

APEC Energy Handbook 2020

Energy Working Group
February 2023

EGEDA Secretariat
Energy Statistics and Training Office
Asia Pacific Energy Research Centre

Produced by
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Asia-Pacific
Economic Cooperation

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ENERGY STATISTICS AND TRAINING OFFICE
ASIA PACIFIC ENERGY RESEARCH CENTRE

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Preface

The APEC Energy Handbook 2020 is a handy, pocket-sized summary of key energy data and a supplement to APEC Energy Statistics 2020, which was released in February 2023.

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 8th Edition published by the Asia Pacific Energy Research Centre in September 2022. 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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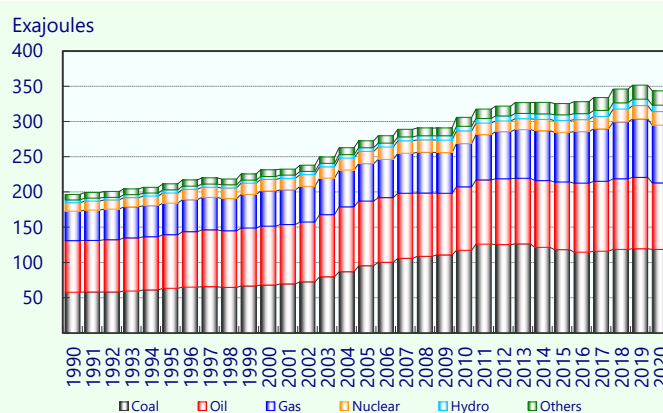
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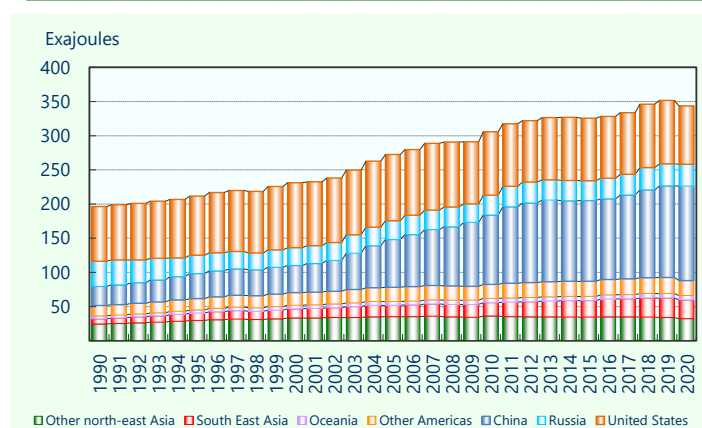
Total primary energy supply by energy APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	57.7	67.8	95.3	117.1	118.0	118.4
Oil	73.3	83.6	91.7	90.0	96.0	94.4
Gas	41.8	49.9	53.1	61.5	70.7	82.0
Nuclear	12.0	16.3	17.6	18.1	16.6	19.0
Hydro	3.9	4.5	5.2	6.4	8.1	9.3
Others	7.8	9.2	9.7	12.6	16.2	20.3
Total	196.4	231.3	272.6	305.7	325.6	343.5

	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	29.4	29.3	34.9	38.3	36.3	34.5
Oil	37.3	36.1	33.6	29.5	29.5	27.5
Gas	21.3	21.6	19.5	20.1	21.7	23.9
Nuclear	6.1	7.1	6.4	5.9	5.1	5.5
Hydro	2.0	1.9	1.9	2.1	2.5	2.7
Others	4.0	4.0	3.6	4.1	5.0	5.9

Total primary energy supply by region APEC

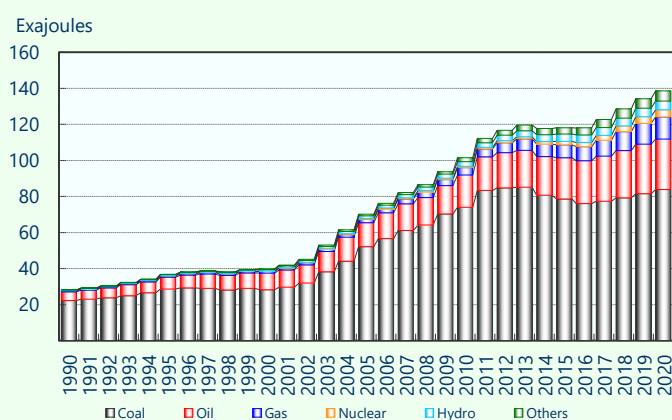


	Exajoules					
	1990	2000	2005	2010	2015	2020
Other north-east Asia	24.4	33.3	35.1	36.0	34.5	32.4
South East Asia	7.7	13.2	16.7	19.8	24.2	27.1
Oceania	4.2	5.4	5.6	6.2	6.3	6.5
Other Americas	15.0	18.5	20.7	20.4	21.9	21.8
China	28.1	39.8	70.2	101.5	118.2	138.5
Russia	36.8	25.9	27.3	29.0	29.0	31.7
United States	80.2	95.2	97.0	92.8	91.5	85.3
Total	196.4	231.3	272.6	305.7	325.6	343.5

	Share (%)					
	1990	2000	2005	2010	2015	2020
Other north-east Asia	12.4	14.4	12.9	11.8	10.6	9.4
South East Asia	3.9	5.7	6.1	6.5	7.4	7.9
Oceania	2.2	2.3	2.1	2.0	1.9	1.9
Other Americas	7.7	8.0	7.6	6.7	6.7	6.4
China	14.3	17.2	25.7	33.2	36.3	40.3
Russia	18.7	11.2	10.0	9.5	8.9	9.2
United States	40.8	41.1	35.6	30.3	28.1	24.8

Primary Energy Supply

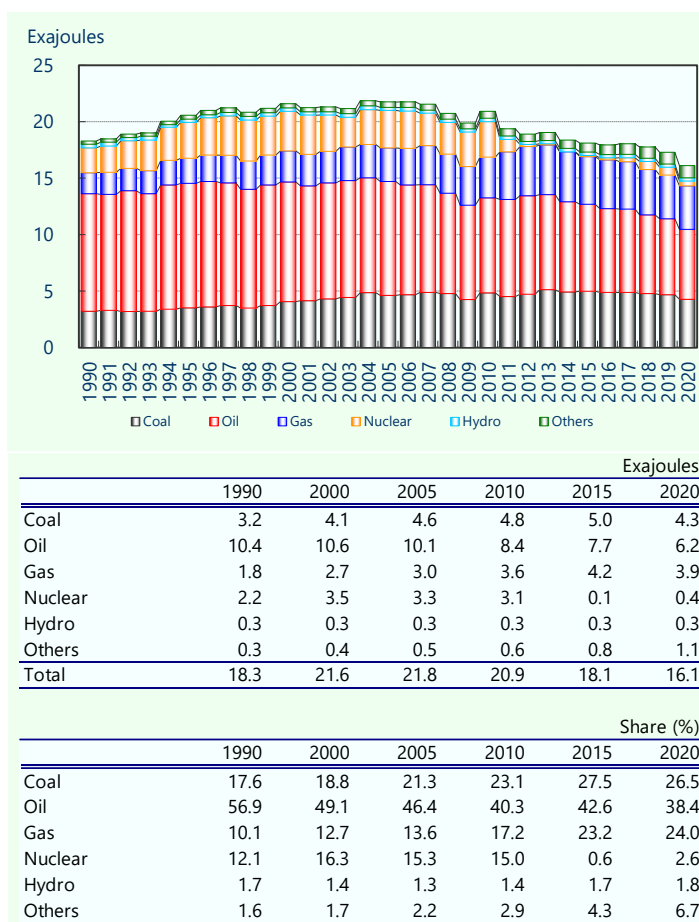
Total primary energy supply by energy China



	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	22.3	28.3	52.2	74.0	78.6	83.9
Oil	4.8	9.3	13.3	17.9	22.9	28.0
Gas	0.6	0.9	1.7	4.0	7.2	12.2
Nuclear	0.0	0.2	0.6	0.8	1.9	4.0
Hydro	0.5	0.8	1.4	2.6	4.1	4.9
Others	0.0	0.5	0.9	2.1	3.5	5.6
Total	28.1	39.8	70.2	101.5	118.2	138.5

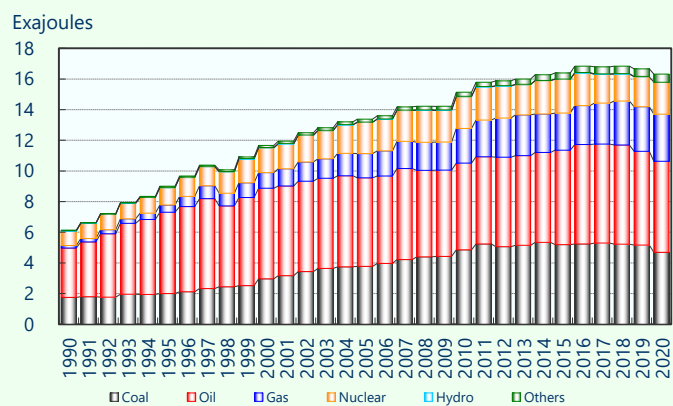
	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	79.3	70.9	74.4	72.9	66.5	60.6
Oil	17.1	23.2	19.0	17.7	19.4	20.2
Gas	2.0	2.3	2.5	4.0	6.1	8.8
Nuclear	-	0.5	0.8	0.8	1.6	2.9
Hydro	1.6	2.0	2.0	2.6	3.4	3.5
Others	0.0	1.2	1.3	2.1	3.0	4.0

