	8.0	5.0	4.7	4.4	4.8	5.2
Oil	11.0	5.3	5.4	5.8	5.8	6.3
Gas	15.4	13.4	14.6	16.1	15.3	17.5
Nuclear	1.3	1.4	1.6	1.9	2.1	2.3
Hydro	0.6	0.6	0.6	0.6	0.6	0.7
Others	0.5	0.3	0.3	0.3	0.3	0.4
Total	36.8	25.9	27.3	29.0	29.0	32.3

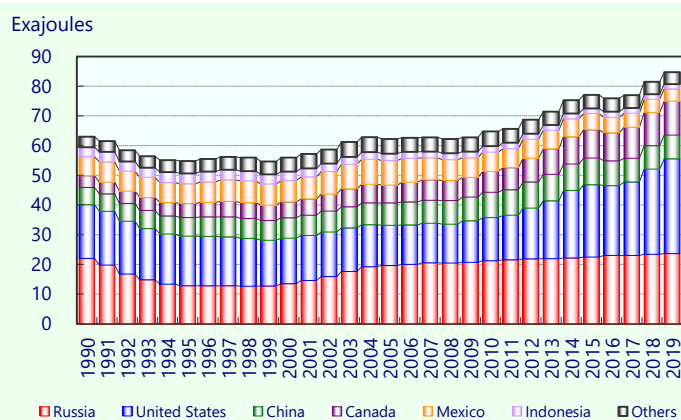
	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	21.6	19.3	17.2	15.2	16.7	16.1
Oil	30.0	20.4	19.8	20.1	20.1	19.3
Gas	41.8	51.5	53.7	55.3	52.6	54.1
Nuclear	3.6	5.6	6.0	6.5	7.4	7.1
Hydro	1.6	2.3	2.3	2.1	2.1	2.2
Others	1.4	1.0	1.0	0.9	1.0	1.2

Production of coal* APEC



*Coal: hard coal, anthracite and lignite

Production of crude oil* APEC

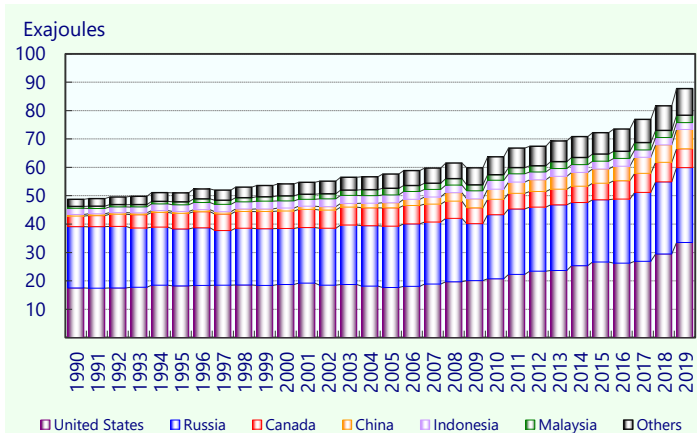


	Exajoules					
	1990	2000	2005	2010	2015	2019
Russia	22.0	13.5	19.6	21.2	22.5	23.6
United States	18.1	15.3	13.5	14.6	24.4	31.9
China	5.8	6.8	7.6	8.5	9.0	8.0
Canada	3.9	5.4	6.0	7.0	9.5	11.4
Mexico	6.4	7.2	8.3	6.5	5.5	4.1
Indonesia	3.2	3.1	2.3	2.1	1.7	1.6
Others	3.5	4.6	4.9	4.9	4.6	4.0
Total	63.0	55.9	62.2	64.8	77.1	84.7

	Share (%)					
	1990	2000	2005	2010	2015	2019
Russia	35.0	24.2	31.6	32.7	29.1	27.9
United States	28.8	27.4	21.7	22.5	31.6	37.7
China	9.2	12.2	12.2	13.2	11.7	9.4
Canada	6.3	9.6	9.6	10.8	12.3	13.5
Mexico	10.2	12.8	13.3	10.0	7.1	4.9
Indonesia	5.0	5.5	3.7	3.2	2.2	1.9
Others	5.6	8.3	7.9	7.6	5.9	4.7

*Crude oil includes NGL and condensates

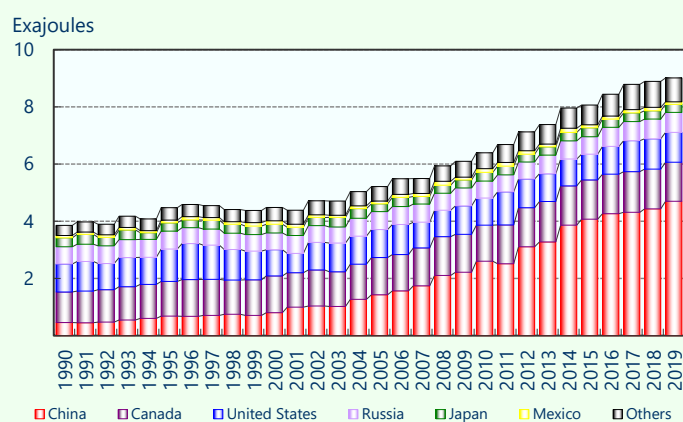
Production of natural gas APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
United States	17.5	18.7	17.6	20.7	26.7	33.5
Russia	21.6	19.7	21.6	22.6	22.0	26.4
Canada	3.7	6.2	6.5	5.4	5.8	6.6
China	.6	1.0	1.8	3.6	5.0	6.8
Indonesia	2.1	2.5	2.7	3.1	2.7	2.4
Malaysia	.6	1.8	2.3	2.0	2.5	2.6
Others	2.6	4.2	5.0	6.3	7.5	9.4
Total	48.8	54.1	57.6	63.7	72.2	87.8

	Share (%)					
	1990	2000	2005	2010	2015	2019
United States	35.9	34.6	30.6	32.5	36.9	38.1
Russia	44.4	36.4	37.5	35.5	30.4	30.1
Canada	7.6	11.5	11.2	8.5	8.1	7.5
China	1.2	1.9	3.2	5.6	7.0	7.8
Indonesia	4.4	4.7	4.7	4.9	3.8	2.8
Malaysia	1.3	3.3	4.0	3.1	3.5	2.9
Others	5.2	7.7	8.7	9.9	10.4	10.8

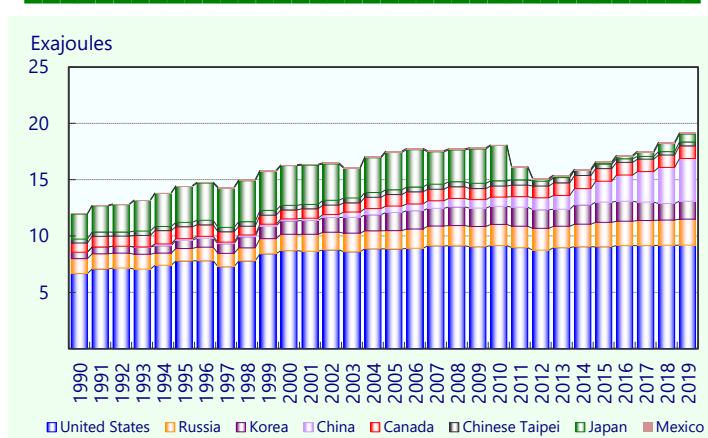
Production of hydro power APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
China	0.5	0.8	1.4	2.6	4.1	4.7
Canada	1.1	1.3	1.3	1.3	1.4	1.4
United States	1.0	0.9	1.0	0.9	0.9	1.0
Russia	0.6	0.6	0.6	0.6	0.6	0.7
Japan	0.3	0.3	0.3	0.3	0.3	0.3
Mexico	0.1	0.1	0.1	0.1	0.1	0.1
Others	0.3	0.5	0.5	0.6	0.7	0.8
Total	3.9	4.5	5.2	6.4	8.1	9.0

	Share (%)					
	1990	2000	2005	2010	2015	2019
China	11.8	17.9	27.4	40.6	50.5	52.1
Canada	27.7	28.8	25.0	19.8	17.1	15.2
United States	25.5	20.3	18.8	14.8	11.2	11.6
Russia	15.5	13.2	11.9	9.4	7.5	7.8
Japan	8.2	6.7	5.3	4.7	3.9	3.2
Mexico	2.2	2.7	1.9	2.1	1.4	0.9
Others	9.0	10.5	9.7	8.6	8.5	9.3

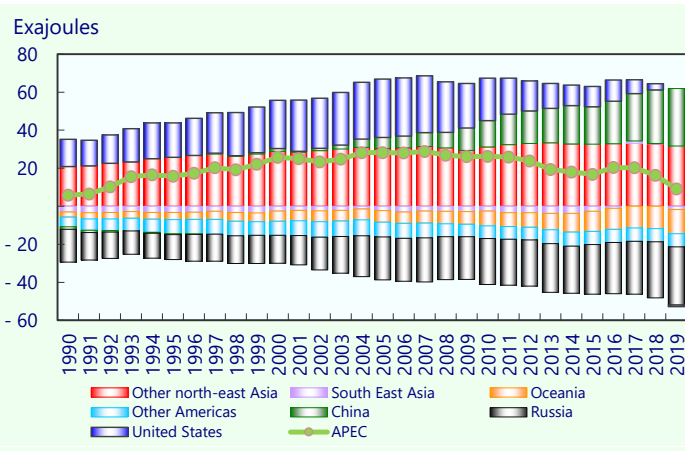
Production of nuclear power APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
United States	6.7	8.7	8.8	9.2	9.1	9.2
China	0.0	0.2	0.6	0.8	1.9	3.8
Russia	1.3	1.4	1.6	1.9	2.1	2.3
Canada	0.8	0.8	1.0	1.0	1.1	1.1
Japan	2.2	3.5	3.3	3.1	0.1	0.7
Others	1.0	1.7	2.2	2.1	2.3	2.1
Total	12.0	16.3	17.6	18.1	16.6	19.2

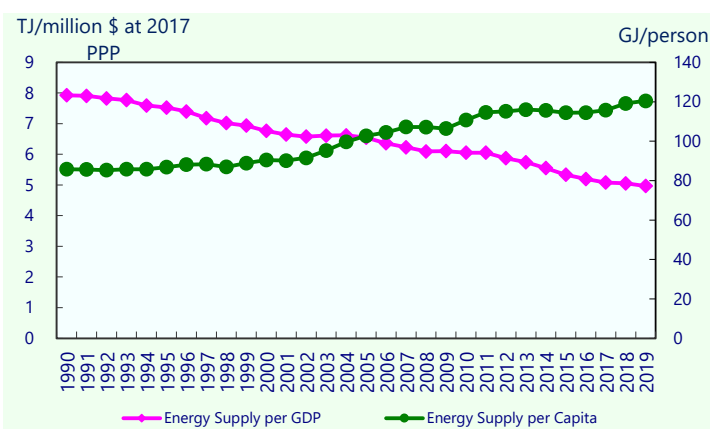
	Share (%)					
	1990	2000	2005	2010	2015	2019
United States	55.7	53.3	50.4	50.6	54.6	48.0
China	0.0	1.1	3.3	4.5	11.2	19.8
Russia	10.9	8.8	9.4	10.3	12.9	12.0
Canada	6.8	4.9	5.7	5.5	6.7	5.8
Japan	18.4	21.5	18.9	17.4	0.6	3.6
Others	8.1	10.4	12.3	11.8	14.0	10.8

Net import by region APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Other north-east Asia	20.9	28.9	30.4	31.2	32.7	31.7
South East Asia	-3.1	-2.6	-2.3	-2.6	-2.6	-1.7
Oceania	-2.6	-5.3	-6.1	-7.7	-10.6	-12.8
Other Americas	-5.1	-7.5	-7.8	-6.8	-6.9	-6.9
China	-1.3	1.4	5.8	13.8	19.6	30.2
Russia	-17.3	-14.6	-22.6	-24.1	-26.0	-30.6
United States	14.3	25.4	30.8	22.3	10.7	-0.8
Total	5.8	25.7	28.2	26.2	16.8	9.1

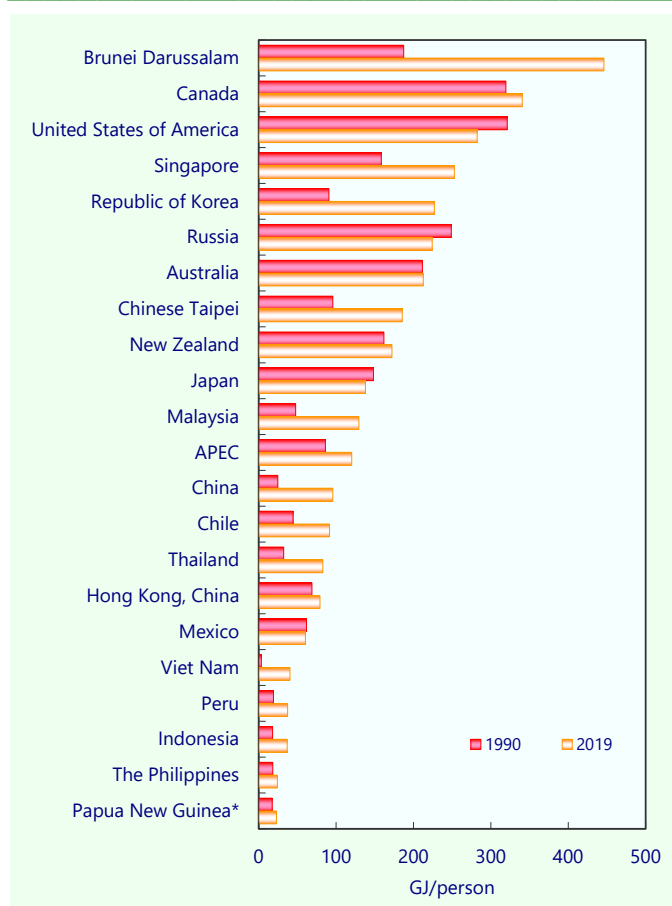
Total primary energy supply per GDP & capita APEC



	1990	2000	2005	2010	2015	2019
Population (million)	2 286	2 554	2 654	2 750	2 846	2 918
Primary Energy Supply per Capita (GJ)	85.76	90.44	102.76	110.72	114.44	120.46
GDP (\$ 2017 PPP)	24 738	34 140	41 663	50 291	61 055	70 752
Primary Energy Supply per GDP (TJ/million \$ at 2017 PPP)	7.9	6.8	6.5	6.1	5.3	5.0

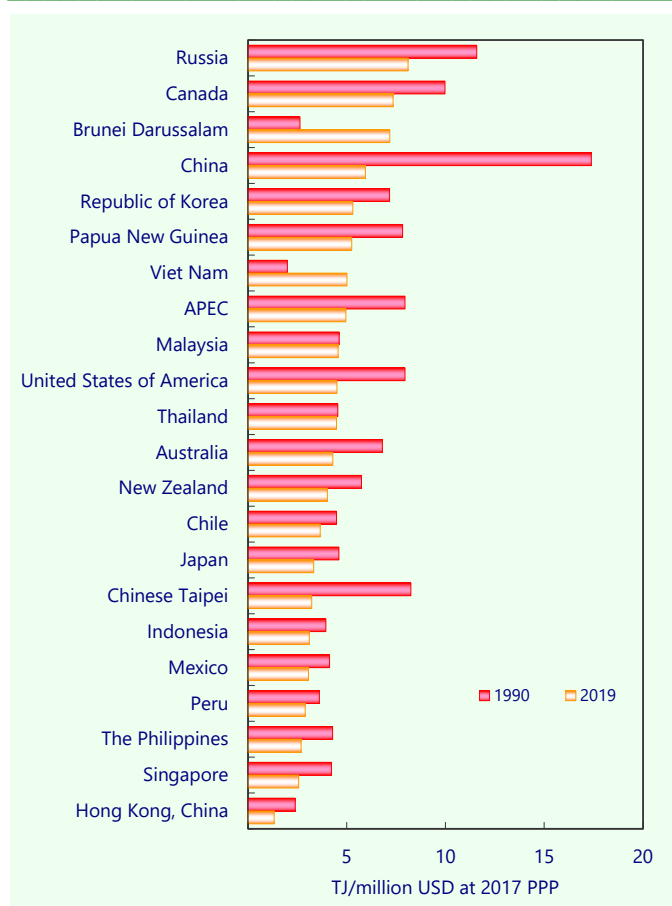
Primary Energy Supply

Total primary energy supply per capita 1990 vs 2019 by economy



*1994 and 2019 data used for Papua New Guinea

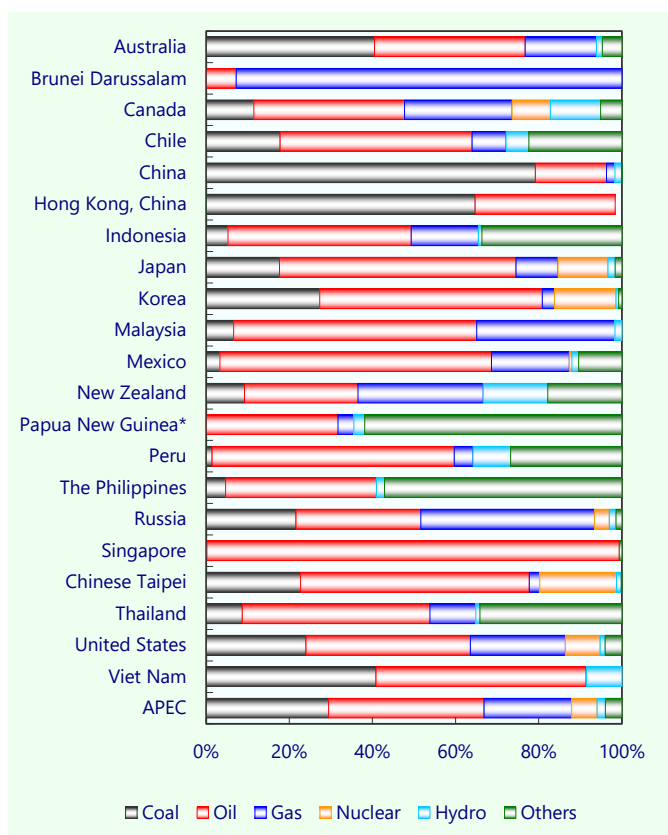
Total primary energy supply per GDP 1990 vs 2019 by economy