Total primary energy supply by energy Japan



Primary Energy Supply

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

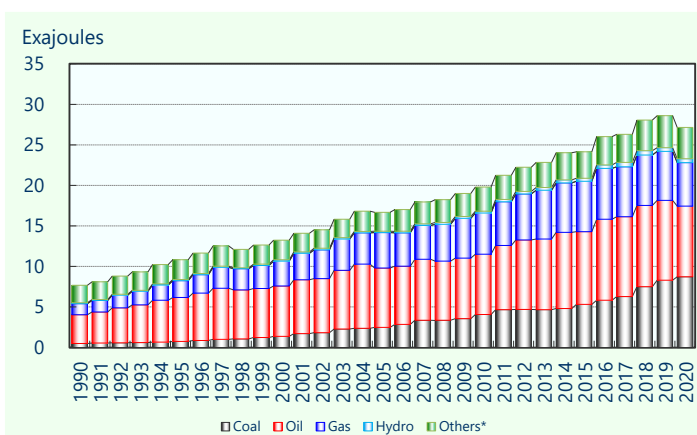


	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	1.7	3.0	3.8	4.9	5.2	4.7
Oil	3.2	5.9	5.8	5.7	6.2	5.9
Gas	0.2	1.0	1.6	2.2	2.4	3.1
Nuclear	0.9	1.6	2.0	2.1	2.2	2.1
Hydro	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.1	0.2	0.3	0.4	0.5
Total	6.1	11.7	13.4	15.1	16.4	16.3

	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	28.4	25.4	28.2	32.1	31.7	28.7
Oil	52.6	50.6	43.3	37.4	37.5	36.3
Gas	2.6	8.8	11.7	14.9	14.8	18.8
Nuclear	15.2	13.8	15.2	13.7	13.4	12.8
Hydro	0.7	0.3	0.2	0.2	0.1	0.2
Others	0.4	1.1	1.4	1.7	2.4	3.2

*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

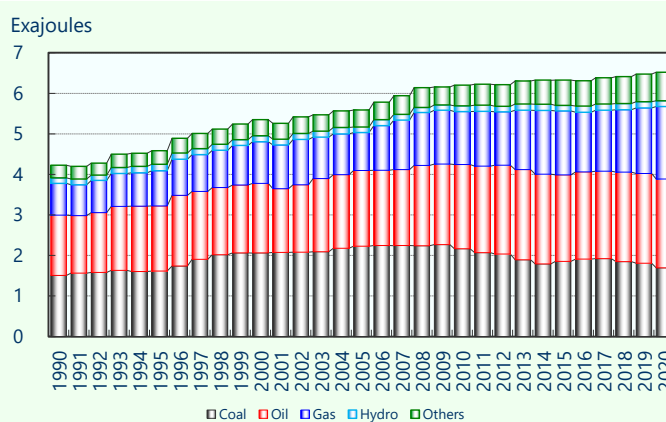


	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	0.5	1.4	2.5	4.1	5.3	8.7
Oil	3.5	6.2	7.3	7.4	9.0	8.7
Gas	1.4	3.1	4.4	5.1	6.2	5.4
Nuclear	-	-	-	-	-	-
Hydro	0.1	0.2	0.2	0.2	0.3	0.5
Others	2.2	2.4	2.3	3.0	3.3	3.8
Total	7.7	13.2	16.7	19.8	24.2	27.1

	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	6.6	10.3	14.9	20.6	22.1	32.2
Oil	46.0	47.1	44.0	37.6	37.1	32.1
Gas	17.9	23.2	26.2	25.6	25.8	19.8
Nuclear	-	-	-	-	-	-
Hydro	1.3	1.2	1.0	1.2	1.4	1.8
Others	28.3	18.2	13.8	15.1	13.6	14.2

Primary Energy Supply

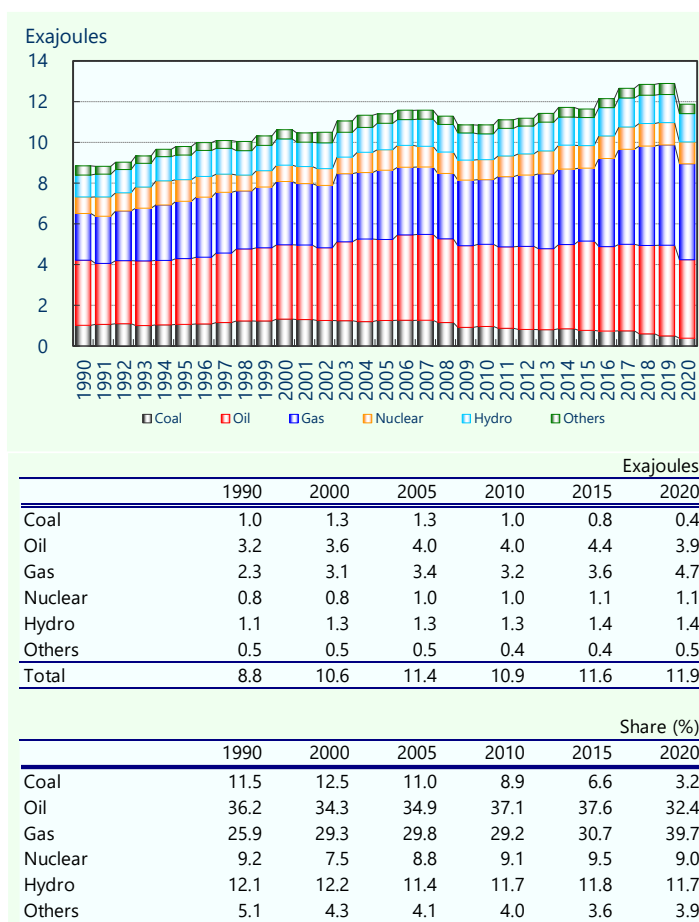
Total primary energy supply by energy Oceania



	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	1.5	2.1	2.2	2.2	1.9	1.7
Oil	1.5	1.7	1.9	2.1	2.1	2.2
Gas	0.8	1.0	0.9	1.3	1.6	1.8
Nuclear	-	-	-	-	-	-
Hydro	0.1	0.1	0.1	0.1	0.1	0.1
Others	0.3	0.4	0.4	0.5	0.6	0.7
Total	4.2	5.4	5.6	6.2	6.3	6.5

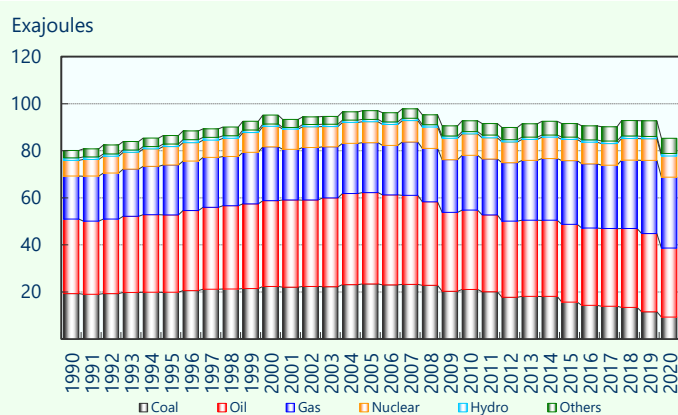
	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	35.7	38.5	39.9	35.0	29.3	26.0
Oil	35.1	32.1	33.4	33.5	33.7	33.6
Gas	18.6	19.1	16.7	21.1	24.9	27.4
Nuclear	-	-	-	-	-	-
Hydro	3.2	2.8	2.5	2.3	2.2	2.2
Others	7.3	7.4	7.5	8.2	9.9	10.8

Total primary energy supply by energy Canada



Primary Energy Supply

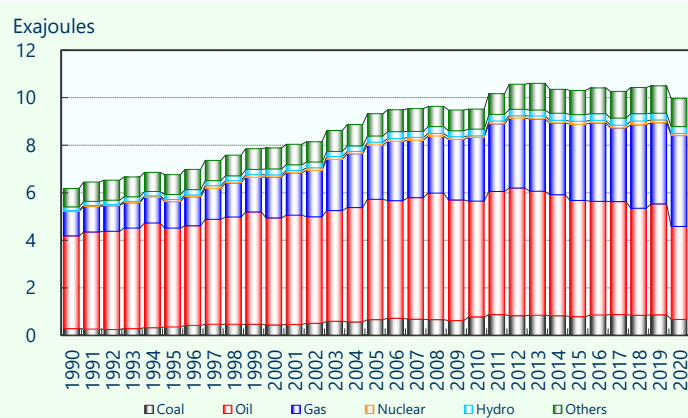
Total primary energy supply by energy United States



	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	19.2	22.3	23.3	21.0	15.7	9.3
Oil	31.7	36.5	38.9	33.8	33.1	29.4
Gas	18.4	22.9	21.2	23.3	27.1	30.1
Nuclear	6.7	8.7	8.8	9.2	9.1	9.0
Hydro	1.0	0.9	1.0	0.9	0.9	1.0
Others	3.2	3.8	3.7	4.6	5.8	6.5
Total	80.2	95.2	97.0	92.8	91.5	85.3

	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	24.0	23.5	24.0	22.6	17.1	10.9
Oil	39.5	38.3	40.1	36.4	36.1	34.5
Gas	22.9	24.1	21.9	25.1	29.6	35.3
Nuclear	8.3	9.1	9.1	9.9	9.9	10.5
Hydro	1.2	1.0	1.0	1.0	1.0	1.2
Others	4.0	4.0	3.9	5.0	6.3	7.6

Total primary energy supply by energy Other Americas*

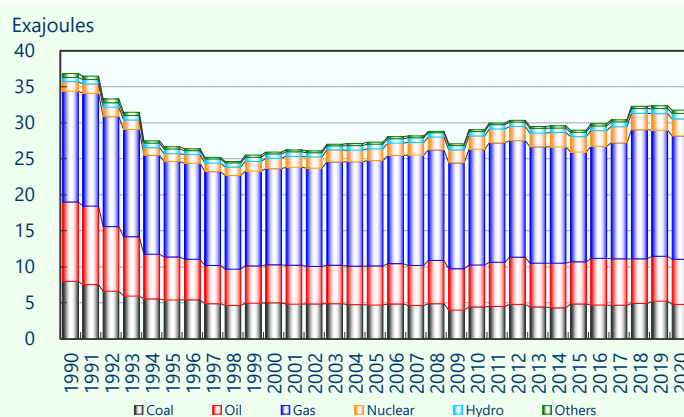


	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	0.3	0.4	0.7	0.8	0.8	0.7
Oil	3.9	4.5	5.1	4.9	4.9	3.9
Gas	1.0	1.7	2.3	2.7	3.2	3.8
Nuclear	0.0	0.1	0.1	0.1	0.1	0.1
Hydro	0.2	0.2	0.3	0.3	0.3	0.3
Others	0.8	0.9	0.9	0.8	1.0	1.2
Total	6.2	7.9	9.3	9.5	10.3	10.0

	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	4.6	5.6	7.1	8.2	7.7	6.7
Oil	63.0	57.0	54.3	51.1	47.4	39.3
Gas	16.7	21.9	24.5	28.2	31.1	38.4
Nuclear	0.5	1.1	1.3	0.7	1.2	0.9
Hydro	2.5	3.1	2.8	3.0	2.7	2.9
Others	12.6	11.3	10.1	8.8	9.9	11.8

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

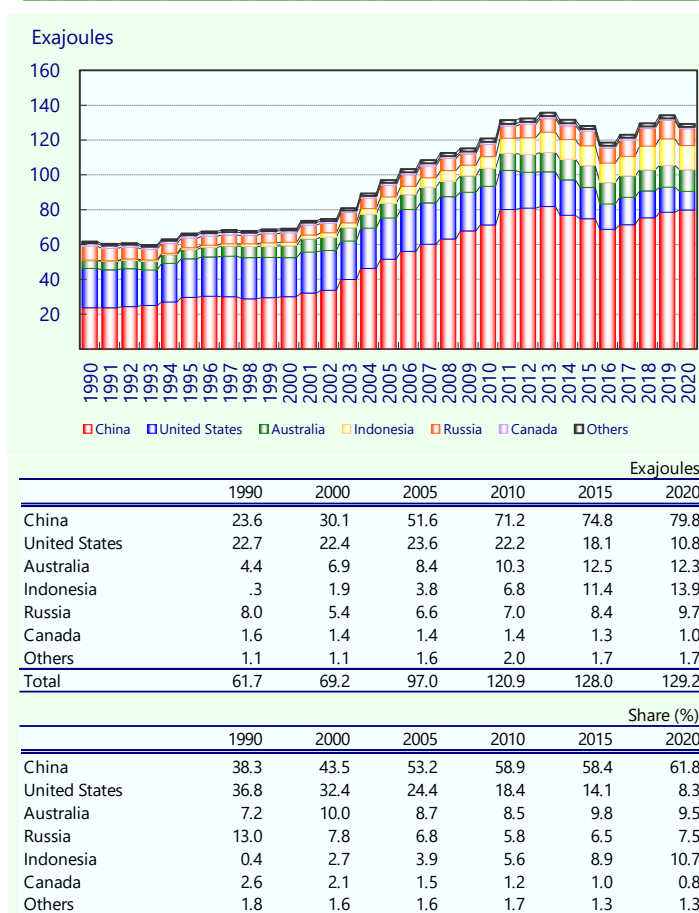
Total primary energy supply by energy Russia



	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	8.0	5.0	4.7	4.4	4.8	4.8
Oil	11.0	5.3	5.4	5.8	5.8	6.3
Gas	15.4	13.4	14.6	16.1	15.3	17.1
Nuclear	1.3	1.4	1.6	1.9	2.1	2.4
Hydro	0.6	0.6	0.6	0.6	0.6	0.8
Others	0.5	0.3	0.3	0.3	0.3	0.4
Total	36.8	25.9	27.3	29.0	29.0	31.7

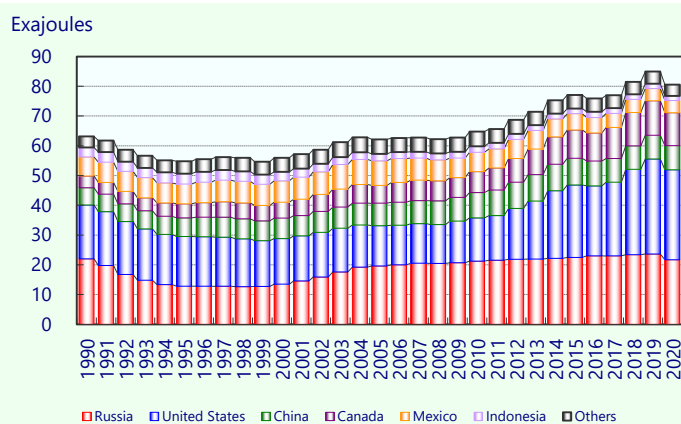
	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	21.6	19.3	17.2	15.2	16.7	15.1
Oil	30.0	20.4	19.8	20.1	20.1	19.8
Gas	41.8	51.5	53.7	55.3	52.6	53.9
Nuclear	3.6	5.6	6.0	6.5	7.4	7.5
Hydro	1.6	2.3	2.3	2.1	2.1	2.4
Others	1.4	1.0	1.0	0.9	1.0	1.4

Production of coal* APEC



*Coal: hard coal, anthracite and lignite

Production of crude oil* APEC

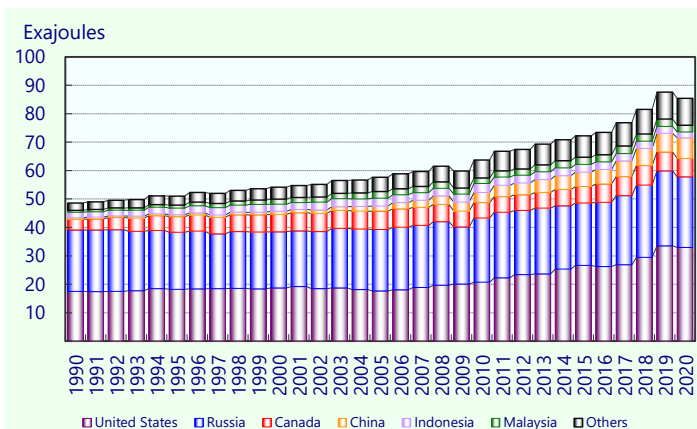


	Exajoules					
	1990	2000	2005	2010	2015	2020
Russia	22.0	13.5	19.6	21.2	22.5	21.7
United States	18.1	15.3	13.5	14.6	24.4	30.2
China	5.8	6.8	7.6	8.5	9.0	8.2
Canada	3.9	5.4	6.0	7.0	9.5	11.0
Mexico	6.4	7.2	8.3	6.5	5.5	4.1
Indonesia	3.2	3.1	2.3	2.1	1.7	1.5
Others	3.7	4.6	4.9	4.9	4.5	3.8
Total	63.2	55.9	62.2	64.8	77.1	80.6

	Share (%)					
	1990	2000	2005	2010	2015	2020
Russia	34.9	24.2	31.6	32.7	29.1	27.0
United States	28.7	27.4	21.7	22.5	31.6	37.5
China	9.2	12.2	12.2	13.2	11.7	10.1
Canada	6.2	9.6	9.6	10.8	12.3	13.7
Mexico	10.2	12.8	13.3	10.0	7.1	5.1
Indonesia	5.0	5.5	3.6	3.2	2.2	1.9
Others	5.9	8.3	7.9	7.6	5.9	4.7

*Crude oil includes NGL and condensates

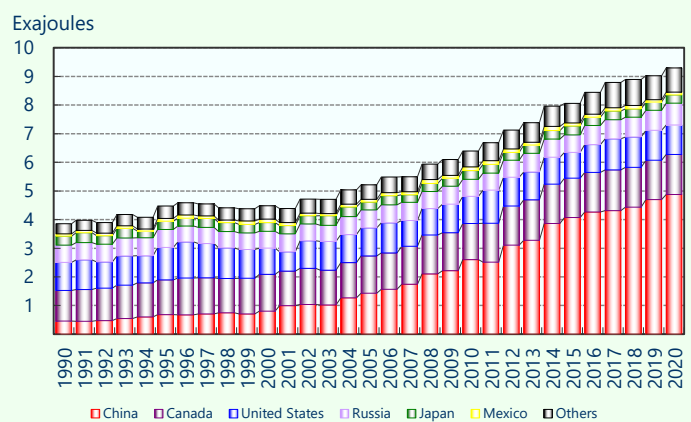
Production of natural gas APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
United States	17.5	18.7	17.6	20.7	26.7	33.0
Russia	21.6	19.7	21.6	22.6	22.0	24.8
Canada	3.7	6.2	6.5	5.4	5.8	6.5
China	.6	1.0	1.8	3.6	5.0	7.2
Indonesia	1.9	2.5	2.7	3.1	2.7	2.1
Malaysia	.6	1.8	2.3	2.0	2.5	2.3
Others	2.6	4.2	5.0	6.3	7.5	9.5
Total	48.6	54.1	57.6	63.7	72.2	85.5

	Share (%)					
	1990	2000	2005	2010	2015	2020
United States	36.0	34.6	30.6	32.5	36.9	38.6
Russia	44.5	36.4	37.5	35.5	30.4	29.1
Canada	7.6	11.5	11.2	8.5	8.1	7.6
China	1.2	1.9	3.2	5.6	6.9	8.4
Indonesia	4.0	4.7	4.7	4.9	3.8	2.5
Malaysia	1.3	3.3	4.0	3.1	3.5	2.7
Others	5.3	7.7	8.7	9.9	10.4	11.1