*1994 and 2019 data used for Papua New Guinea

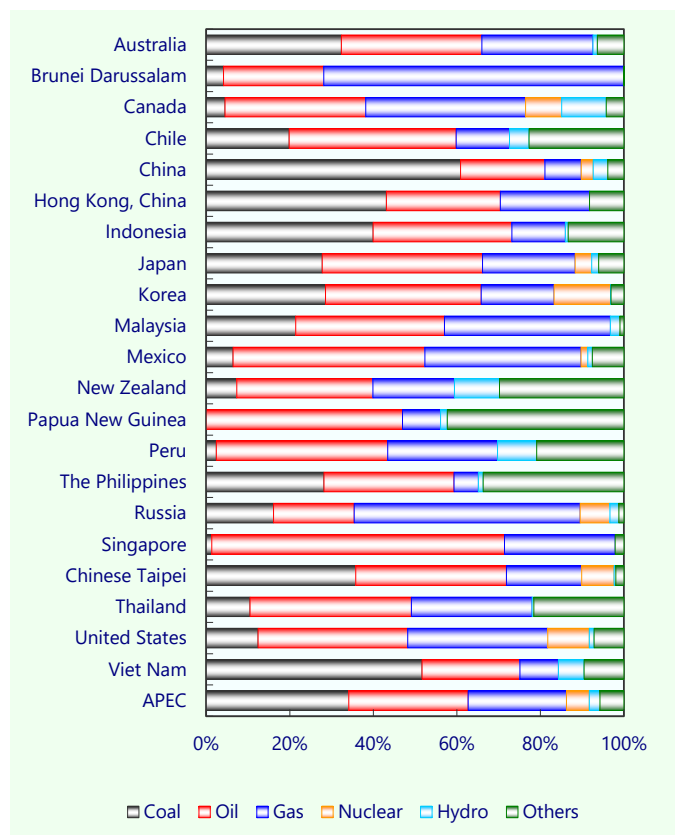
Primary Energy Supply

Primary energy mix by economy 1990



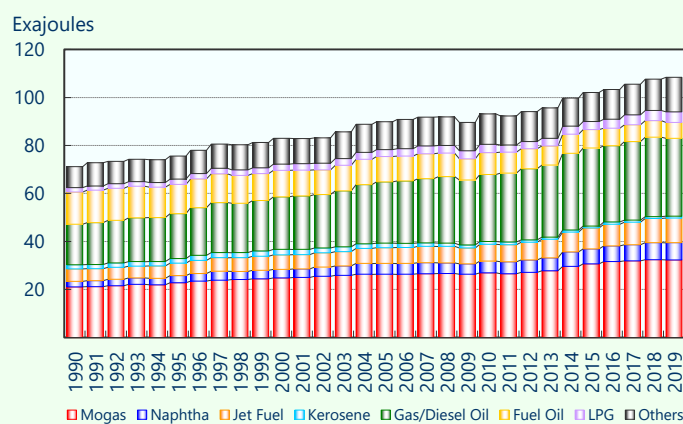
*1994 data used for Papua New Guinea

Primary energy mix by economy 2019



Primary Energy Supply

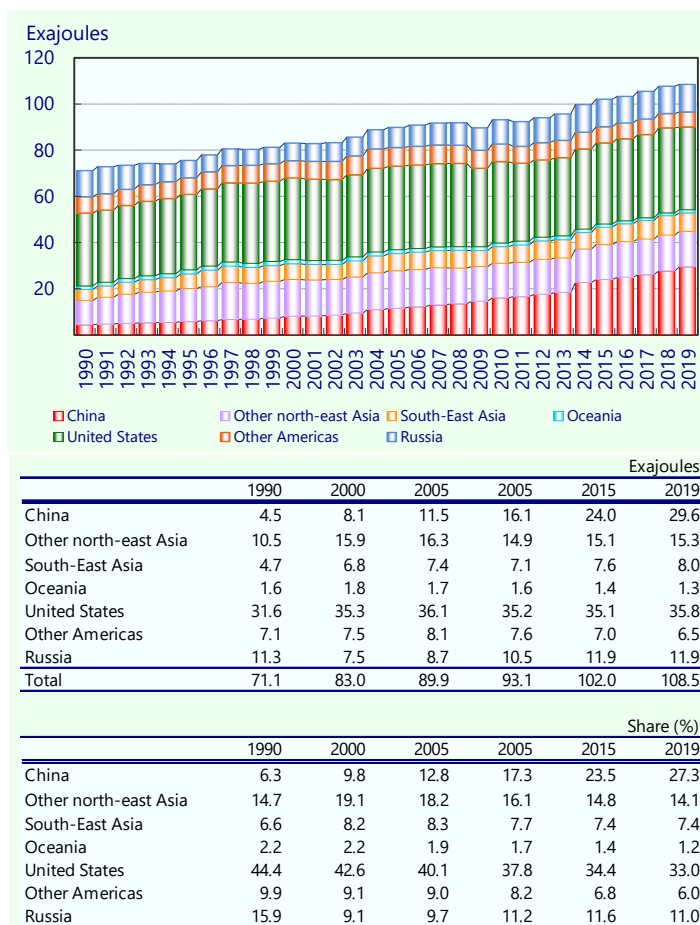
Petroleum refining by product APEC



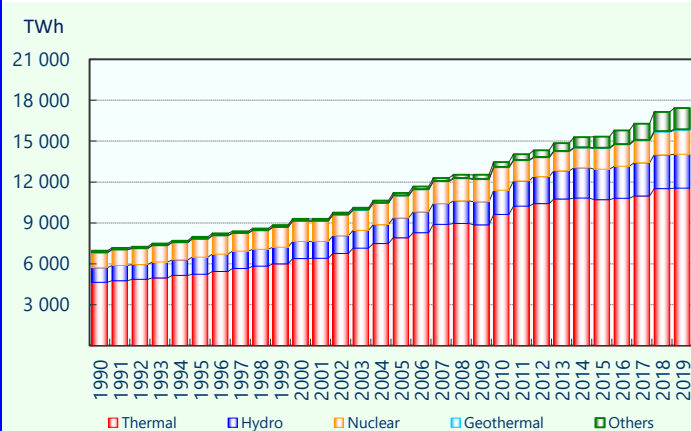
	Exajoules					
	1990	2000	2005	2010	2015	2019
Mogas	21.1	24.8	26.4	27.0	30.7	32.3
Naphtha	2.3	3.5	4.5	4.9	6.2	7.2
Jet Fuel	5.2	6.1	6.5	6.9	8.7	10.3
Gas/Diesel Oil	17.0	21.9	25.5	27.9	32.5	32.4
Fuel Oil	13.4	11.0	10.5	9.1	7.6	6.7
LPG	1.8	2.6	2.9	3.5	3.4	4.4
Others	10.4	13.0	13.5	13.8	12.9	15.2
Total	71.1	83.0	89.9	93.1	102.0	108.5

	Share (%)					
	1990	2000	2005	2010	2015	2019
Mogas	29.6	29.9	29.4	29.0	30.1	29.8
Naphtha	3.3	4.2	5.0	5.3	6.1	6.6
Jet Fuel	7.3	7.3	7.3	7.4	8.6	9.5
Gas/Diesel Oil	23.8	26.3	28.4	29.9	31.9	29.9
Fuel Oil	18.9	13.3	11.7	9.8	7.5	6.2
LPG	2.5	3.2	3.2	3.8	3.3	4.0
Others	14.6	15.7	15.1	14.9	12.7	14.0

Petroleum refining by region APEC



Electricity generation by type APEC

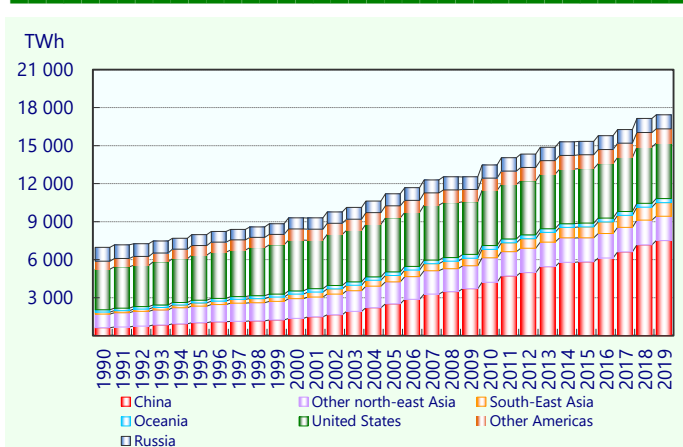


	TWh					
	1990	2000	2005	2010	2015	2019
Thermal	4 639	6 384	7 916	9 614	10 697	11 543
Hydro	1 072	1 250	1 453	1 780	2 243	2 506
Nuclear	1 094	1 496	1 608	1 658	1 521	1 755
Geothermal	32	41	48	53	58	60
Others	125	128	173	368	820	1 571
Total	6 961	9 299	11 197	13 473	15 338	17 436

	Share (%)					
	1990	2000	2005	2010	2015	2019
Thermal	66.6	68.7	70.7	71.4	69.7	66.2
Hydro	15.4	13.4	13.0	13.2	14.6	14.4
Nuclear	15.7	16.1	14.4	12.3	9.9	10.1
Geothermal	0.5	0.4	0.4	0.4	0.4	0.3
Others	1.8	1.4	1.5	2.7	5.3	9.0

Note: Others comprise power generated from other renewable energy sources.

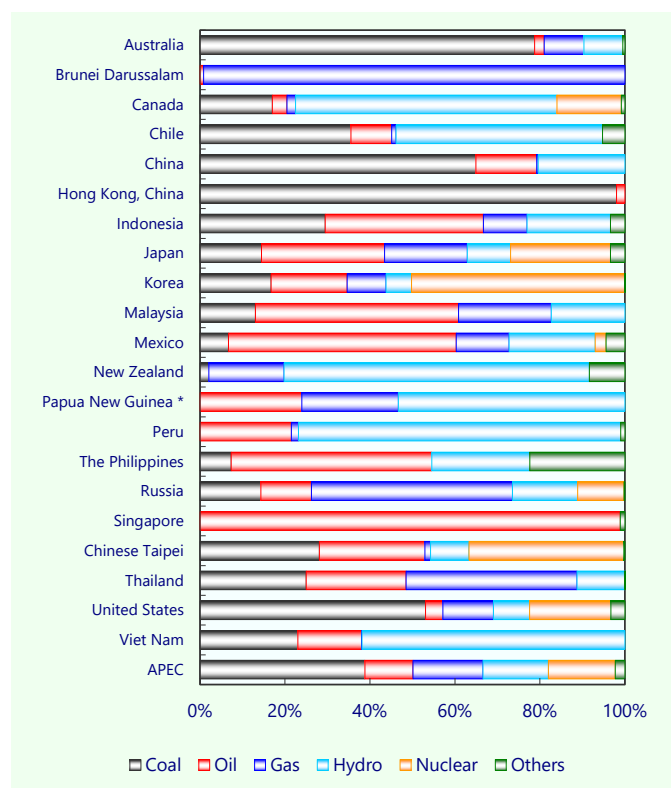
Electricity generation by region APEC



	TWh					
	1990	2000	2005	2010	2015	2019
China	621	1 356	2 500	4 207	5 815	7 503
Other north-east Asia	1 086	1 560	1 753	1 946	1 900	1 926
South-East Asia	152	358	499	653	869	1 071
Oceania	187	252	275	302	300	313
United States	3 203	4 026	4 269	4 354	4 297	4 371
Other Americas	630	871	949	975	1 092	1 131
Russia	1 082	876	951	1 036	1 066	1 120
Total	6 961	9 299	11 197	13 473	15 338	17 436

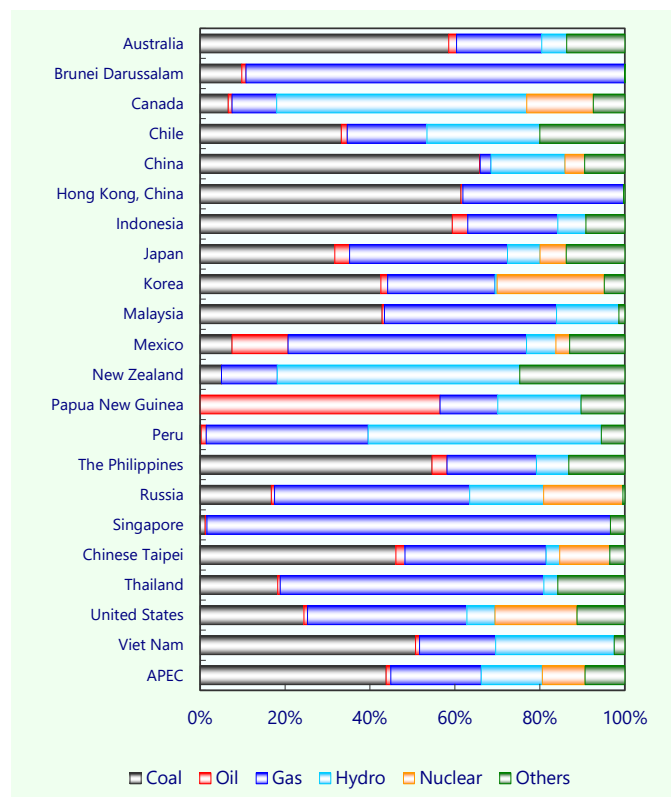
	Share (%)					
	1990	2000	2005	2010	2015	2019
China	8.9	14.6	22.3	31.2	37.9	43.0
Other north-east Asia	15.6	16.8	15.7	14.4	12.4	11.0
South-East Asia	2.2	3.9	4.5	4.8	5.7	6.1
Oceania	2.7	2.7	2.5	2.2	2.0	1.8
United States	46.0	43.3	38.1	32.3	28.0	25.1
Other Americas	9.1	9.4	8.5	7.2	7.1	6.5
Russia	15.5	9.4	8.5	7.7	6.9	6.4