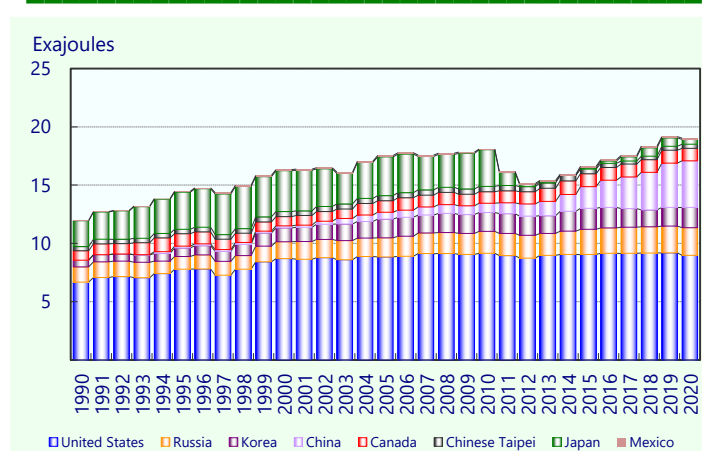
Production of hydro power APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
China	0.5	0.8	1.4	2.6	4.1	4.9
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	0.8
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	9.3

	Share (%)					
	1990	2000	2005	2010	2015	2020
China	11.8	17.9	27.4	40.6	50.5	52.5
Canada	27.7	28.8	25.0	19.8	17.1	15.0
United States	25.5	20.3	18.8	14.8	11.2	11.1
Russia	15.5	13.2	11.9	9.4	7.5	8.2
Japan	8.2	6.7	5.3	4.7	3.9	3.1
Mexico	2.2	2.7	1.9	2.1	1.4	1.0
Others	9.0	10.5	9.7	8.6	8.5	9.1

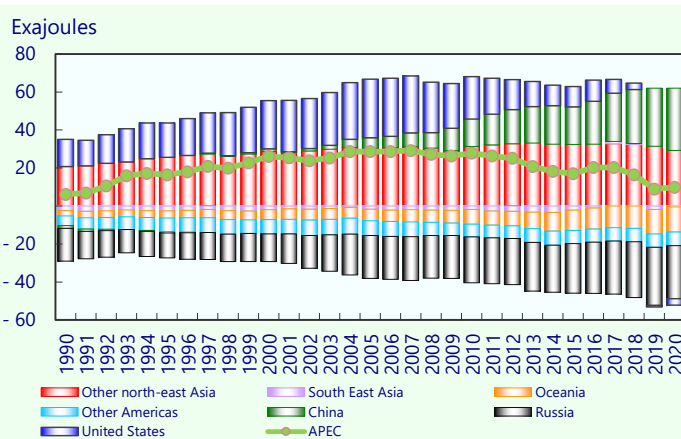
Production of nuclear power APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
United States	6.7	8.7	8.8	9.2	9.1	9.0
China	0.0	0.2	0.6	0.8	1.9	4.0
Russia	1.3	1.4	1.6	1.9	2.1	2.4
Canada	0.8	0.8	1.0	1.0	1.1	1.1
Japan	2.2	3.5	3.3	3.1	0.1	0.4
Others	1.0	1.7	2.2	2.1	2.3	2.2
Total	12.0	16.3	17.6	18.1	16.6	19.0

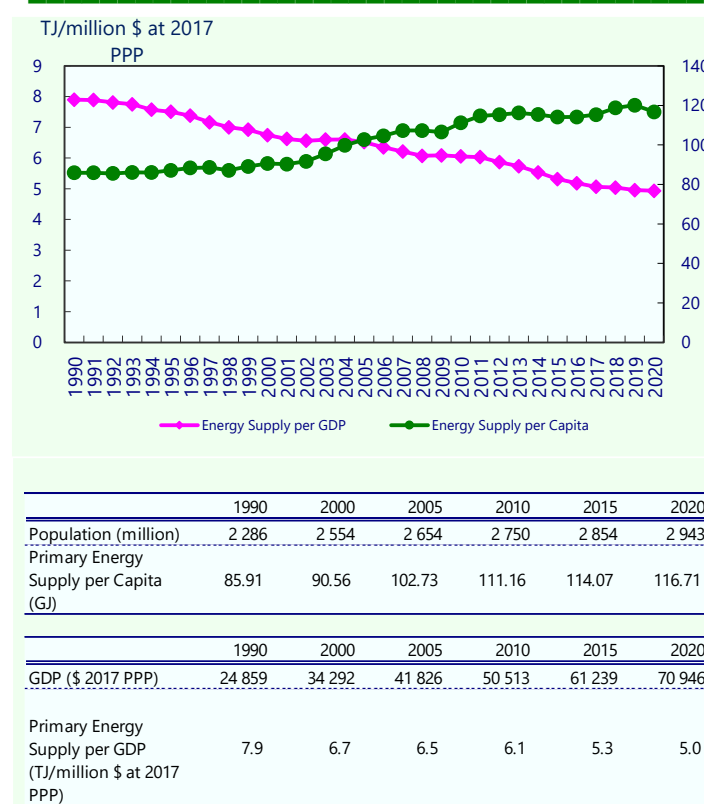
	Share (%)					
	1990	2000	2005	2010	2015	2020
United States	55.7	53.3	50.4	50.6	54.6	47.2
China	0.0	1.1	3.3	4.5	11.2	21.0
Russia	10.9	8.8	9.4	10.3	12.9	12.5
Canada	6.8	4.9	5.7	5.5	6.7	5.6
Japan	18.4	21.5	18.9	17.4	0.6	2.2
Others	8.1	10.4	12.3	11.8	14.0	11.5

Net import by region APEC



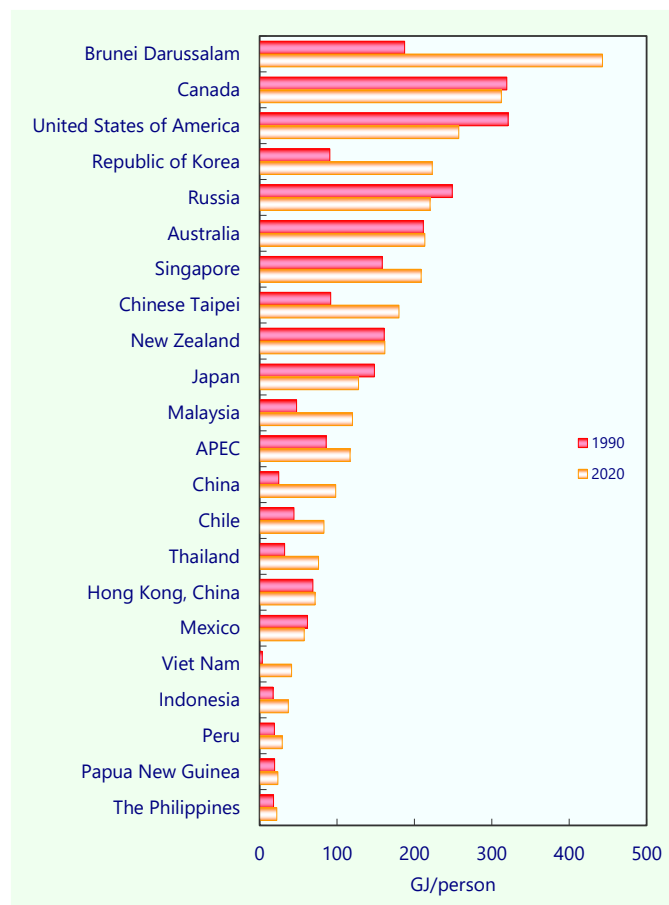
	Exajoules					
	1990	2000	2005	2010	2015	2020
Other north-east Asia	20.8	28.6	30.2	31.4	32.4	29.2
South East Asia	-2.5	-1.9	-1.7	-1.9	-2.2	-0.5
Oceania	-2.8	-5.3	-6.1	-7.7	-10.6	-13.2
Other Americas	-5.1	-7.5	-7.8	-6.8	-6.9	-7.2
China	-1.4	1.4	5.8	14.4	19.8	32.8
Russia	-17.3	-14.6	-22.6	-24.1	-26.0	-27.9
United States	14.3	25.4	30.8	22.3	10.7	-3.4
Total	6.1	26.1	28.6	27.7	17.0	9.8