Electricity generation by economy 1990



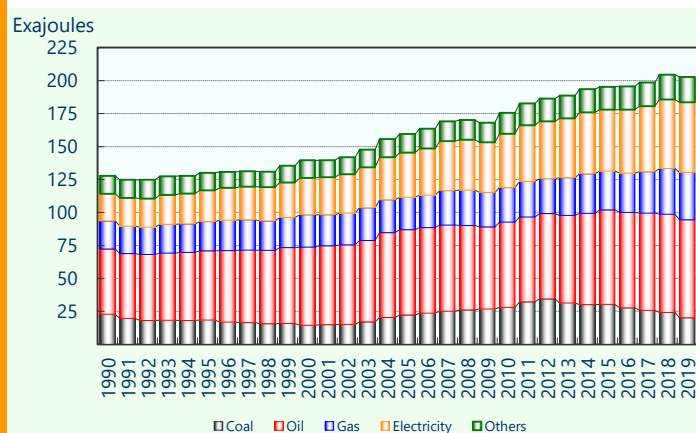
*1994 data used for Papua New Guinea

Electricity generation by economy 2019



Transformation

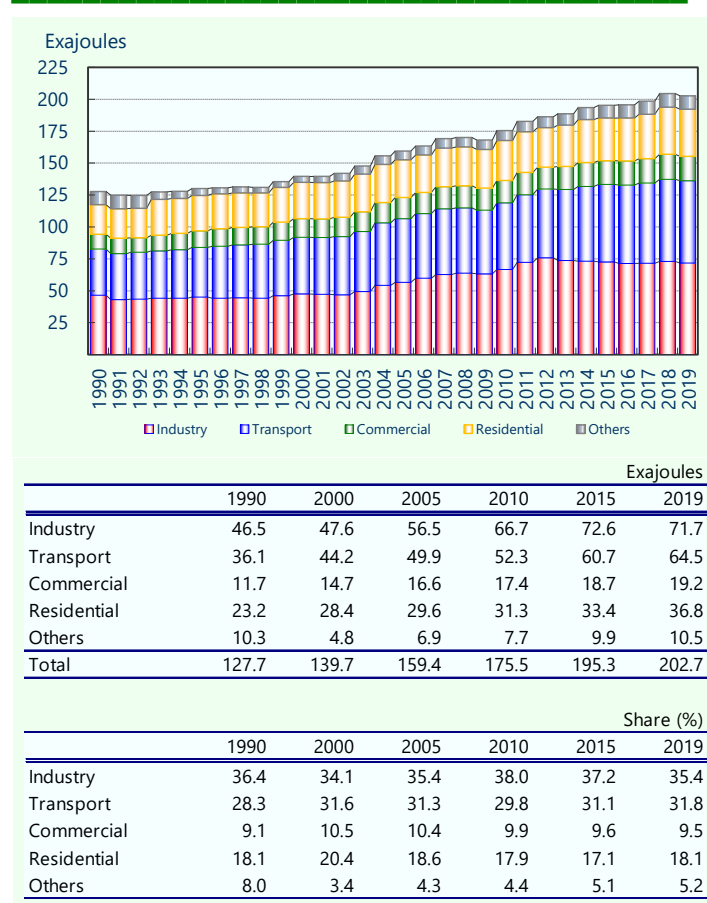
Total final energy consumption by energy APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Coal	22.7	14.4	22.2	28.0	30.2	20.1
Oil	49.6	59.3	64.8	64.7	71.8	74.4
Gas	21.2	24.5	24.5	26.2	29.3	35.9
Electricity	20.7	28.0	33.9	40.8	46.7	53.3
Others	13.5	13.4	14.1	15.9	17.3	19.0
Total	127.7	139.7	159.4	175.5	195.3	202.7

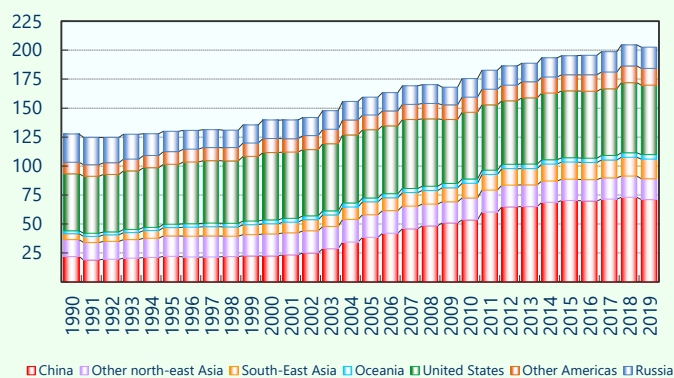
	Share (%)					
	1990	2000	2005	2010	2015	2019
Coal	17.8	10.3	13.9	15.9	15.5	9.9
Oil	38.8	42.4	40.6	36.9	36.8	36.7
Gas	16.6	17.6	15.4	14.9	15.0	17.7
Electricity	16.2	20.1	21.3	23.2	23.9	26.3
Others	10.6	9.6	8.8	9.0	8.8	9.4

Total final energy consumption by sector APEC



Final Energy Consumption

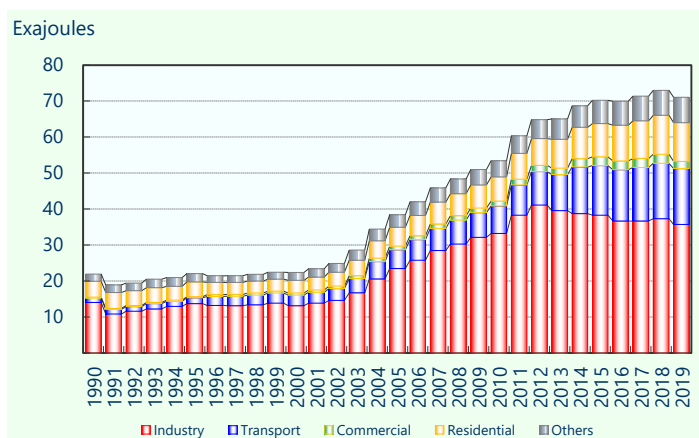
Total final energy consumption by region APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
China	21.9	22.4	38.4	53.4	70.2	71.0
Other north-east Asia	14.5	19.0	19.6	18.9	18.3	18.0
South-East Asia	5.2	8.8	11.0	12.8	14.9	16.9
Oceania	2.6	3.3	3.4	3.6	3.8	3.9
United States	49.2	58.3	58.9	57.7	57.6	59.9
Other Americas	9.9	12.0	12.7	13.1	14.0	14.5
Russia	24.5	16.0	15.4	15.9	16.5	18.4
Total	127.7	139.7	159.4	175.5	195.3	202.7

	Share (%)					
	1990	2000	2005	2010	2015	2019
China	17.2	16.0	24.1	30.4	36.0	35.1
Other north-east Asia	11.4	13.6	12.3	10.8	9.4	8.9
South-East Asia	4.0	6.3	6.9	7.3	7.6	8.3
Oceania	2.0	2.4	2.2	2.1	2.0	1.9
United States	38.5	41.8	36.9	32.9	29.5	29.6
Other Americas	7.8	8.6	8.0	7.5	7.1	7.2
Russia	19.2	11.4	9.7	9.1	8.4	9.1

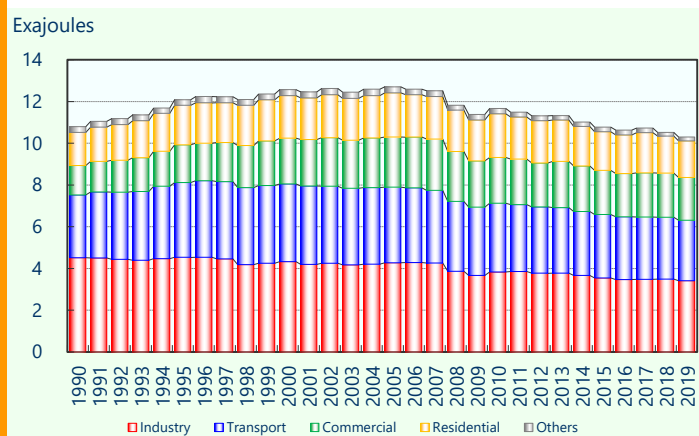
Total final energy consumption by sector China



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	14.0	13.1	23.5	33.2	38.3	35.7
Transport	1.2	3.0	5.2	7.6	13.8	15.5
Commercial	.3	.6	1.0	1.4	2.4	2.0
Residential	4.4	3.5	5.2	6.7	9.2	10.7
Others	2.0	2.2	3.5	4.5	6.5	7.1
Total	21.9	22.4	38.4	53.4	70.2	71.0

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	64.0	58.7	61.0	62.2	54.5	50.3
Transport	5.7	13.2	13.5	14.2	19.7	21.8
Commercial	1.3	2.5	2.7	2.6	3.4	2.9
Residential	20.1	15.8	13.6	12.5	13.2	15.1
Others	8.9	9.7	9.1	8.5	9.3	9.9

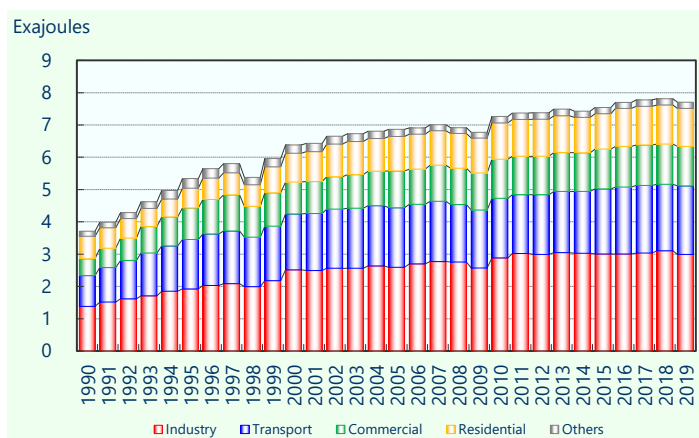
Total final energy consumption by sector Japan



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	4.5	4.3	4.3	3.8	3.5	3.4
Transport	3.0	3.7	3.6	3.3	3.0	2.9
Commercial	1.4	2.2	2.4	2.2	2.1	2.1
Residential	1.6	2.0	2.1	2.1	1.8	1.8
Others	0.3	0.3	0.3	0.3	0.2	0.2
Total	10.8	12.6	12.7	11.7	10.8	10.3

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	41.8	34.4	33.6	32.8	32.9	33.1
Transport	27.9	29.6	28.6	28.2	28.3	28.2
Commercial	13.0	17.4	18.9	18.8	19.6	20.0
Residential	14.7	16.2	16.6	17.9	17.1	17.0
Others	2.6	2.2	2.3	2.2	2.1	1.7

Total final energy consumption by sector Other north-east Asia*

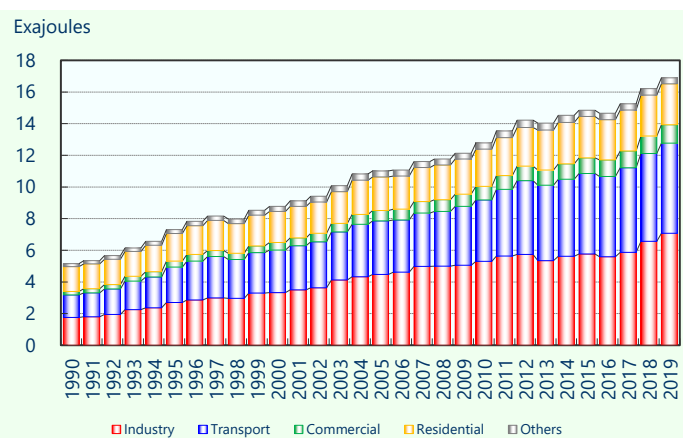


	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	1.4	2.5	2.6	2.9	3.0	3.0
Transport	1.0	1.7	1.8	1.8	2.0	2.1
Commercial	0.5	1.0	1.1	1.2	1.2	1.2
Residential	0.7	0.9	1.1	1.1	1.1	1.2
Others	0.2	0.3	0.2	0.2	0.2	0.2
Total	3.7	6.4	6.9	7.3	7.5	7.7

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	37.3	39.4	37.8	39.8	39.9	38.8
Transport	25.6	27.1	26.8	25.3	26.7	27.6
Commercial	14.0	15.5	16.6	16.7	16.3	15.9
Residential	18.8	14.0	15.6	15.6	14.5	15.2
Others	4.3	4.0	3.2	2.7	2.6	2.5

*In this page, Other north-east Asia includes Hong Kong, China; Republic of Korea and Chinese Taipei

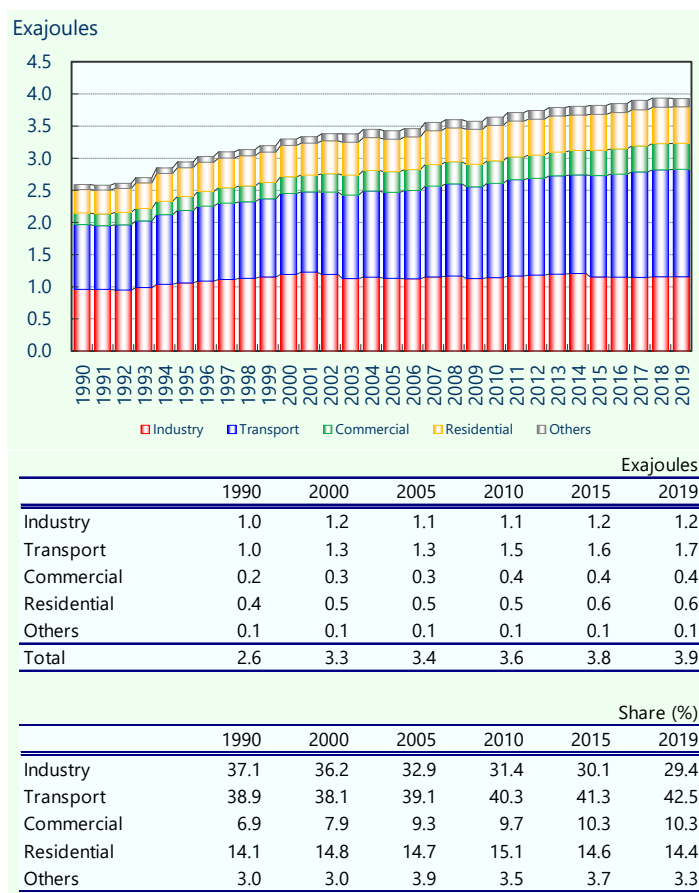
Total final energy consumption by sector South-East Asia



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	1.8	3.3	4.5	5.3	5.8	7.1
Transport	1.4	2.7	3.4	3.9	5.1	5.7
Commercial	0.2	0.5	0.6	0.8	1.0	1.2
Residential	1.6	2.0	2.1	2.4	2.6	2.6
Others	0.2	0.3	0.4	0.4	0.4	0.4
Total	5.2	8.8	11.0	12.8	14.9	16.9

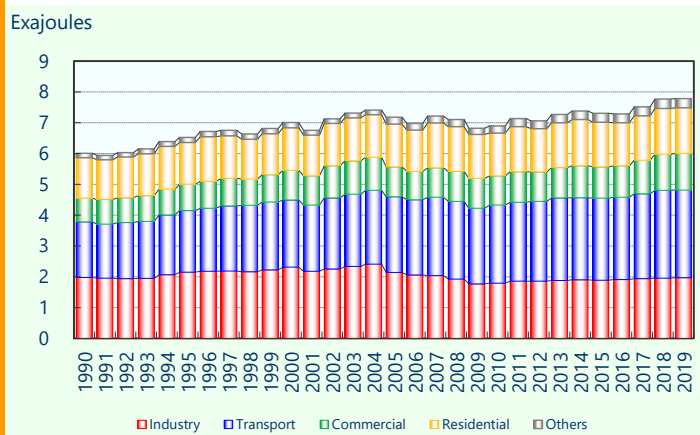
	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	34.0	38.0	40.7	41.5	38.9	41.9
Transport	27.5	30.6	30.7	30.3	34.2	33.8
Commercial	4.3	5.4	5.9	6.6	6.6	6.9
Residential	30.3	22.4	19.2	18.5	17.6	15.3
Others	3.8	3.6	3.5	3.0	2.7	2.2

Total final energy consumption by sector Oceania



Final Energy Consumption

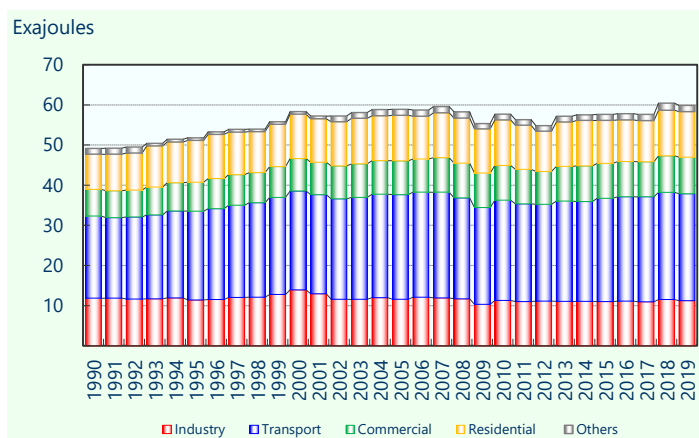
Total final energy consumption by sector Canada