Total primary energy supply per GDP & capita APEC



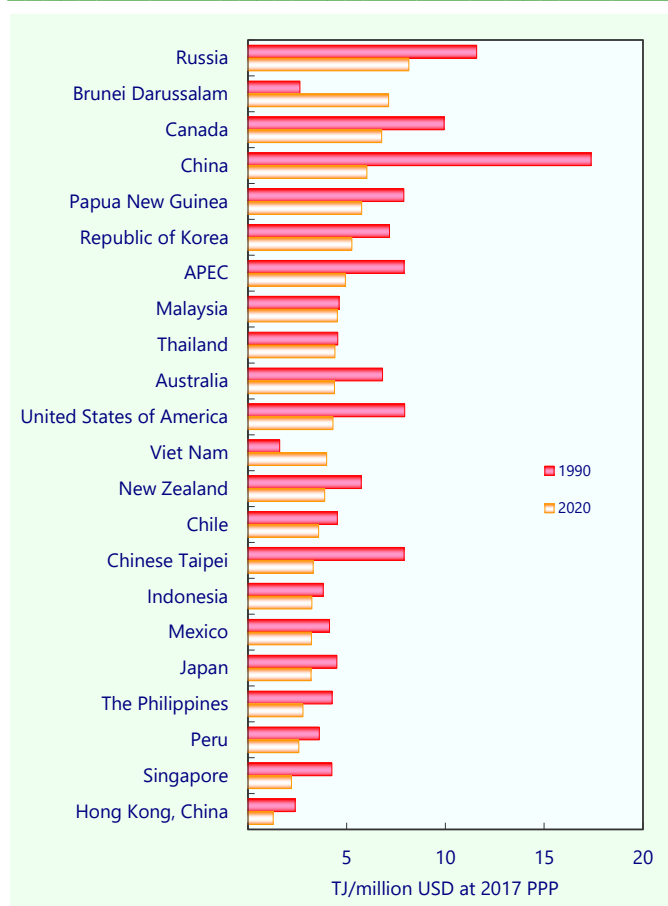
Primary Energy Supply

Total primary energy supply per capita 1990 vs 2020 by economy



*1994 and 2020 data used for Papua New Guinea

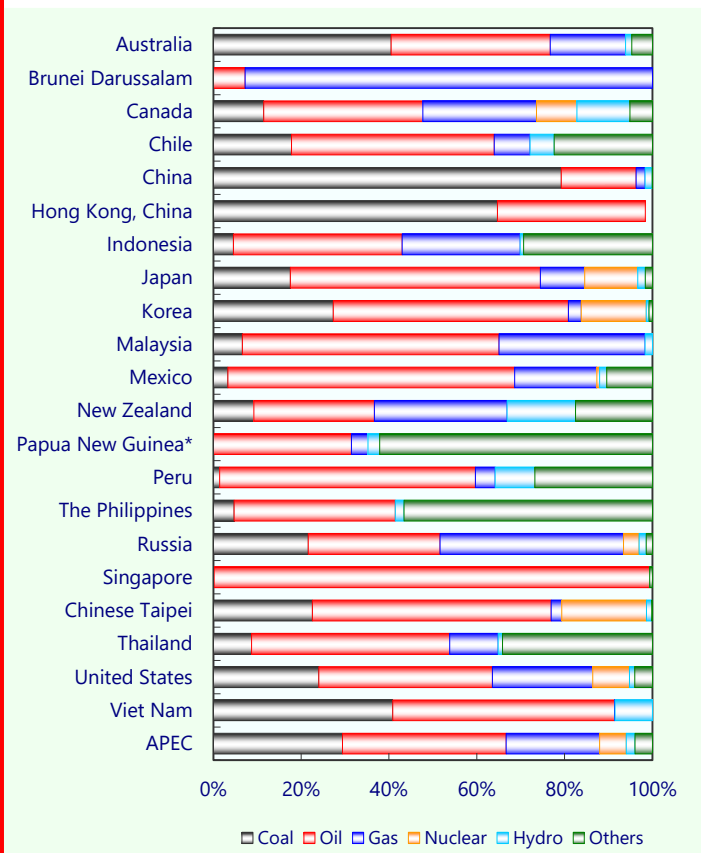
Total primary energy supply per GDP 1990 vs 2020 by economy



Primary Energy Supply

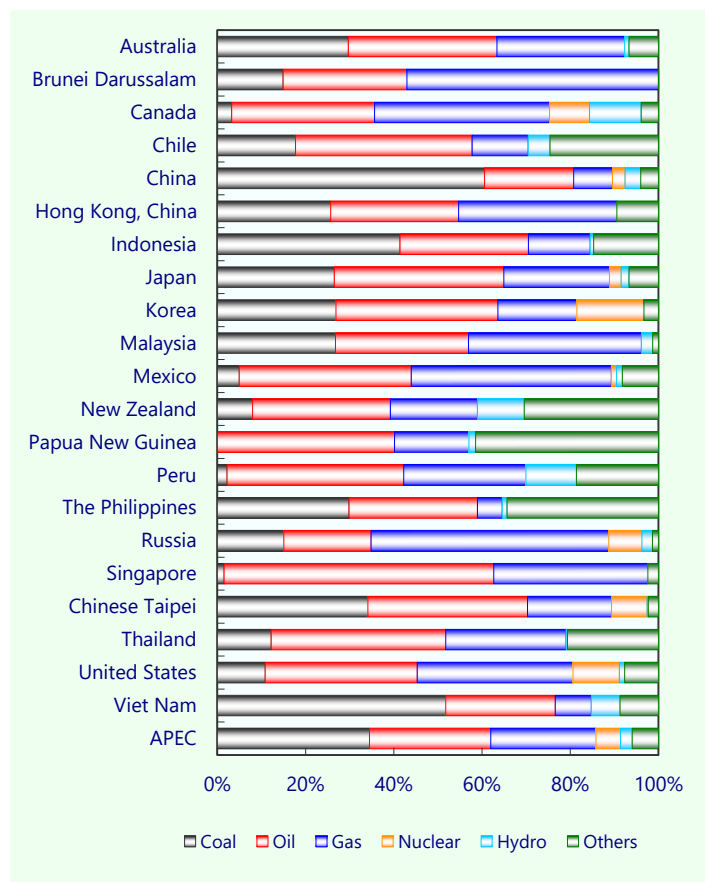
*1994 and 2020 data used for Papua New Guinea

Primary energy mix by economy 1990



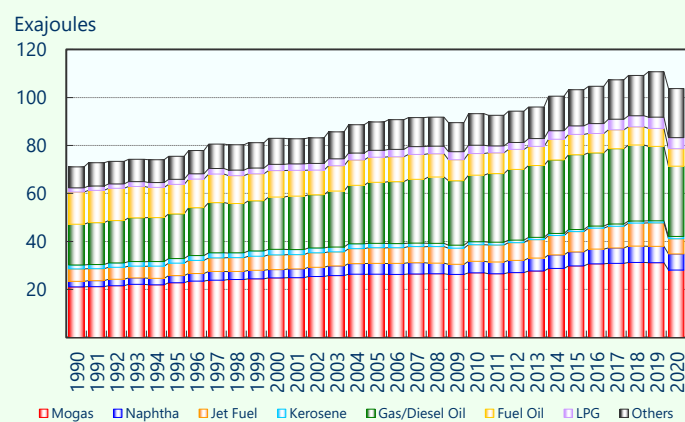
*1994 data used for Papua New Guinea

Primary energy mix by economy 2020



Primary Energy Supply

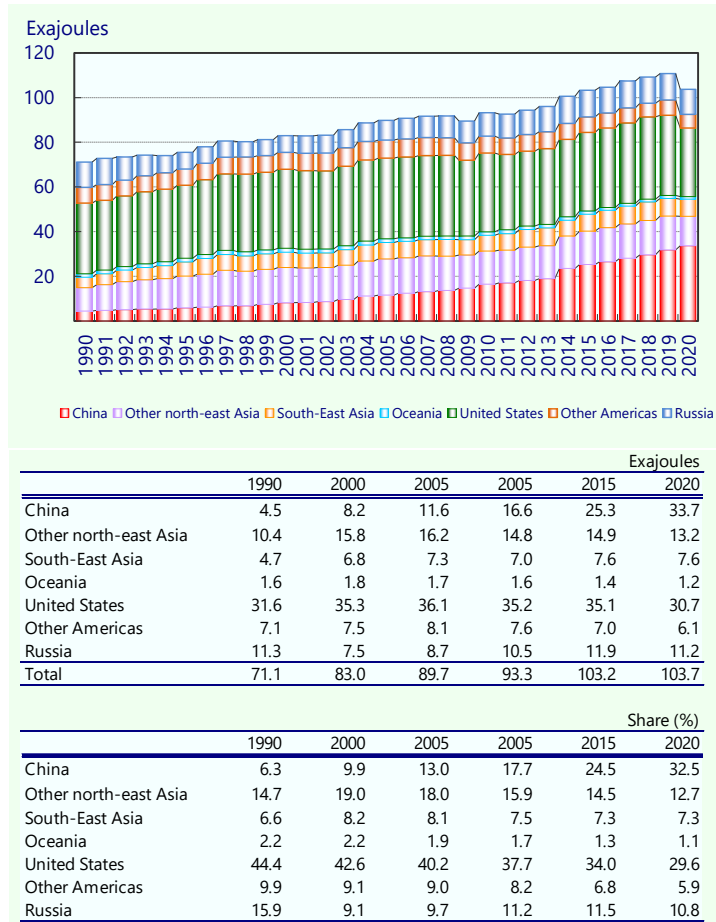
Petroleum refining by product APEC



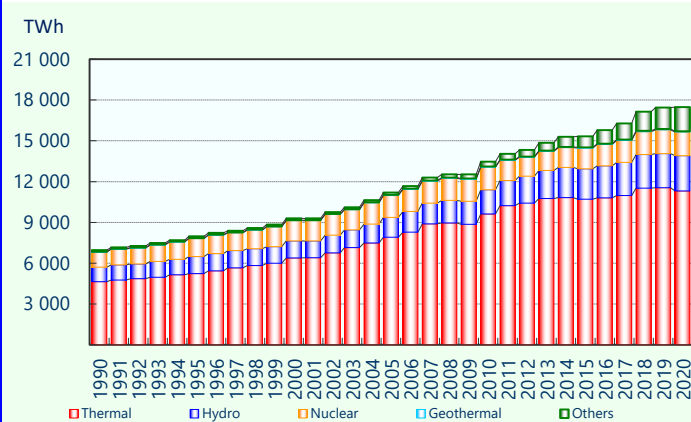
	Exajoules					
	1990	2000	2005	2010	2015	2020
Mogas	21.1	24.8	26.4	26.9	29.8	28.1
Naphtha	2.3	3.5	4.5	4.8	5.9	6.6
Jet Fuel	5.2	6.1	6.5	6.9	8.4	6.3
Gas/Diesel Oil	16.9	21.8	25.4	27.7	31.1	29.3
Fuel Oil	13.4	11.0	10.4	9.0	8.5	7.3
LPG	1.8	2.6	2.9	3.5	3.6	4.6
Others	10.4	13.1	13.7	14.3	16.0	21.4
Total	71.1	83.0	89.7	93.3	103.2	103.7

	Share (%)					
	1990	2000	2005	2010	2015	2020
Mogas	29.6	29.9	29.4	28.9	28.9	27.1
Naphtha	3.3	4.2	5.0	5.2	5.7	6.4
Jet Fuel	7.3	7.3	7.3	7.4	8.1	6.1
Gas/Diesel Oil	23.8	26.3	28.3	29.7	30.2	28.3
Fuel Oil	18.8	13.2	11.6	9.7	8.2	7.0
LPG	2.5	3.2	3.2	3.7	3.5	4.4
Others	14.7	15.8	15.2	15.4	15.5	20.6

Petroleum refining by region APEC



Electricity generation by type APEC

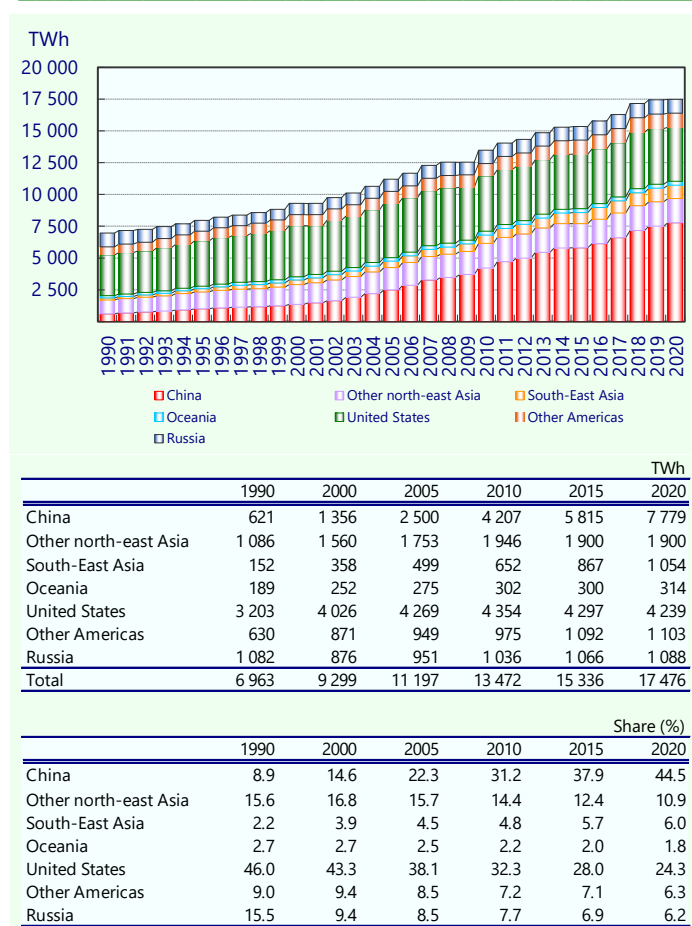


	1990	2000	2005	2010	2015	2020
Thermal	4 640	6 384	7 916	9 613	10 696	11 319
Hydro	1 073	1 250	1 453	1 780	2 242	2 584
Nuclear	1 094	1 496	1 608	1 658	1 521	1 742
Geothermal	32	41	48	53	58	63
Others	125	129	174	368	820	1 768
Total	6 963	9 299	11 197	13 472	15 336	17 476

	1990	2000	2005	2010	2015	2020
Thermal	66.6	68.6	70.7	71.4	69.7	64.8
Hydro	15.4	13.4	13.0	13.2	14.6	14.8
Nuclear	15.7	16.1	14.4	12.3	9.9	10.0
Geothermal	0.5	0.4	0.4	0.4	0.4	0.4
Others	1.8	1.4	1.6	2.7	5.3	10.1

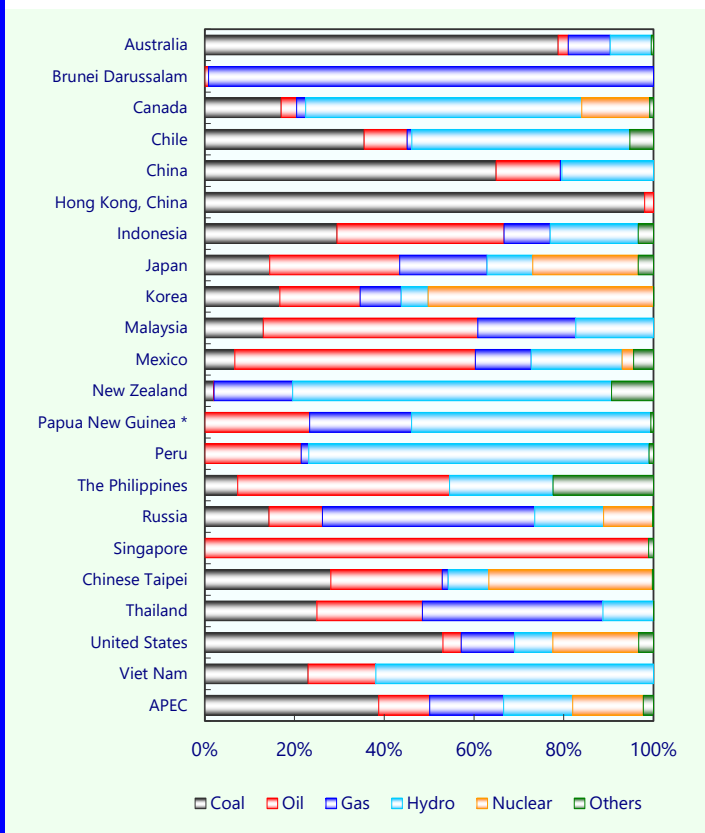
Note: Others comprise power generated from other renewable energy sources.

Electricity generation by region APEC



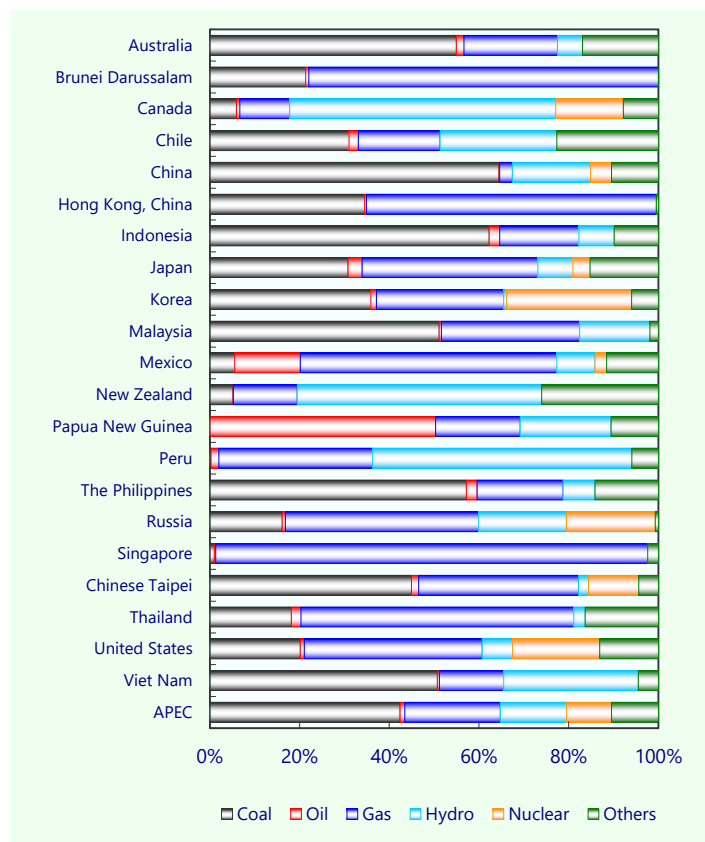
Transformation

Electricity generation by economy 1990



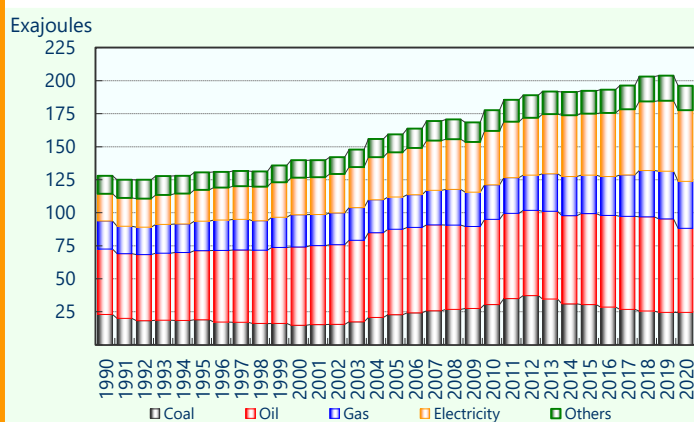
*1994 data used for Papua New Guinea

Electricity generation by economy 2020



Transformation

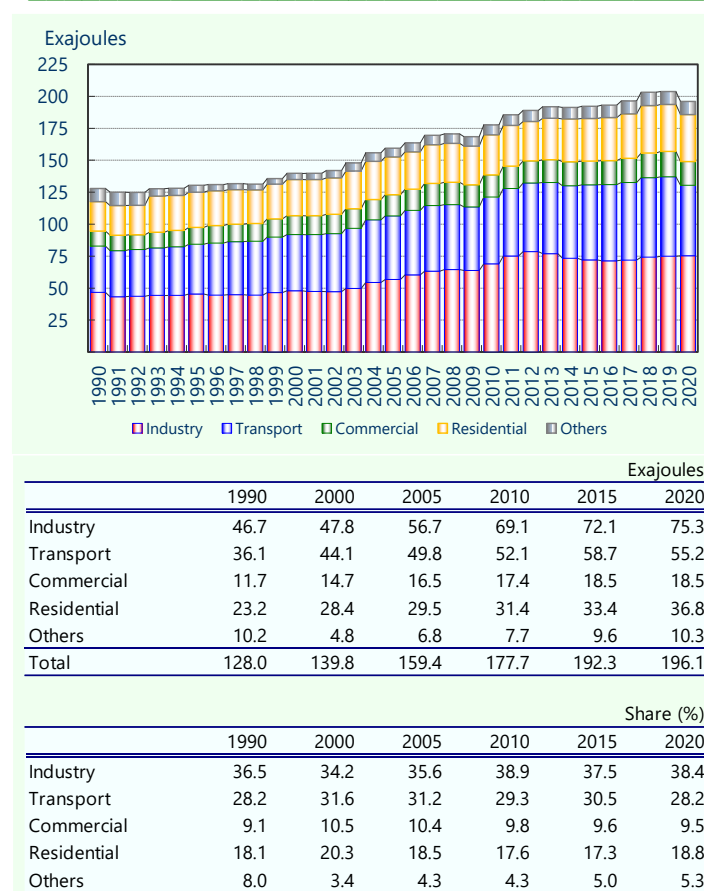
Total final energy consumption by energy APEC