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	2.0	2.3	2.1	1.8	1.9	2.0
Transport	1.8	2.2	2.5	2.5	2.7	2.8
Commercial	0.8	1.0	1.0	0.9	1.0	1.2
Residential	1.3	1.4	1.4	1.4	1.5	1.5
Others	0.1	0.2	0.2	0.2	0.3	0.3
Total	6.0	7.0	7.2	6.9	7.3	7.8

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	32.9	33.0	29.8	26.0	25.8	25.3
Transport	30.1	31.1	34.3	36.8	36.5	36.6
Commercial	12.8	13.7	13.5	13.7	13.9	15.3
Residential	21.9	19.6	19.4	20.1	19.9	19.0
Others	2.3	2.5	3.0	3.4	3.9	3.8

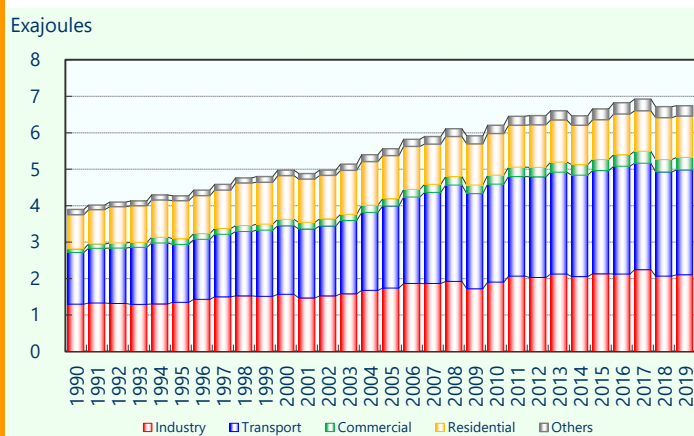
Total final energy consumption by sector United States



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	11.9	13.9	11.6	11.3	11.0	11.2
Transport	20.4	24.6	26.1	24.9	25.7	26.7
Commercial	6.7	8.1	8.4	8.7	8.7	9.1
Residential	8.8	11.1	11.4	11.3	10.7	11.3
Others	1.4	.7	1.5	1.4	1.5	1.6
Total	49.2	58.3	58.9	57.7	57.6	59.9

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	24.2	23.8	19.7	19.6	19.1	18.7
Transport	41.5	42.2	44.3	43.2	44.6	44.6
Commercial	13.6	13.9	14.2	15.1	15.1	15.1
Residential	17.9	19.0	19.3	19.6	18.6	18.9
Others	2.9	1.1	2.5	2.5	2.5	2.6

Total final energy consumption by sector Other Americas*

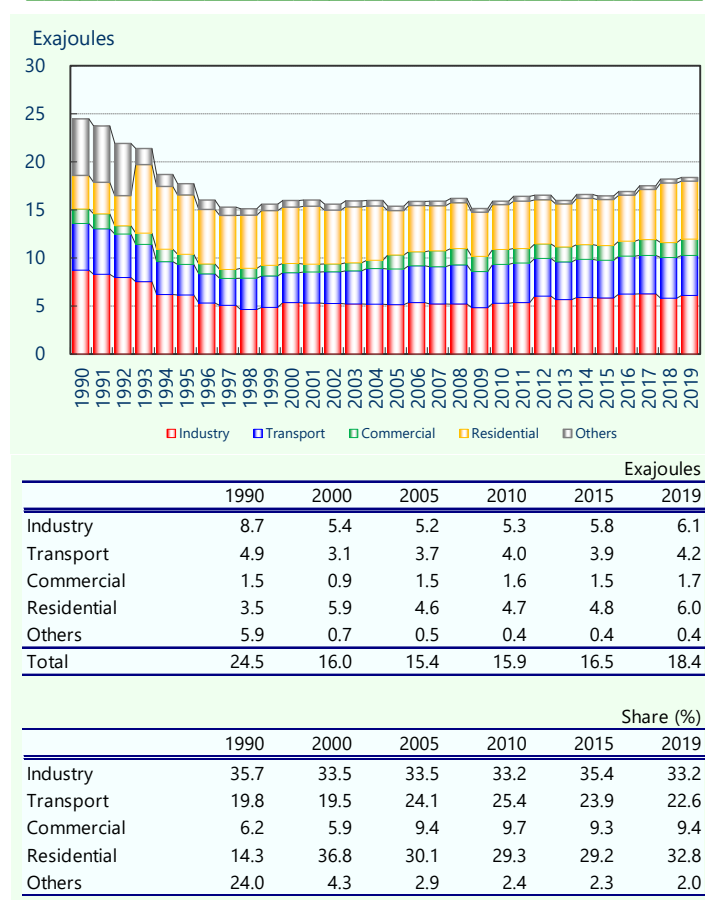


	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	1.3	1.6	1.7	1.9	2.1	2.1
Transport	1.4	1.9	2.3	2.7	2.8	2.9
Commercial	0.1	0.2	0.2	0.2	0.3	0.3
Residential	0.9	1.2	1.2	1.1	1.1	1.1
Others	0.1	0.2	0.2	0.2	0.3	0.3
Total	3.9	5.0	5.6	6.2	6.7	6.7

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	33.3	31.5	31.2	30.7	32.0	31.2
Transport	36.4	37.8	40.6	43.3	42.5	42.7
Commercial	2.5	3.6	3.6	4.0	4.6	5.0
Residential	24.1	24.1	21.2	18.3	16.5	16.8
Others	3.8	3.1	3.4	3.7	4.4	4.3

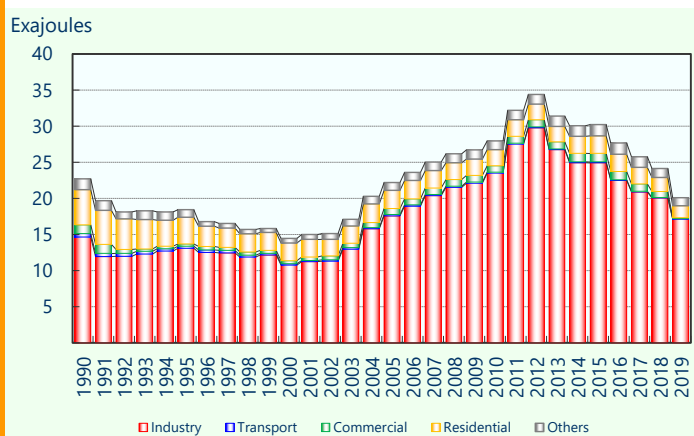
*Other Americas include Chile, Mexico and Peru.

Total final energy consumption by sector Russia



Final Energy Consumption

Coal* demand by sector APEC

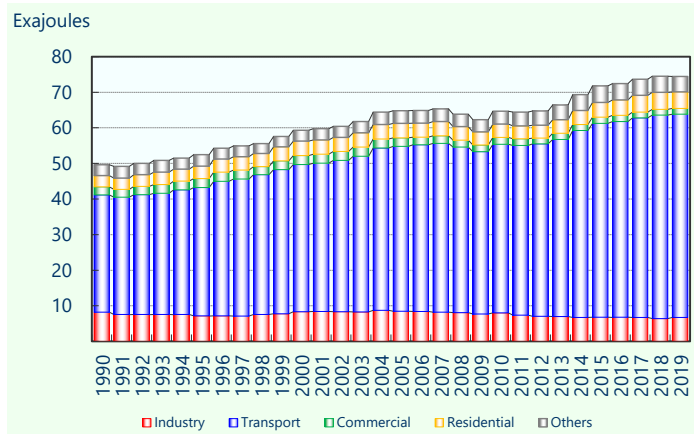


	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	14.7	10.8	17.6	23.5	24.9	17.1
Transport	0.5	0.2	0.2	0.1	0.1	0.1
Commercial	1.2	0.4	0.8	0.9	1.2	0.1
Residential	4.9	2.5	2.5	2.2	2.4	1.7
Others	1.5	0.6	1.1	1.2	1.6	1.1
Total	22.7	14.4	22.2	28.0	30.2	20.1

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	64.5	74.4	79.2	84.0	82.5	85.2
Transport	2.1	1.4	0.8	0.5	0.4	0.3
Commercial	5.4	2.8	3.8	3.2	3.9	0.7
Residential	21.4	17.0	11.3	8.0	8.1	8.3
Others	6.7	4.4	4.9	4.4	5.1	5.5

*Coal and Coal Products

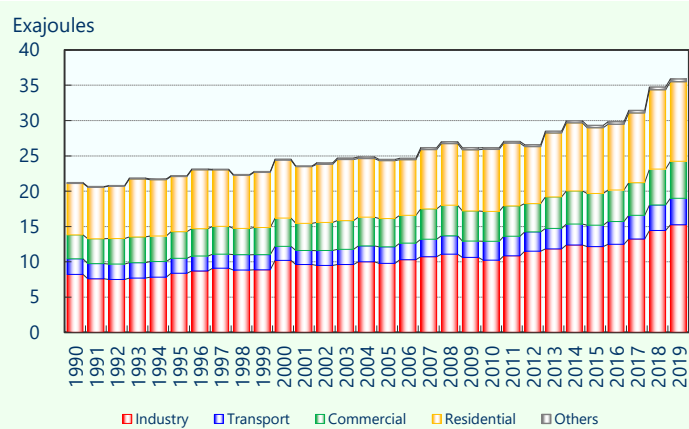
Oil demand by sector APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	8.2	8.4	8.5	8.0	6.8	6.8
Transport	32.9	41.3	46.3	47.4	54.5	57.1
Commercial	2.3	2.5	2.4	1.9	1.7	1.6
Residential	3.2	4.1	4.1	3.7	4.2	4.6
Others	3.0	3.0	3.5	3.7	4.7	4.3
Total	49.6	59.3	64.8	64.7	71.8	74.4

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	16.6	14.1	13.1	12.4	9.5	9.1
Transport	66.4	69.7	71.4	73.2	75.9	76.7
Commercial	4.5	4.2	3.7	2.9	2.4	2.2
Residential	6.4	6.9	6.3	5.8	5.8	6.2
Others	6.1	5.0	5.4	5.7	6.5	5.8

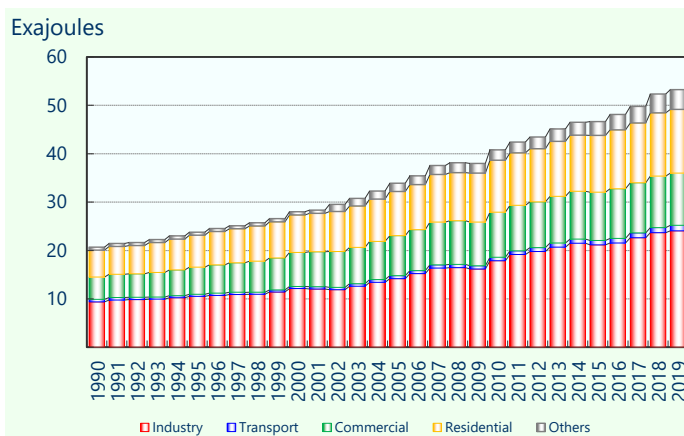
Gas demand by sector APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	8.2	10.2	9.8	10.2	12.1	15.2
Transport	2.2	2.0	2.3	2.7	3.0	3.7
Commercial	3.4	4.0	4.0	4.2	4.5	5.2
Residential	7.3	8.2	8.2	8.8	9.3	11.3
Others	0.1	0.1	0.2	0.2	0.3	0.4
Total	21.2	24.5	24.5	26.2	29.3	35.9

	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	38.8	41.6	39.9	39.1	41.4	42.5
Transport	10.4	8.1	9.6	10.2	10.4	10.4
Commercial	16.0	16.3	16.3	16.2	15.3	14.6
Residential	34.4	33.6	33.4	33.6	31.8	31.4
Others	0.4	0.5	0.7	0.8	1.1	1.0

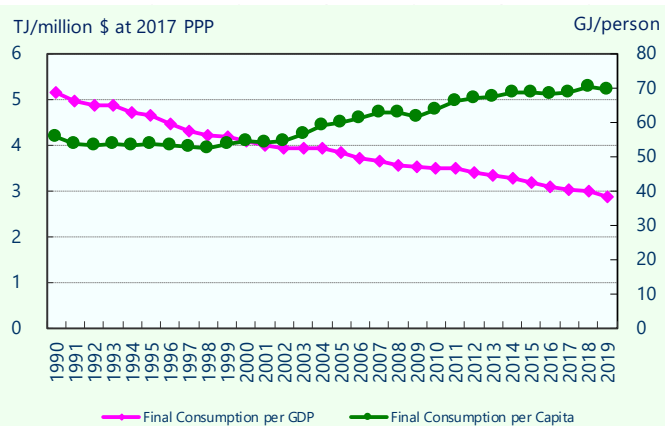
Electricity demand by sector APEC



	Exajoules					
	1990	2000	2005	2010	2015	2019
Industry	9.4	12.1	14.2	17.9	21.2	24.1
Transport	0.5	0.4	0.6	0.7	0.9	1.1
Commercial	4.6	7.0	8.2	9.3	10.0	10.8
Residential	5.5	7.8	9.1	10.7	11.7	13.2
Others	0.6	0.7	1.7	2.1	2.9	4.1
Total	20.7	28.0	33.9	40.8	46.7	53.3

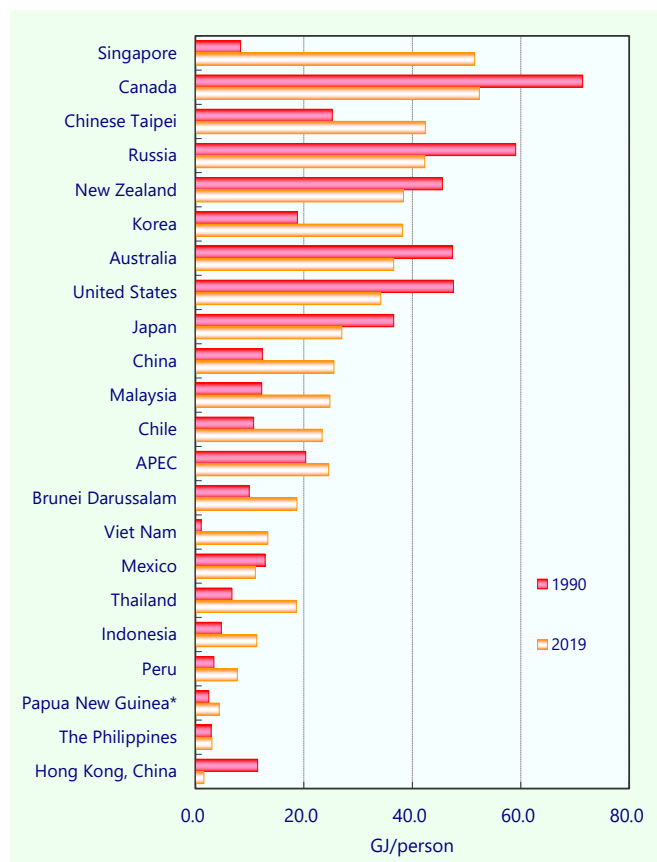
	Share (%)					
	1990	2000	2005	2010	2015	2019
Industry	45.5	43.3	41.9	43.9	45.4	45.2
Transport	2.5	1.6	1.8	1.8	1.9	2.1
Commercial	22.3	25.0	24.3	22.8	21.5	20.3
Residential	26.8	27.7	27.0	26.3	25.1	24.7
Others	2.9	2.3	5.0	5.3	6.2	7.7

Final consumption per capita and GDP APEC



	1990	2000	2005	2010	2015	2019
Population (million)	2 286	2 554	2 654	2 750	2 846	2 918
Final Consumption per Capita (GJ)	55.87	54.68	60.08	63.81	68.62	69.45
	1990	2000	2005	2010	2015	2019
GDP (billion \$ at 2017 PPP)	24 738	34 140	41 663	50 291	61 055	70 752
Final Consumption per GDP (TJ/million \$ at 2017 PPP)	5.16	4.09	3.83	3.49	3.20	2.86