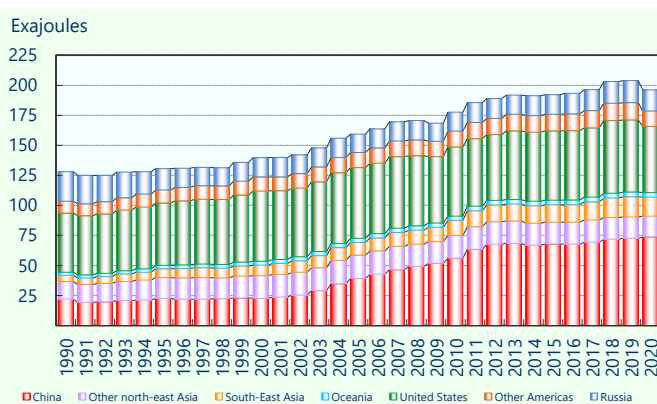
	Exajoules					
	1990	2000	2005	2010	2015	2020
Coal	23.0	14.8	22.8	30.5	30.5	24.5
Oil	49.6	59.2	64.6	64.5	68.9	63.7
Gas	21.2	24.5	24.5	26.1	29.0	35.6
Electricity	20.7	28.0	33.9	40.8	46.7	53.8
Others	13.6	13.3	13.6	15.8	17.2	18.5
Total	128.0	139.8	159.4	177.7	192.3	196.1

	Share (%)					
	1990	2000	2005	2010	2015	2020
Coal	17.9	10.6	14.3	17.1	15.9	12.5
Oil	38.7	42.4	40.5	36.3	35.9	32.5
Gas	16.6	17.5	15.4	14.7	15.1	18.2
Electricity	16.2	20.0	21.3	23.0	24.3	27.4
Others	10.6	9.5	8.5	8.9	8.9	9.4

Total final energy consumption by sector APEC



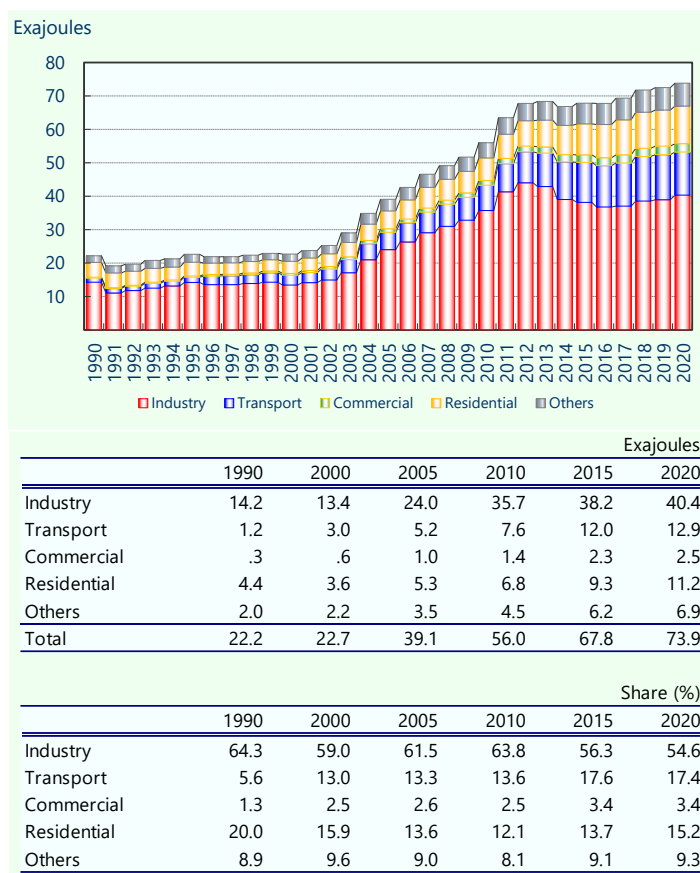
Total final energy consumption by region APEC



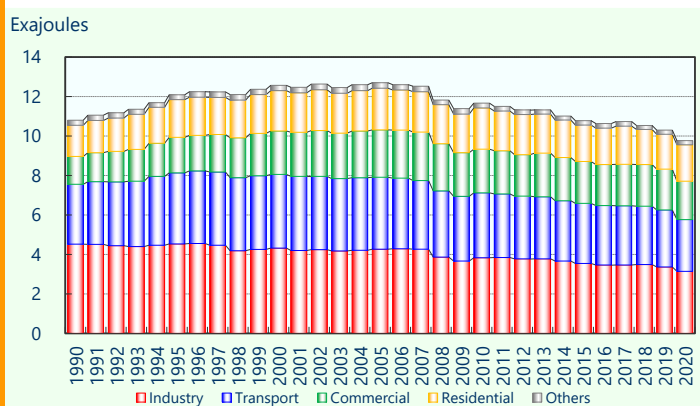
	Exajoules					
	1990	2000	2005	2010	2015	2020
China	22.2	22.7	39.1	56.0	67.8	73.9
Other north-east Asia	14.5	18.9	19.5	18.8	18.2	17.2
South-East Asia	5.2	8.8	10.6	12.6	14.5	15.7
Oceania	2.6	3.3	3.4	3.6	3.8	3.8
United States	49.2	58.3	58.9	57.7	57.6	55.2
Other Americas	9.9	11.9	12.6	13.0	13.8	12.7
Russia	24.5	16.0	15.4	15.9	16.5	17.5
Total	128.0	139.8	159.4	177.7	192.3	196.1

	Share (%)					
	1990	2000	2005	2010	2015	2020
China	17.3	16.2	24.5	31.5	35.3	37.7
Other north-east Asia	11.3	13.5	12.2	10.6	9.5	8.8
South-East Asia	4.0	6.3	6.6	7.1	7.5	8.0
Oceania	2.1	2.3	2.1	2.0	2.0	1.9
United States	38.4	41.7	37.0	32.5	30.0	28.2
Other Americas	7.7	8.5	7.9	7.3	7.2	6.5
Russia	19.1	11.4	9.7	9.0	8.6	8.9

Total final energy consumption by sector China



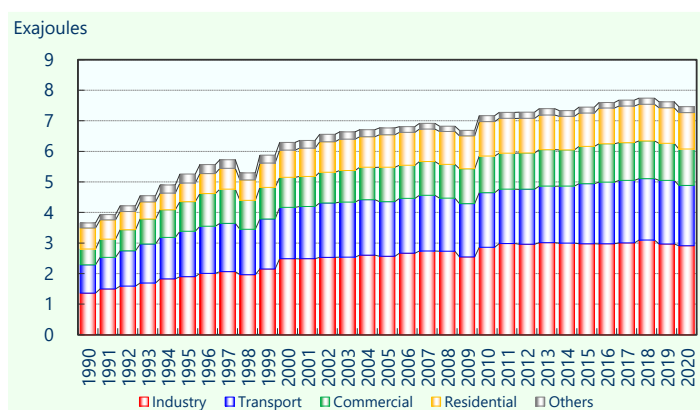
Total final energy consumption by sector Japan



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	4.5	4.3	4.3	3.8	3.5	3.1
Transport	3.0	3.7	3.6	3.3	3.0	2.6
Commercial	1.4	2.2	2.4	2.2	2.1	1.9
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	9.8

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	41.9	34.4	33.6	32.8	32.8	32.2
Transport	28.0	29.7	28.6	28.2	28.3	26.8
Commercial	13.1	17.4	18.9	18.9	19.6	19.9
Residential	14.6	16.3	16.6	17.9	17.1	18.9
Others	2.4	2.2	2.3	2.2	2.1	2.2

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

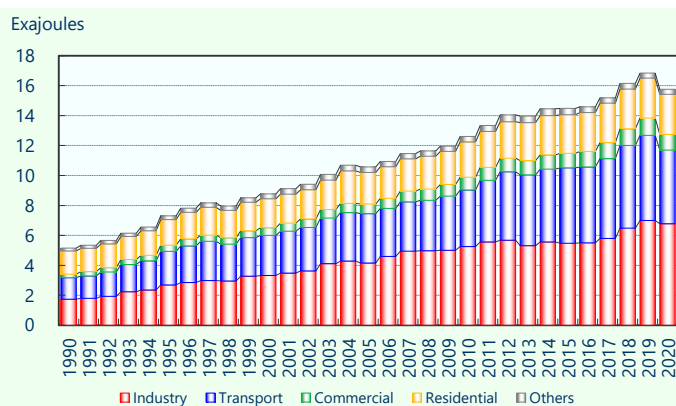


	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	1.4	2.5	2.6	2.9	3.0	2.9
Transport	0.9	1.7	1.8	1.8	2.0	2.0
Commercial	0.5	1.0	1.1	1.2	1.2	1.2
Residential	0.7	0.9	1.1	1.1	1.1	1.2
Others	0.2	0.3	0.2	0.2	0.2	0.2
Total	3.7	6.3	6.8	7.2	7.4	7.5

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	37.3	39.5	37.9	39.9	40.0	39.1
Transport	25.3	26.7	26.4	25.0	26.4	26.4
Commercial	14.0	15.7	16.7	16.7	16.4	16.0
Residential	19.0	14.1	15.7	15.7	14.6	16.0
Others	4.3	4.0	3.2	2.7	2.6	2.6

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

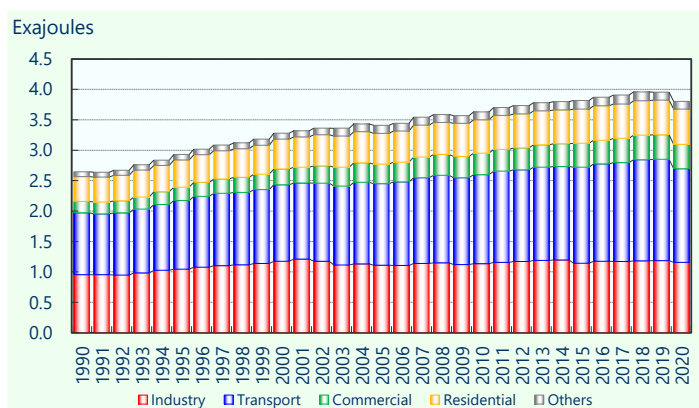
Total final energy consumption by sector South-East Asia