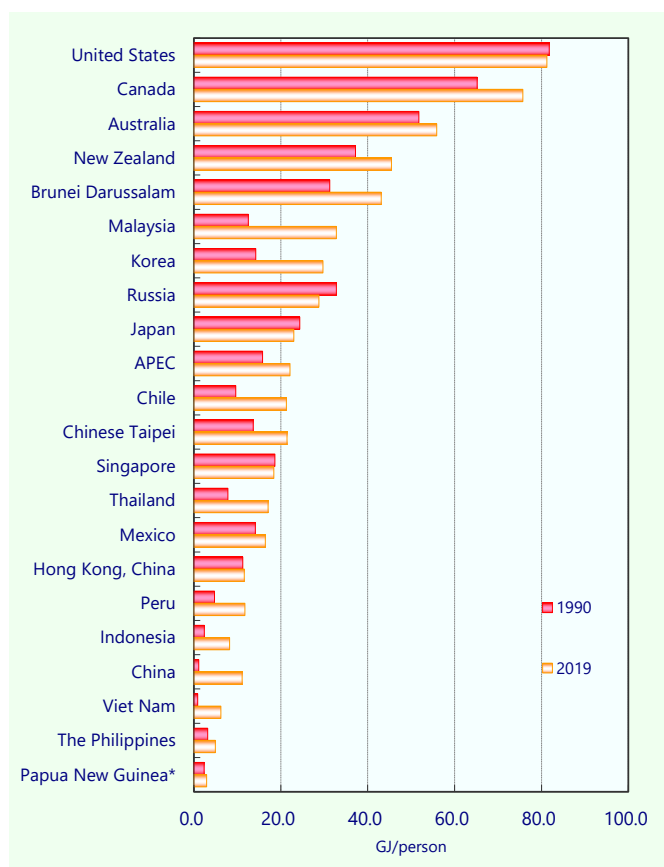
Energy consumption in industry: APEC



*1994 and 2019 data used for Papua New Guinea

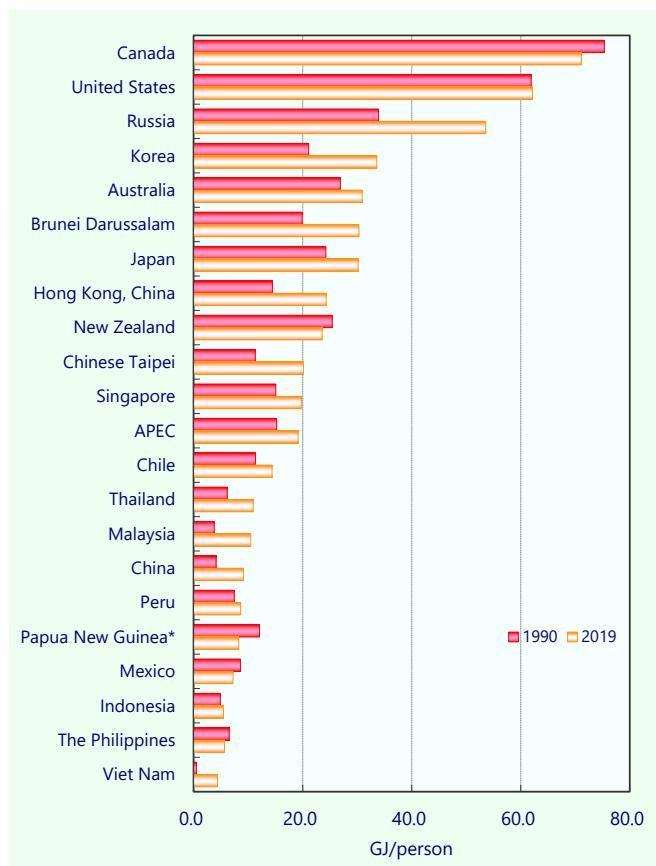
Final Energy Consumption

Energy consumption in transportation: APEC



*1994 and 2019 data used for Papua New Guinea

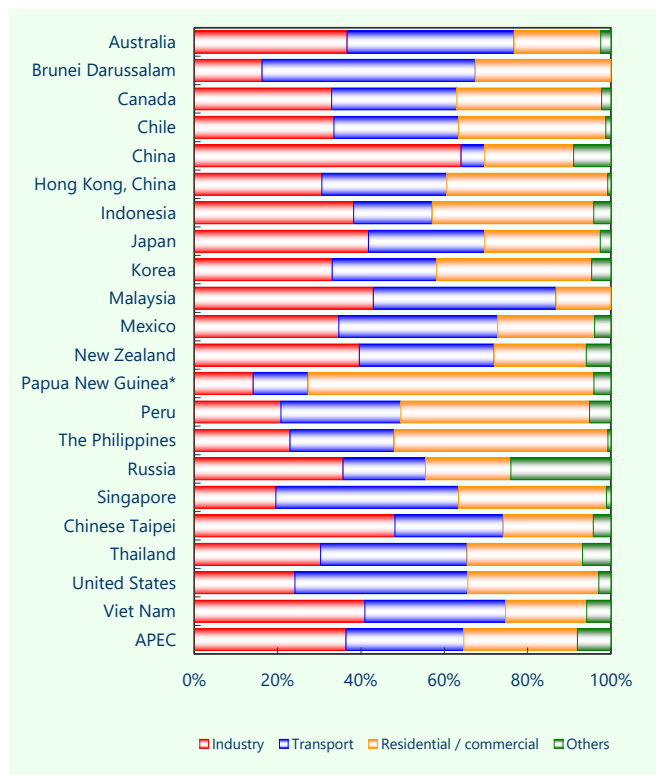
Energy consumption in residential/ commercial: APEC



*1994 and 2010 data used for Papua New Guinea

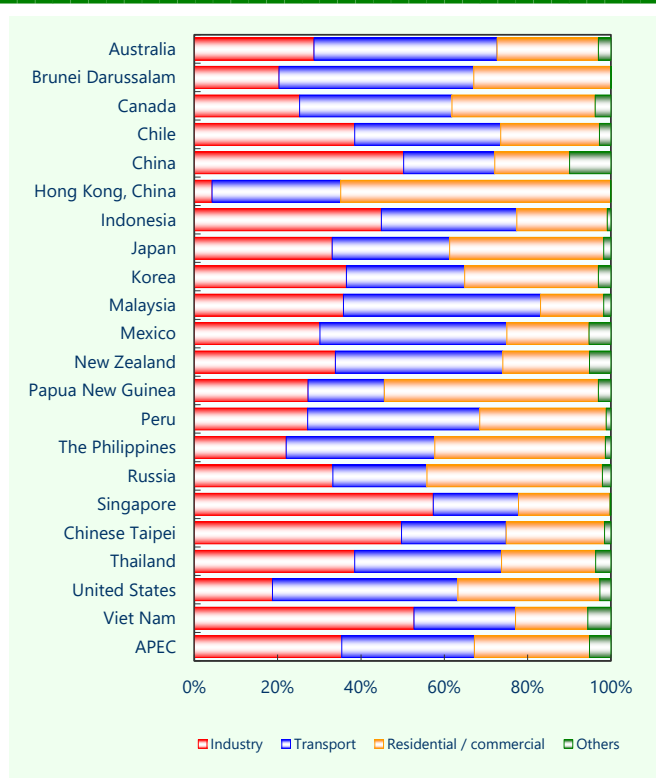
Final Energy Consumption

Final energy consumption by sector 1990



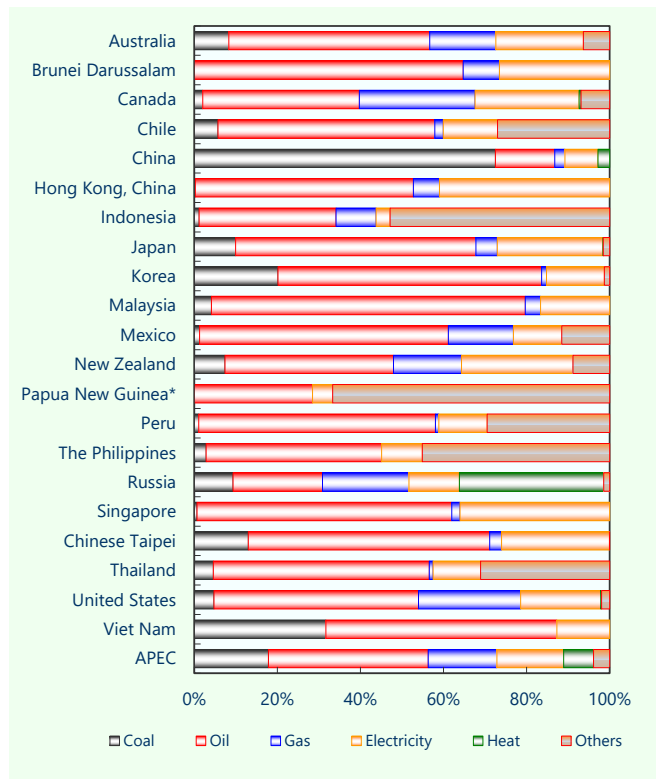
*1994 data used for Papua New Guinea

Final energy consumption by sector 2019



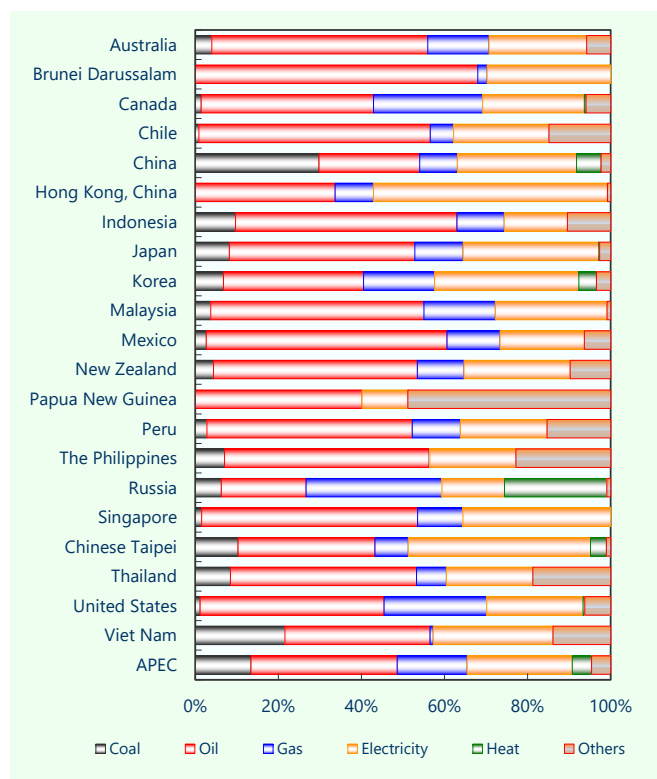
Final Energy Consumption

Final energy consumption by energy 1990



*1994 data used for Papua New Guinea

Final energy consumption by energy 2019



Final Energy Consumption

APEC, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	134 441		84 711	
2 Import	19 893	485	60 927	23 990
3 Export	- 31 107	- 361	- 31 423	- 28 796
4 International marine and aviation bunkers				- 8 373
5 Stock change	- 3 232	- 106	- 442	- 39
6 Total energy supply	119 995	18	113 773	- 13 219
7 Transfers			204	5 681
8 Main activity producers	- 73 278	- 276	- 14	- 1 495
9 Autoproducers	- 1 348	- 416	- 23	- 684
10 Gas processing	- 626	- 5		9
11 Petroleum refineries			- 113 785	108 453
12 Coal transformation	- 23 659	5 710		- 14
13 Other transformation			1 047	- 746
14 Loss & own-use	- 187	- 452	- 452	- 5 685
15 Discrepancy	- 4 969	- 293	- 108	- 5 005
16 Total final energy consumption	15 927	4 287	641	87 295
17 Total final energy consumption	15 878	4 216	3	74 419
18 Industry sector	13 059	4 058	2	6 750
19 Transport sector	64			57 101
20 Other sector	2 755	158	1	10 567
20.1 Residential & Commercial	1 670	138		6 244
20.2 Agriculture	500	17		2 293
20.3 Other	585	3		2 029
21 Non-energy	50	71	638	12 877

Australia, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	12 596		691	
2 Import	5	12	745	1 272
3 Export	- 10 611	- 18	- 518	- 111
4 International marine and aviation bunkers				243
5 Stock change	- 240		- 6	- 16
6 Total energy supply	1 750	- 6	910	902
7 Transfers			- 9	152
8 Main activity producers	- 1 532			- 9
9 Autoproducers				- 39
10 Gas processing				
11 Petroleum refineries			- 1 049	1 035
12 Coal transformation	- 113	60		
13 Other transformation				
14 Loss & own-use		- 34	- 2	- 202
15 Discrepancy	- 1		150	2
16 Total final consumption	105	21	1	1 842
17 Total final energy consumption	105	21	1	1 667
18 Industry sector	105	21	1	165
19 Transport sector				1 370
20 Other sector				133
20.1 Residential & Commercial				45
20.2 Agriculture				88
20.3 Other				
21 Non-energy				174

Unit: PJ

Natural gas LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
87 802	9 009	19 160	6 500	13 705	2	355 331	27 613
18 916				237	453	124 900	236
- 23 317				- 300	- 475	- 115 780	- 298
- 713				- 9		- 8 381	- 9
- 12				- 12		- 4 544	- 10
82 688	9 009	19 160	6 500	13 621	- 20	351 527	27 532
						5 885	
- 28 474	- 8 879	- 19 160	- 5 778	- 3 007	68 909	- 71 453	- 16 716
- 4 567	- 129		- 460	- 1 016	5 657	- 2 987	- 1 307
614						8	
						- 5 333	
						- 17 968	
- 827				- 477	3	- 1 001	- 477
- 8 570				- 23	- 11 549	- 26 917	- 17
- 222				33	- 116	- 10 681	29
40 642			262	9 124	62 885	221 064	9 044
35 880			262	9 124	62 885	202 666	9 044
15 242			6	3 552	29 062	71 733	3 280
3 748				2 424	1 132	64 468	2 424
16 890			256	3 148	32 690	66 465	3 340
16 514			249	2 840	28 315	55 971	27 613
161			3	286	1 146	4 406	286
214			5	22	3 229	6 088	7
4 762						18 398	

Unit: PJ

Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
4 938	56		135	207		18 623	394
182						2 216	
- 3 685						- 14 943	
						- 243	
						- 262	
1 435	56		135	207		5 390	394
						144	
- 315	- 56		- 73	- 20	816	- 1 189	- 149
- 196			- 44	- 26	133	- 172	- 70
						- 14	
						- 53	
- 372					- 177	- 787	
- 24						128	
528			17	161	772	3 447	175
481			17	161	772	3 226	175
254				108	274	927	104
19				5	23	1 417	5
207			17	48	476	881	66
206			17	48	468	784	394
11					8	97	
47						222	

Brunei Darussalam, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production			268	
2 Import	8		66	20
3 Export			- 258	- 37
4 International marine and aviation bunkers				- 5
5 Stock change			3	- 10
6 Total energy supply	8		79	- 32
7 Transfers			6	
8 Main activity producers				- 1
9 Autoproducers	- 8			
10 Gas processing				4
11 Petroleum refineries			- 85	56
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy				- 1
16 Total final consumption				25
17 Total final energy consumption				25
18 Industry sector				6
19 Transport sector				19
20 Other sector				1
20.1 Residential & Commercial				1
20.2 Agriculture				
20.3 Other				
21 Non-energy				

Canada, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	1 208		11 405	
2 Import	214	36	1 898	553
3 Export	- 865	- 1	- 8 552	- 953
4 International marine and aviation bunkers				- 59
5 Stock change	- 16	3	- 41	59
6 Total energy supply	542	38	4 710	- 401
7 Transfers			79	92
8 Main activity producers	- 424			- 51
9 Autoproducers		- 2		- 23
10 Gas processing				
11 Petroleum refineries			- 4 478	4 276
12 Coal transformation	- 88	58		
13 Other transformation			152	
14 Loss & own-use				- 688
15 Discrepancy	10	- 27	- 462	696
16 Total final consumption	40	67		3 901
17 Total final energy consumption	37	65		3 195
18 Industry sector	37	65		263
19 Transport sector				2 575
20 Other sector				357
20.1 Residential & Commercial				142
20.2 Agriculture				215
20.3 Other				
21 Non-energy	3	2		706

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
427						695	
						94	
- 286						- 581	
						- 5	
						- 7	
140						195	
						5	
- 47					14	- 33	
- 6					3	- 11	
- 31						- 27	
						- 29	
- 31					- 4	- 35	
20						19	
45					14	84	
1					14	40	
					3	8	
						19	
					12	13	
					12	13	
44						44	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
6 627	1 367	1 104	134	580		22 424	2 070
920				56	48	3 725	56
- 2 705				- 59	- 217	- 13 352	- 59
						- 59	
52						57	
4 894	1 367	1 104	134	577	- 169	12 795	2 067
						171	
- 408	- 1 263	- 1 104	- 124	- 38	2 126	- 1 286	- 1 421
- 253	- 104		- 8	- 79	221	- 248	- 191
						- 202	
						- 30	
- 150						1	
- 1 653					- 323	- 2 664	
- 224					76	69	
2 206			2	459	1 931	8 605	454
2 097			2	459	1 931	7 785	454
671				229	704	1 969	223
152				92	28	2 847	92
1 273			2	138	1 199	2 970	139
1 234				138	1 161	2 675	2 070
39					38	252	
			2			3	2
109						820	

Chile, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	24		22	
2 Import	314		410	329
3 Export		- 2		- 22
4 International marine and aviation bunkers				- 36
5 Stock change	7	1	- 1	- 9
6 Total energy supply	345	- 1	431	262
7 Transfers			37	- 36
8 Main activity producers	- 315			- 12
9 Auto-producers				- 4
10 Gas processing				
11 Petroleum refineries			- 469	444
12 Coal transformation	- 16	11		
13 Other transformation				
14 Loss & own-use		- 7		- 16
15 Discrepancy	- 8		2	4
16 Total final consumption	6	4		642
17 Total final energy consumption	6	4		640
18 Industry sector	6	4		150
19 Transport sector				398
20 Other sector				92
20.1 Residential & Commercial				73
20.2 Agriculture				9
20.3 Other				10
21 Non-energy				2

China, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	78 453		7 997	
2 Import	5 345	15	21 172	2 710
3 Export	- 150	- 186	- 34	- 3 470
4 International marine and aviation bunkers				- 482
5 Stock change	- 1 907	- 49	- 662	- 161
6 Total energy supply	81 741	- 220	28 473	- 1 403
7 Transfers			5 162	127
8 Main activity producers	- 47 279	- 21	- 7	- 259
9 Auto-producers				
10 Gas processing	- 554	- 5		- 2
11 Petroleum refineries			- 33 169	29 555
12 Coal transformation	- 17 731	2 435		
13 Other transformation				
14 Loss & own-use	- 151	- 9	- 150	- 2 291
15 Discrepancy	- 4 397	- 213	- 310	- 5 538
16 Total final consumption	11 630	1 967	1	20 190
17 Total final energy consumption	11 630	1 967	1	20 190
18 Industry sector	8 955	1 826	1	2 988
19 Transport sector	64			13 026
20 Other sector	2 611	142		4 175
20.1 Residential & Commercial	1 530	121		1 558
20.2 Agriculture	496	17		878
20.3 Other	585	3		1 739
21 Non-energy				

Unit: PJ							
Natural gas	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
54	81		51	341		572	473
169						1 222	
						- 23	
						- 36	
- 2				2		- 3	2
220	81		51	343		1 732	474
						1	
- 106	- 81		- 48	- 31	281	- 312	- 160
- 4				- 153	23	- 138	- 153
						- 26	
						- 5	
				- 5		- 5	- 5
- 11					- 24	- 58	
1				10	- 13	- 3	10
100			3	163	267	1 185	166
67			3	163	267	1 150	166
39				84	160	442	84
1					5	403	
28			3	80	102	304	83
27				79	93	273	473
1					8	18	
			5		1	13	3
33						36	

Unit: PJ							
Natural gas	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
6 805	4 696	3 800	2 270	2 947		106 969	9 277
4 967					17	34 227	
- 131					- 78	- 4 049	
						- 482	
						- 2 778	
11 642	4 696	3 800	2 270	2 947	- 60	133 886	9 277
						5 290	
- 2 130	- 4 696	- 3 800	- 2 270	- 1 213	32 664	- 29 010	- 7 540
						- 427	
133						- 3 614	
						- 15 296	
- 1 265				- 6	- 5 169	- 9 041	- 6
238				2	- 140	- 10 357	- 2
8 618				1 730	27 295	71 430	1 730
8 225				1 730	27 295	71 038	1 730
4 517				288	17 132	35 706	288
1 246				539	631	15 506	539
2 462				903	9 532	19 825	903
2 244				705	6 603	12 762	9 277
5				196	482	2 075	198
214					2 447	4 988	
392						392	

Hong Kong, China, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production				
2 Import	265			876
3 Export				- 12
4 International marine and aviation bunkers				- 690
5 Stock change	- 6			- 11
6 Total energy supply	258			163
7 Transfers				
8 Main activity producers	- 258			- 4
9 Autoproducers				
10 Gas processing				- 12
11 Petroleum refineries				
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy				- 55
16 Total final consumption				92
17 Total final energy consumption				92
18 Industry sector				3
19 Transport sector				84
20 Other sector				5
20.1 Residential & Commercial				5
20.2 Agriculture				
20.3 Other				
21 Non-energy				

Indonesia, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	15 169		1 638	
2 Import	182		524	1 394
3 Export	- 11 189		- 152	- 95
4 International marine and aviation bunkers				
5 Stock change	23		37	134
6 Total energy supply	4 184		2 046	1 432
7 Transfers				
8 Main activity producers	- 2 426			- 143
9 Autoproducers				
10 Gas processing				106
11 Petroleum refineries			- 2 006	2 020
12 Coal transformation				
13 Other transformation				- 112
14 Loss & own-use			- 39	- 5
15 Discrepancy				
16 Total final consumption	1 758			3 298
17 Total final energy consumption	1 758			3 163
18 Industry sector	1 758			150
19 Transport sector				2 215
20 Other sector				798
20.1 Residential & Commercial				738
20.2 Agriculture				
20.3 Other				60
21 Non-energy				135

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
				5		5	5
128					45	1 313	
						- 12	
						- 690	
						- 17	
128				5	45	599	5
- 115					133	- 245	
				- 2		- 2	- 2
						- 12	
					- 16	- 16	
12						- 42	
25				2	162	282	2
25				2	162	282	2
1					7	12	
					3	87	
24				2	152	183	2
24				2	151	182	5

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
2 420	70		510	954		20 760	1 534
					6	2 105	
- 1 076				- 50		- 12 562	- 50
				- 26		167	- 26
1 343	70		510	878	6	10 470	1 458
- 606	- 70		- 510	- 211	1 058	- 2 908	- 791
409						514	
						14	
				- 243		- 356	- 243
- 528					- 129	- 701	
64					9	73	
683				424	943	7 106	424
538				424	943	6 826	424
528				289	339	3 065	289
1						2 217	
8				135	603	1 544	135
8				135	603	1 484	1 534
						60	
145						280	

Japan, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	18		18	
2 Import	4 837	21	6 221	1 719
3 Export		- 47		- 798
4 International marine and aviation bunkers				- 449
5 Stock change		1	- 36	- 3
6 Total energy supply	4 855	- 25	6 203	468
7 Transfers			- 58	68
8 Main activity producers	- 2 476	- 137	- 7	- 207
9 Autoproducers	- 176	- 113		- 161
10 Gas processing				- 73
11 Petroleum refineries			- 6 337	6 411
12 Coal transformation	- 1 678	906		- 14
13 Other transformation			178	- 185
14 Loss & own-use	- 10	- 114	- 2	- 283
15 Discrepancy	- 120	- 42	25	- 53
16 Total final consumption	394	476	2	5 971
17 Total final energy consumption	394	442		4 629
18 Industry sector	394	438		731
19 Transport sector				2 821
20 Other sector	1	4		1 078
20.1 Residential & Commercial	1	4		931
20.2 Agriculture				98
20.3 Other				49
21 Non-energy		34	2	1 342

Korea, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	21		34	
2 Import	3 343	9	6 126	1 739
3 Export			- 5	- 2 898
4 International marine and aviation bunkers				- 584
5 Stock change	- 22		- 71	31
6 Total energy supply	3 342	9	6 084	- 1 712
7 Transfers			331	- 296
8 Main activity producers	- 2 060	- 82		- 45
9 Autoproducers	- 140	- 94		- 64
10 Gas processing				- 4
11 Petroleum refineries			- 6 982	6 836
12 Coal transformation	- 979	480		- 4
13 Other transformation			510	- 466
14 Loss & own-use		- 132		- 248
15 Discrepancy	- 6	- 7	57	82
16 Total final consumption	157	174		4 082
17 Total final energy consumption	157	152		1 899
18 Industry sector	157	140		153
19 Transport sector				1 447
20 Other sector		12		299
20.1 Residential & Commercial		12		199
20.2 Agriculture				15
20.3 Other				86
21 Non-energy		22		2 184

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
88	287	696	391	590		2 086	1 022
3 767				69		16 633	69
						- 845	
						- 449	
1						- 37	
3 855	287	696	391	658		17 388	1 090
						10	
- 2 521	- 276	- 696	- 152	- 265	3 153	- 3 583	- 561
- 149	- 11		- 226	- 122	597	- 362	- 329
70						- 4	
						74	
				- 5		- 791	
				- 1	3	- 4	- 1
- 44				- 6	- 377	- 836	- 6
- 2				- 1	- 14	- 207	- 1
1 209			13	258	3 362	11 686	193
1 199			13	258	3 362	10 299	193
463				149	1 233	3 408	105
11				17	63	2 903	17
735			13	92	2 066	3 989	70
735			12	70	2 056	3 809	1 022
				1	9	107	
				22	1	72	1
9						1 386	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
9	10	1 592	69	288	2	2 025	235
2 018						13 235	
						- 2 903	
						- 584	
19						- 43	
2 046	10	1 592	69	288	2	11 731	235
						34	
- 983	- 10	- 1 592	- 54	- 81	2 058	- 2 849	- 136
- 61			- 4	- 49	259	- 154	- 21
						- 4	
						- 146	
						- 499	
						44	
- 5					- 1	- 596	
- 85				6	9	56	6
912			11	164	2 116	7 617	83
912			11	164	2 116	5 412	83
311				100	1 115	1 976	25
50				27	11	1 535	27
552			11	36	990	1 901	32
552			10	36	929	1 737	235
				1	51	67	2
					11	97	
						2 205	

Malaysia, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	91		1 339	
2 Import	822		435	739
3 Export			- 523	- 493
4 International marine and aviation bunkers				- 17
5 Stock change	- 28		- 86	79
6 Total energy supply	885		1 165	308
7 Transfers			- 88	88
8 Main activity producers	- 810			- 22
9 Autoproducers				- 3
10 Gas processing				19
11 Petroleum refineries			- 1 058	966
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				- 7
15 Discrepancy	- 4		- 18	- 17
16 Total final consumption	71			1 333
17 Total final energy consumption	71			1 215
18 Industry sector	71			116
19 Transport sector				1 014
20 Other sector				86
20.1 Residential & Commercial				49
20.2 Agriculture				9
20.3 Other				28
21 Non-energy				118

Mexico, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	207		4 109	
2 Import	237	34	18	2 296
3 Export			- 2 586	- 246
4 International marine and aviation bunkers				- 207
5 Stock change	16		86	66
6 Total energy supply	460	34	1 628	1 908
7 Transfers			- 167	197
8 Main activity producers	- 302			- 342
9 Autoproducers		- 2		- 56
10 Gas processing				- 30
11 Petroleum refineries			- 1 552	1 463
12 Coal transformation	- 40	15		
13 Other transformation			4	- 2
14 Loss & own-use		- 13		- 170
15 Discrepancy	- 46	1	88	- 71
16 Total final consumption	71	34		2 897
17 Total final energy consumption	71	31		2 735
18 Industry sector	71	31		229
19 Transport sector				2 089
20 Other sector				417
20.1 Residential & Commercial				288
20.2 Agriculture				129
20.3 Other				
21 Non-energy		3		162

Unit: PJ							
Natural gas	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
LNG							
2 573	94		5	69		4 171	168
305						2 301	
- 1 235				- 26	- 6	- 2 284	- 26
						- 17	
				- 3		- 38	- 3
1 642	94		5	39	- 6	4 133	139
- 547	- 94		- 5	- 6	618	- 867	- 105
- 56				- 7	25	- 41	- 7
- 85						- 66	
						- 92	
- 34					- 55	- 96	
314					- 10	265	
1 234				27	571	3 236	27
328				27	571	2 213	27
323					283	792	
4				27	2	1 047	27
1					287	374	
					285	335	168
					2	11	
						28	
906						1 024	

Unit: PJ							
Natural gas	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
LNG							
1 148	85	122	213	365		6 250	662
1 717					14	4 316	
					- 11	- 2 843	
						- 207	
9						177	
2 874	85	122	213	365	3	7 692	662
						29	
- 1 064	- 83	- 122	- 153		1 023	- 1 043	- 236
- 287	- 3		- 46	- 84	216	- 261	- 131
9						- 22	
						- 88	
						- 25	
						1	
- 630					- 207	- 1 020	
- 387				26	- 26	- 415	26
515			14	308	1 008	4 847	322
503			14	308	1 008	4 670	322
464			1	60	552	1 409	61
2					4	2 095	
37			13	248	452	1 166	261
37			13	248	336	921	662
					47	176	
					69	69	
13						177	

New Zealand, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	76		56	
2 Import	26		219	119
3 Export	- 42		- 48	- 5
4 International marine and aviation bunkers				- 68
5 Stock change	3		7	- 1
6 Total energy supply	63		235	44
7 Transfers			13	- 12
8 Main activity producers	- 15			
9 Autoproducers		- 8		
10 Gas processing				
11 Petroleum refineries			- 256	263
12 Coal transformation	- 20	12		
13 Other transformation				
14 Loss & own-use	- 1	- 3		- 15
15 Discrepancy	- 2		8	9
16 Total final consumption	26	2		291
17 Total final energy consumption	26	2		271
18 Industry sector	23	2		19
19 Transport sector				226
20 Other sector	3			26
20.1 Residential & Commercial	1			11
20.2 Agriculture	2			13
20.3 Other				2
21 Non-energy				20

Papua New Guinea, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production			28	
2 Import			55	59
3 Export			- 28	- 21
4 International marine and aviation bunkers				
5 Stock change				1
6 Total energy supply			55	40
7 Transfers				
8 Main activity producers				- 6
9 Autoproducers				- 24
10 Gas processing				2
11 Petroleum refineries			- 55	47
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy			1	
16 Total final consumption				57
17 Total final energy consumption				57
18 Industry sector				25
19 Transport sector				26
20 Other sector				7
20.1 Residential & Commercial				2
20.2 Agriculture				4
20.3 Other				1
21 Non-energy				

Unit: PJ							
Natural gas	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
167	92		205	48		644	343
				3		366	3
						- 95	
						- 68	
1						10	
168	92		205	51		858	346
						2	
- 43	- 92		- 194	- 2	156	- 190	- 288
- 2			- 2	- 6	7	- 11	- 6
						7	
						- 7	
						- 1	
- 10					- 18	- 46	
5					- 2	19	
118			8	43	141	630	52
73			8	43	141	564	52
58			5	34	51	191	39
						226	
15			4	9	90	146	12
14			3	9	80	117	343
1					9	26	
					1	3	
46						66	

Unit: PJ							
Natural gas	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
463	3		15	70		580	88
						114	
- 445						- 494	
						1	
18	3		15	70		201	88
- 1	- 2				5	- 5	- 3
- 6	- 1		- 15		11	- 35	- 16
						1	
						- 8	
						- 1	- 1
- 12					- 1	- 14	
						1	
				69	15	141	69
				69	15	141	69
				3	11	38	3
						26	
				66	4	77	66
				66	4	72	88
						4	

Peru, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	5		263	
2 Import	11	3	222	210
3 Export	- 18		- 12	- 156
4 International marine and aviation bunkers				- 49
5 Stock change	30	- 1	- 5	25
6 Total energy supply	28	2	468	29
7 Transfers			- 151	89
8 Main activity producers				- 5
9 Autoproducers	- 5			- 8
10 Gas processing				
11 Petroleum refineries			- 317	349
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				- 8
15 Discrepancy				- 16
16 Total final consumption	22	2		431
17 Total final energy consumption	22	2		431
18 Industry sector	22	2		45
19 Transport sector				333
20 Other sector				53
20.1 Residential & Commercial				49
20.2 Agriculture				2
20.3 Other				2
21 Non-energy				

The Philippines, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	304		22	
2 Import	612		352	573
3 Export	- 221		- 23	- 41
4 International marine and aviation bunkers				- 70
5 Stock change	37		- 3	- 2
6 Total energy supply	732		347	461
7 Transfers				
8 Main activity producers	- 633			- 31
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 335	320
12 Coal transformation				
13 Other transformation				
14 Loss & own-use			- 9	
15 Discrepancy			- 3	27
16 Total final consumption	99			777
17 Total final energy consumption	93			735
18 Industry sector	93			61
19 Transport sector				512
20 Other sector				162
20.1 Residential & Commercial				153
20.2 Agriculture				2
20.3 Other				8
21 Non-energy	6			42

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
543	113		86	147		1 157	346
				18		463	18
- 224				- 1		- 412	- 1
						- 49	
				3		52	3
319	113		86	166		1 211	366
						- 62	
- 167	- 111		- 24	- 28	196	- 139	- 162
- 11	- 2			- 6	11	- 23	- 9
							32
				- 8		- 8	- 8
- 38					- 26	- 72	
- 1					- 13	- 18	
102			62	125	179	923	187
102			62	125	179	923	187
56				23	103	251	23
31				18		38	18
15			62	85	76	291	146
15			62	84	70	280	346
					5	7	1
					1	3	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
152	29		393	474		1 373	895
				5		1 542	5
						- 285	
						- 70	
				3		35	3
152	29		393	482		2 595	903
- 143	- 29		- 393	- 34	382	- 881	- 456
							- 15
				- 97		- 97	- 97
- 7					- 68	- 84	
						24	
3				351	314	1 543	351
3				351	314	1 495	351
3				71	101	330	71
				21		533	21
				258	212	632	258
				258	202	612	895
					9	11	
					1	9	
						48	

Russia, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	10 565		23 600	
2 Import	599	2		52
3 Export	- 5 673	- 81	- 11 326	- 5 430
4 International marine and aviation bunkers				- 698
5 Stock change	- 200		66	- 8
6 Total energy supply	5 292	- 80	12 340	- 6 084
7 Transfers				
8 Main activity producers	- 1 971			- 31
9 Autoproducers	- 647	- 138	- 23	- 218
10 Gas processing				
11 Petroleum refineries			- 12 067	11 876
12 Coal transformation	- 2 147	1 305		
13 Other transformation				
14 Loss & own-use	- 25	- 42	- 249	- 171
15 Discrepancy	- 251			87
16 Total final consumption	251	1 046	1	5 460
17 Total final energy consumption	244	1 046	1	3 912
18 Industry sector	140	1 046	1	426
19 Transport sector				2 675
20 Other sector	104		1	811
20.1 Residential & Commercial	102			670
20.2 Agriculture	2			113
20.3 Other				29
21 Non-energy	8			1 548

Singapore, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production				
2 Import	19		2 278	4 561
3 Export			- 31	- 3 517
4 International marine and aviation bunkers				- 2 296
5 Stock change				14
6 Total energy supply	19		2 247	- 1 237
7 Transfers			300	- 304
8 Main activity producers	- 12			
9 Autoproducers				- 3
10 Gas processing				
11 Petroleum refineries			- 2 171	2 196
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				- 81
15 Discrepancy			- 376	- 16
16 Total final consumption	8			554
17 Total final energy consumption	8			264
18 Industry sector	8			166
19 Transport sector				94
20 Other sector				4
20.1 Residential & Commercial				4
20.2 Agriculture				
20.3 Other				
21 Non-energy				290

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
26 439	701	2 294	10	446		64 056	838
314				1	6	973	
- 8 941				- 4	- 72	- 31 526	- 2
- 310				- 4		- 698	- 2
17 502	701	2 294	10	439	- 66	32 349	835
- 5 801	- 697	- 2 294	- 10	- 7	6 173	- 4 637	- 707
- 2 808	- 4			- 202	3 167	- 872	- 28
						- 191	
						- 842	
- 477				- 3	2	- 478	- 3
- 1 046				- 6	- 2 149	- 3 688	
353						190	
7 725				222	7 127	21 832	97
5 822				222	7 127	18 373	97
1 630				126	2 738	6 108	9
1 182					294	4 151	
3 009				95	4 094	8 114	88
2 957				92	3 917	7 738	838
52				3	176	346	1
					2	31	
1 903						3 458	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
			1	25		27	14
382				3		7 244	3
						- 3 547	
						- 2 296	
						14	
382			1	28		1 441	17
						- 4	
- 286			- 1	- 28	171	- 157	- 17
- 43					25	- 21	
						25	
						- 10	- 91
2						- 390	
54					186	802	
54					186	512	
48					72	294	
					11	105	
6					104	114	
6					103	113	14
						3	
						290	

Chinese Taipei, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production				
2 Import	1 662	8	1 943	670
3 Export		- 1		- 800
4 International marine and aviation bunkers				- 180
5 Stock change	- 32	- 1	4	14
6 Total energy supply	1 630	6	1 947	- 296
7 Transfers				- 9
8 Main activity producers	- 817			- 47
9 Autoproducers	- 326	- 44		- 15
10 Gas processing				
11 Petroleum refineries			- 1 947	2 027
12 Coal transformation	- 292	165		
13 Other transformation				
14 Loss & own-use		- 52		- 107
15 Discrepancy	- 43	- 2		- 2
16 Total final consumption	150	73		1 551
17 Total final energy consumption	148	62		658
18 Industry sector	148	62		61
19 Transport sector				500
20 Other sector				98
20.1 Residential & Commercial				78
20.2 Agriculture				3
20.3 Other				17
21 Non-energy	3	11		893

Thailand, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	147		804	
2 Import	223	343	1 842	201
3 Export	- 1	- 1	- 57	- 361
4 International marine and aviation bunkers				- 217
5 Stock change	- 50	- 57	143	- 128
6 Total energy supply	320	286	2 732	- 506
7 Transfers			- 291	280
8 Main activity producers	- 279	- 27		- 2
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 2 160	1 917
12 Coal transformation				
13 Other transformation				20
14 Loss & own-use				- 82
15 Discrepancy		- 4	- 1	- 188
16 Total final consumption	41	255	281	1 439
17 Total final energy consumption	41	255		1 439
18 Industry sector	41	255		196
19 Transport sector				1 016
20 Other sector				227
20.1 Residential & Commercial				105
20.2 Agriculture				123
20.3 Other				
21 Non-energy			281	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
6	20	353	25	63		466	74
832						5 114	
						- 800	
						- 180	
- 13						- 29	
824	20	353	25	63		4 571	74
						- 9	
- 643	- 20	- 353	- 8	- 1	840	- 1 050	- 28
- 3			- 14	- 46	240	- 208	- 34
63						63	
						80	
						- 128	
- 4						- 4	
- 15					- 119	- 293	
- 55					- 3	- 104	
167			4	16	958	2 919	12
167			4	16	958	2 012	12
120				16	595	1 001	9
					5	503	
47			4		357	506	4
47			4		346	475	74
					7	10	
					4	21	
						906	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
1 096	23		32	1 124		3 227	1 171
562				3	92	3 266	3
					- 10	- 430	
						- 217	
8				3		- 81	3
1 666	23		32	1 129	82	5 764	1 175
						- 11	
- 1 116	- 23		- 32	- 377	710	- 1 146	- 427
						- 242	
						- 58	- 78
- 110					- 63	- 255	
- 113				- 5		- 311	- 5
326				669	729	3 740	665
235				669	729	3 369	665
163				357	284	1 296	352
72				99	1	1 187	99
				214	444	886	214
				214	442	761	1 171
					2	124	
91						372	

United States, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	14 482		31 940	
2 Import	142	3	16 073	3 414
3 Export	- 2 309	- 25	- 7 085	- 9 186
4 International marine and aviation bunkers				- 2 022
5 Stock change	- 779	- 2	170	- 108
6 Total energy supply	11 535	- 25	41 098	- 7 902
7 Transfers			- 4 941	5 227
8 Main activity producers	- 10 282	- 10		- 259
9 Autoproducers	- 44	- 14		- 65
10 Gas processing	- 72			
11 Petroleum refineries			- 36 733	35 838
12 Coal transformation	- 555	264		
13 Other transformation			203	
14 Loss & own-use		- 47		- 1 311
15 Discrepancy	- 103		730	94
16 Total final consumption	477	168	356	31 623
17 Total final energy consumption	477	168		26 362
18 Industry sector	461	168		706
19 Transport sector				24 078
20 Other sector	16			1 578
20.1 Residential & Commercial	16			1 082
20.2 Agriculture				496
20.3 Other				
21 Non-energy			356	5 261

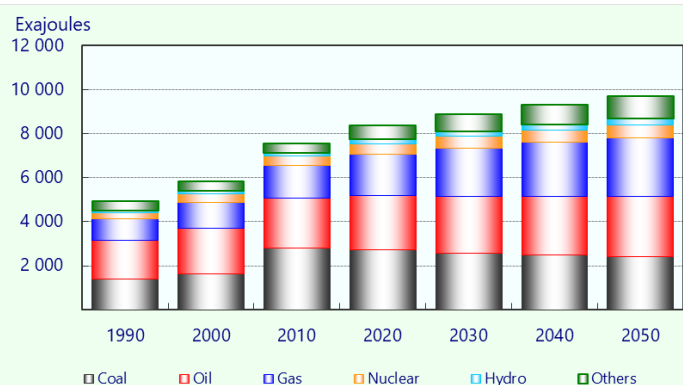
Viet Nam, 2019

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	1 074		477	
2 Import	1 027		331	485
3 Export	- 27		- 188	- 144
4 International marine and aviation bunkers				
5 Stock change	- 67		- 45	- 5
6 Total energy supply	2 007		576	335
7 Transfers			- 18	18
8 Main activity producers	- 1 387			- 18
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 558	555
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy				- 51
16 Total final consumption	620			839
17 Total final energy consumption	590			839
18 Industry sector	569			93
19 Transport sector				586
20 Other sector	20			160
20.1 Residential & Commercial	20			63
20.2 Agriculture				97
20.3 Other				
21 Non-energy	30			

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
33 492	1 043	9 200	1 935	4 615		96 706	7 397
2 655				79	213	22 578	79
- 4 590				- 156	- 72	- 23 423	- 156
				- 9		- 2 031	- 9
- 478				10		- 1 187	10
31 079	1 043	9 200	1 935	4 540	141	92 644	7 322
						285	
- 11 130	- 1 039	- 9 200	- 1 707	- 598	15 480	- 18 743	- 3 204
- 683	- 4		- 101	- 235	718	- 429	- 309
47						- 25	
						- 895	
						- 292	
- 196						7	
- 2 757				- 5	- 2 298	- 6 419	- 5
- 341				- 6		373	- 6
16 019			127	3 697	14 040	66 506	3 799
15 021			127	3 697	14 040	59 892	3 799
5 572				1 419	2 895	11 221	1 400
981				1 573	50	26 682	1 573
8 468			127	705	11 095	21 989	825
8 406			127	636	10 135	20 402	7 397
62				69	271	897	69
					689	689	
998						6 614	

Unit: PJ							
Natural gas LNG	Hydro	Nuclear	Geothermal, solar, wind	Others	Electricity and Heat	Total	Total Renewables
357	238		20	349		2 516	607
					12	1 855	
				- 4	- 7	- 370	- 4
						- 118	
357	238		20	346	4	3 884	604
- 303	- 238		- 20	- 68	853	- 1 180	- 326
						- 3	
				- 42		- 42	- 42
					- 104	- 104	
						- 51	
55				236	753	2 503	236
27				236	753	2 445	236
23				195	409	1 289	195
5				5		596	5
				35	344	560	35
				21	321	424	607
				15	24	136	15
27						58	

Primary energy supply outlook by energy

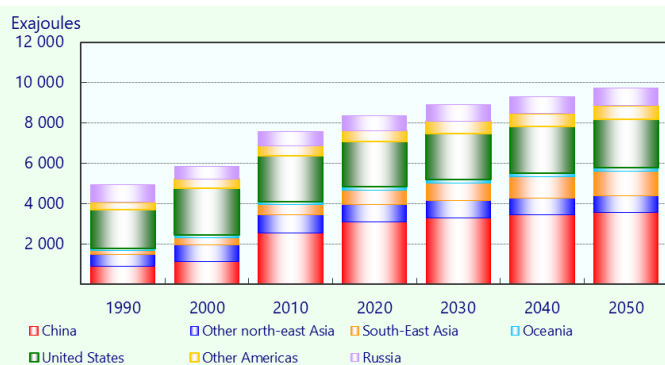


	Exajoules						
	1990	2000	2010	2020	2030	2040	2050
Coal	577	675	1 175	1 148	1 075	1 049	1 011
Oil	737	879	953	1 022	1 079	1 112	1 146
Gas	416	494	609	791	919	1 019	1 115
Nuclear	120	163	181	193	224	237	249
Hydro	39	45	64	90	100	107	112
Others	176	191	187	260	323	376	434
Total	2 064	2 447	3 169	3 504	3 721	3 900	4 067

	Share (%)						
	1990	2000	2010	2020	2030	2040	2050
Coal	27.9	27.6	37.1	32.8	28.9	26.9	24.9
Oil	35.7	35.9	30.1	29.2	29.0	28.5	28.2
Gas	20.2	20.2	19.2	22.6	24.7	26.1	27.4
Nuclear	5.8	6.7	5.7	5.5	6.0	6.1	6.1
Hydro	1.9	1.8	2.0	2.6	2.7	2.7	2.8
Others	8.5	7.8	5.9	7.4	8.7	9.6	10.7

Source: Asia Pacific Energy Research Centre, May 2019.

Primary energy supply outlook by region



	Exajoules						
	1990	2000	2010	2020	2030	2040	2050
China	365	476	1 065	1 296	1 370	1 434	1 489
Other north-east Asia	246	342	372	364	363	353	343
South-East Asia	93	150	216	290	361	438	512
Oceania	42	54	63	70	76	77	79
United States	802	976	955	938	963	975	995
Other Americas	149	190	209	234	252	270	289
Russia	368	259	289	312	337	354	361
APEC 21	2 064	2 447	3 169	3 504	3 721	3 900	4 067

	Share (%)						
	1990	2000	2010	2020	2030	2040	2050
China	17.7	19.4	33.6	37.0	36.8	36.8	36.6
Other north-east Asia	11.9	14.0	11.7	10.4	9.8	9.0	8.4
South-East Asia	4.5	6.1	6.8	8.3	9.7	11.2	12.6
Oceania	2.0	2.2	2.0	2.0	2.0	2.0	1.9
United States	38.8	39.9	30.1	26.8	25.9	25.0	24.5
Other Americas	7.2	7.8	6.6	6.7	6.8	6.9	7.1
Russia	17.8	10.6	9.1	8.9	9.1	9.1	8.9

Other north-east Asia includes Hong Kong, China; Japan; Republic of Korea and Chinese Taipei.
Other Americas includes Canada; Chile; Mexico and Peru.

Selected energy indicators APEC region

	Population			Real GDP			Real GDP		
	Millions			Billion (constant 2015 USD)			Billion, PPP at constant 2017 USD		
	1990	2005	2019	1990	2005	2019	1990	2005	2019
APEC	2 286	2 654	2 918	19 214	32 032	50 939	24 778	41 676	70 737
Other north-east Asia	192	206	209	4 212	5 865	7 183	4 957	7 153	9 246
Hong Kong, China	5.7	6.8	7.5	122	221	332	164	298	447
Japan	123	128	126	3 520	4 229	4 591	4 015	4 824	5 237
Korea	43	48	52	401	1 021	1 635	543	1 380	2 209
Chinese Taipei	20	23	24	169	394	626	235	651	1 353
South-East Asia	389	492	583	713	1 450	2 884	1 917	3 863	7 713
Brunei Darussalam	0.3	0.4	0.4	9.1	12.6	13.3	18.4	25.5	26.9
Indonesia	181	226	271	270	498	1 049	822	1 516	3 197
Malaysia	18	26	32	75	187	364	186	465	906
The Philippines	62	86	108	108	179	396	262	436	964
Singapore	3.0	4.3	5.7	71	178	349	114	285	559
Thailand	57	65	70	144	289	461	402	805	1 285
Viet Nam	68	84	96	37	107	251	114	330	776
Oceania	25	31	39	727	1 183	1 720	635	1 034	1 506
Australia	17	20	25	631	1 026	1 495	530	861	1 254
New Zealand	3.3	4.1	5.0	88	145	201	94	154	214
Papua New Guinea	4.6	6.5	8.8	7.4	12.3	25.0	11.2	18.7	38.2
Other americas	147	182	217	1 568	2 460	3 422	2 392	3 753	5 247
Canada	28	32	38	810	1 244	1 690	891	1 356	1 843
Chile	13	16	19	73	167	263	131	302	473
Mexico	84	106	128	626	941	1 254	1 255	1 886	2 513
Peru	22	28	33	60	108	215	116	210	418
China	1 135	1 304	1 398	1 027	4 421	14 296	1 616	6 955	22 492
Russia	148	144	144	1 161	1 051	1 459	3 179	2 877	3 994
United States	250	296	328	9 805	15 602	19 975	10 082	16 043	20 539

Energy Indigenous Production			Net Import			Total Primary Energy Supply			
Petajoules			Petajoules			Petajoules			
1990	2005	2019	1990	2005	2019	1990	2005	2019	
197 057	249 789	355 331	5 769	28 209	9 121	196 075	272 692	351 527	
4 500	6 595	4 582	20 880	30 366	31 736	24 538	35 334	34 289	
3 106	4 259	2 086	15 772	18 174	15 788	18 310	21 772	17 388	HKC
947	1 799	2 025	2 937	7 350	10 333	3 890	8 804	11 731	JPN
447	533	466	1 696	3 860	4 314	1 946	4 168	4 571	ROK
									CT
11 173	20 000	32 769	-3 053	-2 320	-1 654	7 300	16 366	28 482	
655	921	695	-604	-794	-488	48	120	195	BD
6 515	9 863	20 760	-3 642	-4 430	-10 457	2 736	5 587	10 470	INA
1 948	3 926	4 171	-1 084	-1 190	17	857	2 745	4 133	MAS
699	898	1 373	468	718	1 257	1 123	1 602	2 595	PHL
2.9	16.5	26.6	1 027	2 079	3 696	483	880	1 441	SGP
1 110	2 351	3 227	790	2 041	2 835	1 826	4 221	5 764	THA
243	2 025	2 516	-7	-742	1 485	227	1 212	3 884	VN
7 079	11 818	19 847	-2 613	-6 059	-12 836	4 145	5 601	6 448	
6 595	11 102	18 623	-2 701	-6 228	-12 727	3 606	4 751	5 390	AUS
483	538	644	89	207	271	538	709	858	NZ
	179	580		-38	-380		141	201	PNG
20 539	28 801	30 403	-5 142	-7 771	-6 905	15 029	20 895	23 429	
11 575	16 829	22 424	-2 484	-5 421	-9 627	8 846	11 471	12 795	CDA
332	391	572	294	858	1 199	587	1 188	1 732	CHL
8 187	11 032	6 250	-2 927	-3 333	1 472	5 179	7 561	7 692	MEX
446	549	1 157	-25	125	51	418	675	1 211	PE
30 453	63 943	106 969	-1 343	5 754	30 177	28 092	70 164	133 886	PRC
54 145	50 383	64 056	-17 274	-22 580	-30 553	36 816	27 287	32 349	RUS
69 169	68 248	96 706	14 315	30 820	-845	80 155	97 044	92 644	USA

	Total Final Energy Consumption			Final Consumption of Electricity			Primary Energy Supply per capita	
	Petajoules			TWh			GJ / Person	
	1990	2005	2019	1990	2005	2019	1990	2005
APEC	127 741	159 450	202 666	5 742	9 413	14 794	86	103
Other north-east Asia	14 513	19 566	18 005	960	1 621	1 743	128	172
Hong Kong, China	214	282	282	24.5	40.1	44.9	69	87
Japan	10 800	12 704	10 299	765	1 025	928	148	170
Korea	2 436	4 609	5 412	94	358	524	91	183
Chinese Taipei	1 064	1 971	2 012	77	199	246	96	183
South-East Asia	5 166	11 012	16 900	128	438	975	19	33
Brunei Darussalam	15.8	27.5	39.9	1.2	2.6	3.9	187	328
Indonesia	2 282	4 525	6 826	28	107	262	15	25
Malaysia	514	1 512	2 213	20	81	159	48	107
The Philippines	788	956	1 495	21.2	45.2	87.1	18	19
Singapore	130	299	512	13.0	35.5	51.7	158	206
Thailand	1 261	2 671	3 369	38	121	202	32	65
Viet Nam	175	1 022	2 445	6	46	209	3	14
Oceania	2 589	3 428	3 930	158	230	258	166	181
Australia	2 207	2 815	3 226	129	189	215	211	233
New Zealand	383	502	564	29	38	39	162	171
Papua New Guinea		111	141		3.2	4.1	N.A.	22
Other americas	9 903	12 739	14 528	546	749	934	102	115
Canada	6 005	7 177	7 785	418	488	530	319	356
Chile	426	813	1 150	15.5	48.3	74.1	44	73
Mexico	3 108	4 190	4 670	100	190	280	62	71
Peru	363	559	923	11.8	22.7	49.8	19	24
China	21 909	38 419	71 038	491	1 992	6 299	25	54
Russia	24 487	15 395	18 373	827	650	756	249	190
United States	49 173	58 890	59 892	2 634	3 732	3 830	321	328

	Primary Energy Intensity			Final Energy Intensity			Final Energy Consumption per Capita				
	PJ / Million USD at 2017 PPP			PJ / Million USD at 2017 PPP			GJ / Person				
	2019	1990	2005	2019	1990	2005	2019	1990	2005		2019
	120	7.9	6.5	5.0	5.2	3.8	2.9	56	60	69	
	164	4.9	4.9	3.7	2.9	2.7	1.9	75	95	86	
	80	2.4	2.0	1.3	1.3	0.9	0.6	37	41	38	HKC
	138	4.6	4.5	3.3	2.7	2.6	2.0	87	99	82	JPN
	227	7.2	6.4	5.3	4.5	3.3	2.4	57	96	105	ROK
	194	8.3	6.4	3.4	4.5	3.0	1.5	52	87	85	CT
	49	3.8	4.2	3.7	2.7	2.9	2.2	13	22	29	
	450	2.6	4.7	7.2	0.9	1.1	1.5	61	75	92	BD
	39	3.3	3.7	3.3	2.8	3.0	2.1	13	20	25	INA
	129	4.6	5.9	4.6	2.8	3.2	2.4	29	59	69	MAS
	24	4.3	3.7	2.7	3.0	2.2	1.6	13	11	14	PHL
	253	4.3	3.1	2.6	1.1	1.0	0.9	43	70	90	SGP
	83	4.5	5.2	4.5	3.1	3.3	2.6	22	41	48	THA
	40	2.0	3.7	5.0	1.5	3.1	3.2	3	12	25	VN
	165	6.5	5.4	4.3	4.1	3.3	2.6	104	111	100	
	212	6.8	5.5	4.3	4.2	3.3	2.6	129	138	127	AUS
	172	5.8	4.6	4.0	4.1	3.3	2.6	115	121	113	NZ
	23	N.A.	7.5	5.3	N.A.	5.9	3.7	N.A.	17	16	PNG
	108	6.3	5.6	4.5	4.1	3.4	2.8	67	70	67	
	340	9.9	8.5	6.9	6.7	5.3	4.2	217	223	207	CDA
	91	4.5	3.9	3.7	3.3	2.7	2.4	32	50	61	CHL
	60	4.1	4.0	3.1	2.5	2.2	1.9	37	40	37	MEX
	37	3.6	3.2	2.9	3.1	2.7	2.2	16	20	28	PE
	96	17.4	10.1	6.0	13.6	5.5	3.2	19	29	51	PRC
	224	11.6	9.5	8.1	7.7	5.4	4.6	165	107	127	RUS
	282	8.0	6.0	4.5	4.9	3.7	2.9	197	199	182	USA

	Energy Related CO ₂ Emission			CO ₂ Emission per Capita		
	Mt-CO ₂			t-CO ₂ / Person		
	1990	2005	2019	1990	2005	2019
APEC	12,374	16,569	19,588	5.41	6.24	6.71
Other north-east Asia	1,453	1,962	1,928	7.55	9.55	9.22
Hong Kong, China	33	38	35	5.80	5.51	4.65
Japan	1,079	1,218	1,048	8.74	9.53	8.30
Korea	232	457	586	5.41	9.49	11.32
Chinese Taipei	109	248	260	5.39	10.93	11.03
South-East Asia	346	859	1,574	0.89	1.74	2.70
Brunei Darussalam	3.5	6.8	7.0	13.43	18.66	16.26
Indonesia	120	325	642	0.66	1.44	2.37
Malaysia	57	143	226	3.14	5.56	7.09
The Philippines	38	69	134	0.61	0.80	1.24
Singapore	29	37	47	9.50	8.65	8.30
Thailand	82	202	242	1.45	3.08	3.48
Viet Nam	17	77	274	0.26	0.92	2.84
Oceania	274	392	414	10.95	12.64	10.58
Australia	252	355	374	14.75	17.41	14.76
New Zealand	22	32	32	6.64	7.77	6.46
Papua New Guinea	N.A.	5.0	7.6	N.A.	0.77	0.86
Other americas	717	1,013	1,086	4.88	5.55	5.01
Canada	411	517	524	14.85	16.03	13.93
Chile	29	54	90	2.22	3.36	4.77
Mexico	257	412	419	3.06	3.89	3.29
Peru	20	29	52	0.89	1.04	1.61
China	2,467	5,108	8,147	2.17	3.92	5.83
Russia	2,264	1,341	1,443	15.30	9.34	10.0
United States	4,852	5,895	4,997	19.44	19.95	15.22

CO ₂ Emission per Real GDP			CO ₂ Emission per Real GDP			CO ₂ Emission per Total Primary Energy Supply			
t-CO ₂ / Million USD (constant 2015)			t-CO ₂ / Million USD at 2017 PPP			t-CO ₂ / GJ			
1990	2005	2019	1990	2005	2019	1990	2005	2019	
644	517	385	499	398	277	63	61	56	
345	334	268	293	274	209	59	56	56	
271	170	105	201	126	78	84	64	58	HKC
306	288	228	269	253	200	59	56	60	JPN
577	448	358	427	331	265	60	52	50	ROK
648	631	416	465	381	192	56	60	57	CT
486	592	546	181	222	204	47	52	55	
382	542	531	189	267	262	72	57	36	BD
443	653	612	146	214	201	44	58	61	INA
759	764	622	305	307	250	66	52	55	MAS
353	383	338	145	157	139	34	43	52	PHL
409	207	136	255	129	85	60	42	33	SGP
570	698	526	205	250	189	45	48	42	THA
473	724	1 091	153	234	353	77	64	71	VN
377	332	241	431	379	275	66	70	64	
399	346	250	475	412	298	70	75	69	AUS
251	222	160	236	208	151	41	45	38	NZ
N.A.	406	303	N.A.	267	199	N.A.	35	38	PNG
457	412	317	300	270	207	48	48	46	
508	415	310	462	381	284	46	45	41	CDA
405	325	344	225	180	191	50	46	52	CHL
410	438	334	205	219	167	50	55	55	MEX
330	270	244	170	139	126	47	43	43	PE
2 402	1 156	570	1 526	734	362	88	73	61	PRC
1 949	1 276	989	712	466	361	61	49	45	RUS
495	378	250	481	367	243	61	61	54	USA

Glossary

General note

The definitions for some items are different from the APEC Energy Statistics publication in order to match with the aggregated product categories. In the energy balance, the definitions of all items are the same as those in the APEC Energy Statistics publication.

Energy products

Coal

Includes coal, i.e. solid fossil fuel consisting of carbonized vegetal matter, and coal products derived directly or indirectly from various classes of coal by carbonization or pyrolysis processes, by the aggregation of finely divided coal or by chemical reactions with oxidizing agents, including water.

Oil

Liquid hydrocarbons of fossil origins comprising (i) crude oil; (ii) liquids extracted from natural gas (NGL); (iii) fully or partly processed products from the refining of crude oil, and (iv) functionally similar liquid hydrocarbons and organic chemicals from vegetal or animal origins.

Petroleum products

Products obtained from crude oil, non-conventional oils or gases from oil and gas fields. They may be produced through refining of conventional crude and non-conventional oils or during the separation of natural gas from gases extracted from oil or gas fields.

Mogas (Motor gasoline)

A mixture of some aromatics (e.g., benzene and toluene) and aliphatic hydrocarbons in the C₅ to C₁₂ range. The distillation range is 25 °C to 220 °C.

Naphtha

Light or medium oils distilling between 30 °C and 210 °C which do not meet the specification for motor gasoline.

Jet fuel

Jet fuel comprises both gasoline and kerosene type jet fuels meeting specifications for use in aviation turbine power units.

Gasoline type: Light hydrocarbon for use in aviation turbine power units, distilling between 100 °C and 250 °C. They are obtained by blending kerosene and gasoline or naphtha in such a way that the aromatic content does not exceed 25 per cent in volume, and the vapour pressure is between 13.7 kPa and 20.6 kPa.

Kerosene type: A blend of kerosenes suited to flight conditions with particular specifications, such as freezing points.

Kerosene

Mixtures of hydrocarbons in the range C_9 to C_{16} and distilling over the temperature interval 145 °C to 300 °C, but not usually above 250 °C and with a flash point above 38 °C.

Diesel oil

Diesel oil includes heavy gas oils. Gas oils are obtained from the lowest fraction from atmospheric distillation of crude oil, while heavy gas oils obtained by vacuum re-distillation of the residual from atmospheric distillation.

Fuel oil

Comprises residual fuel oil and heavy fuel oil. Residual fuel oils have a distillation range of 350 °C to 650 °C and a kinematic viscosity in the range 6 to 55 centistokes (cSt) at 100 °C. Their flash point is always above 60 °C and their specific gravity is above 0.95. Heavy fuel oil is a general term describing a blended product based on the residues from various refinery processes.

LPG

LPG refers to liquefied propane (C_3H_8) and butane (C_4H_{10}) or mixtures of both. Commercial grades are usually mixtures of the gases with small amounts of propylene, butylene, isobutene and isobutylene stored under pressure in containers.

Others

The category, "Other oil products", groups together white spirit and SBP, lubricants, bitumen, paraffin waxes, refining gas and others (tar, sulfur and grease).

Gas

A mixture of gaseous hydrocarbons, primarily methane, but generally also including ethane, propane and higher hydrocarbons in much smaller amounts and some non-combustible gases such as nitrogen and carbon dioxide.

The separation process produces natural gas by removing or reducing the hydrocarbons other than methane to levels which are acceptable in the marketable gas.

Natural gas also includes methane recovered from coal mines (colliery gas) or from coal seams and shale formation. When distributed it may contain methane from anaerobic fermentation or the methanation of biomass.

Natural gas may be liquefied (LNG) by reducing its temperature in order to simplify storage and transportation when production sites are remote from

centres of consumption and pipeline transportation is not economically practicable.

Hydro

The primary equivalent of electricity generated from hydroelectric power plants.

Nuclear

The primary equivalent of electricity and heat generated from nuclear fuels.

Others

Others is the sum of peat, peat products, oil shale and tar sands, geothermal, wind, tide, solar, biomass, biogas, liquid biofuels, industrial wastes and municipal solid wastes and others.

Total renewables

Total renewables is the sum of hydro, geothermal, wind, tide, solar, biomass, biogas, liquid biofuels and the renewable parts of industrial wastes and municipal solid wastes.

Sectors

Production

Quantities of fuels extracted within the economy.

Net imports

Defined as imports minus exports.

Total primary energy supply (TPES)

Calculated from indigenous production plus imports minus exports minus international marine and aviation bunkers plus or minus stock change.

Refining

The transformation of crude oil, NGL and condensate to petroleum products.

Power generation

Production of electricity from thermal, hydro, nuclear, geothermal and other power plants of public utilities and auto-producers. An auto-producer is an establishment which, in addition to its main activities, generates electricity wholly or partially for its own use, such as industries, railways, refineries, etc.

Total final consumption

This is the sum of total final energy consumption and non-energy use.

Total final energy consumption (TFEC)

Total energy consumption of industry, transport, residential, commercial and other sectors. This excludes non-energy use.

Industry

These sectors include the following branches:

- Iron and steel industry
- Chemical industry
- Non-ferrous metals basic industries
- Non-metallic mineral products such as glass, ceramic, cement, etc.
- Transport equipment
- Machinery. Fabricated metal products, machinery and equipment other than transport equipment
- Mining (excluding fuels) and quarrying
- Food processing, beverages and tobacco
- Pulp, paper and printing
- Wood and wood products (other than pulp and paper)
- Construction
- Textiles and leather
- Collection, purification and distribution of water
- Non-specified (any manufacturing industry not included above)

Transport

The transportation sector is disaggregated into the following sub-sectors:

- Domestic air transport
- Road transport
- Railways
- Internal navigation
- Pipeline transport
- Other transport

Residential and commercial

Residential shows all consumption by households

Commercial shows consumption of the commercial and public sectors.

Others

Agriculture, fishing and others.

Non-energy

Non-energy use in industry, transport and other sectors. Examples of these are the feedstocks in the production of chemicals, lubricants used in equipment, bitumen used for paving of roads, etc.

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