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	1.7	3.3	4.2	5.3	5.5	6.8
Transport	1.4	2.7	3.3	3.8	5.0	4.9
Commercial	0.2	0.5	0.6	0.8	1.0	1.0
Residential	1.6	1.9	2.1	2.4	2.6	2.7
Others	0.2	0.3	0.4	0.4	0.4	0.3
Total	5.2	8.8	10.6	12.6	14.5	15.7

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	33.9	37.9	39.3	41.7	37.8	43.1
Transport	27.5	30.6	31.2	30.0	34.8	31.2
Commercial	4.6	5.9	6.1	6.7	6.7	6.6
Residential	30.1	22.0	20.0	18.7	17.8	17.0
Others	3.8	3.6	3.4	2.9	3.0	2.1

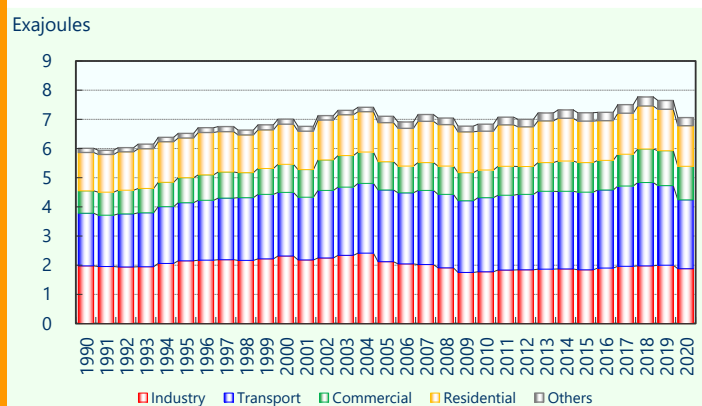
Total final energy consumption by sector Oceania



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	1.0	1.2	1.1	1.1	1.14	1.16
Transport	1.0	1.3	1.3	1.5	1.58	1.54
Commercial	0.2	0.3	0.3	0.4	0.39	0.40
Residential	0.4	0.5	0.5	0.5	0.56	0.58
Others	0.1	0.1	0.1	0.1	0.14	0.12
Total	2.6	3.3	3.4	3.6	3.82	3.80

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	36.1	35.8	32.6	31.2	30.0	30.5
Transport	38.4	38.3	39.3	40.4	41.4	40.5
Commercial	7.1	8.0	9.4	9.7	10.3	10.5
Residential	15.3	14.9	14.8	15.1	14.7	15.3
Others	3.0	3.1	3.9	3.6	3.7	3.2

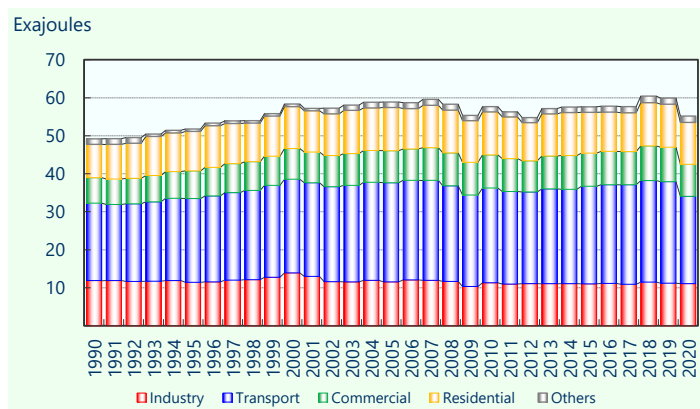
Total final energy consumption by sector Canada



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	2.0	2.3	2.1	1.8	1.8	1.9
Transport	1.8	2.2	2.5	2.5	2.7	2.4
Commercial	0.8	1.0	1.0	0.9	1.0	1.1
Residential	1.3	1.4	1.3	1.3	1.4	1.4
Others	0.1	0.2	0.2	0.2	0.3	0.3
Total	6.0	7.0	7.1	6.8	7.2	7.1

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	32.9	33.0	29.8	26.0	25.5	26.6
Transport	30.1	31.1	34.6	37.1	36.8	33.5
Commercial	12.8	13.7	13.7	13.9	14.1	16.3
Residential	21.9	19.6	18.8	19.6	19.7	19.7
Others	2.3	2.5	3.1	3.5	4.0	3.9

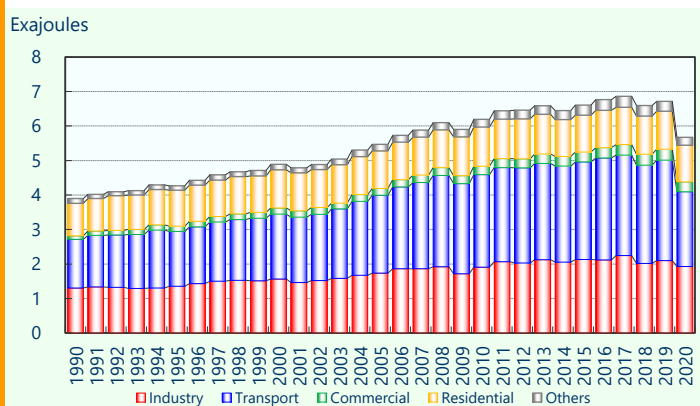
Total final energy consumption by sector United States



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	11.9	13.9	11.6	11.3	11.0	11.1
Transport	20.4	24.6	26.1	24.9	25.7	23.0
Commercial	6.7	8.1	8.4	8.7	8.7	8.4
Residential	8.8	11.1	11.4	11.3	10.7	11.0
Others	1.4	.7	1.5	1.4	1.5	1.7
Total	49.2	58.3	58.9	57.7	57.6	55.2

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	24.2	23.8	19.7	19.6	19.1	20.1
Transport	41.5	42.2	44.3	43.2	44.6	41.6
Commercial	13.6	13.9	14.2	15.1	15.1	15.2
Residential	17.9	19.0	19.3	19.6	18.6	20.0
Others	2.9	1.1	2.5	2.5	2.5	3.0

Total final energy consumption by sector Other Americas*

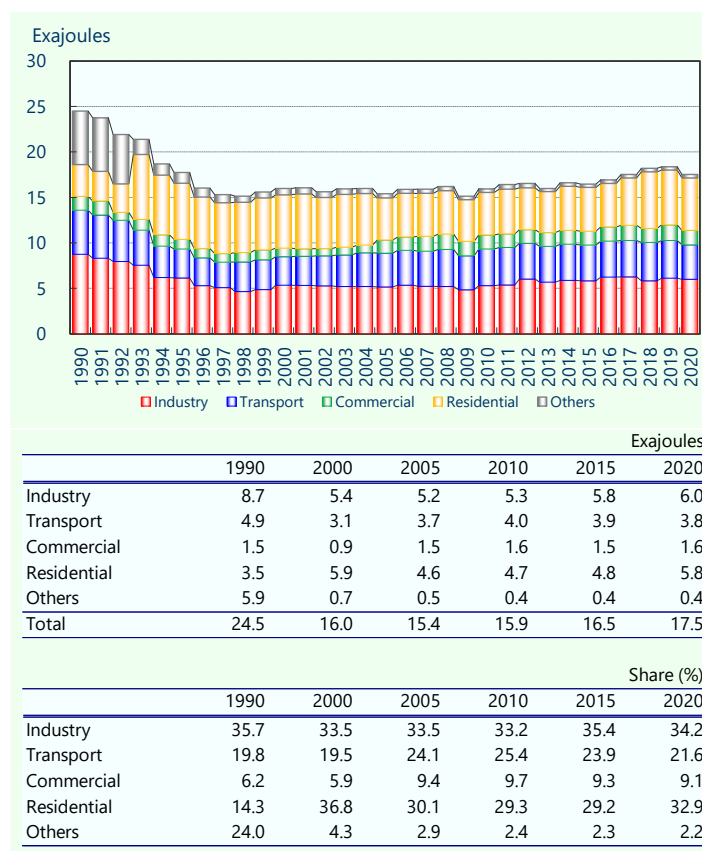


	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	1.3	1.6	1.7	1.9	2.1	1.9
Transport	1.4	1.9	2.3	2.7	2.8	2.2
Commercial	0.1	0.2	0.2	0.2	0.3	0.3
Residential	0.9	1.1	1.1	1.1	1.1	1.1
Others	0.1	0.2	0.2	0.2	0.3	0.2
Total	3.9	4.9	5.5	6.2	6.6	5.7

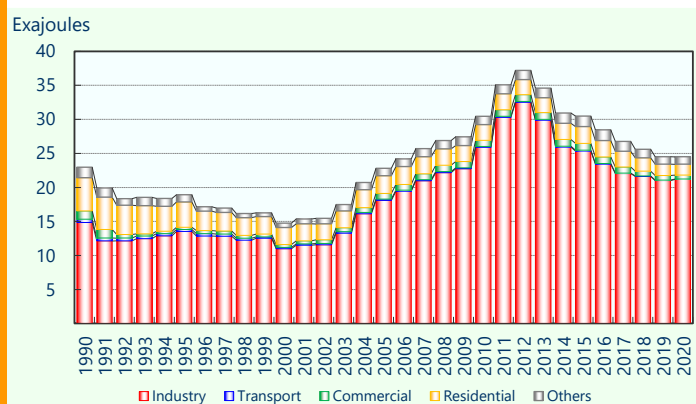
	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	33.4	32.1	31.8	30.8	32.3	34.0
Transport	36.4	38.5	41.3	43.4	42.8	38.3
Commercial	2.5	3.7	3.7	3.9	4.3	5.1
Residential	24.1	22.7	19.8	18.3	16.2	18.7
Others	3.6	3.1	3.5	3.7	4.4	4.0

*Other Americas include Chile, Mexico and Peru.

Total final energy consumption by sector Russia



Coal* demand by sector APEC

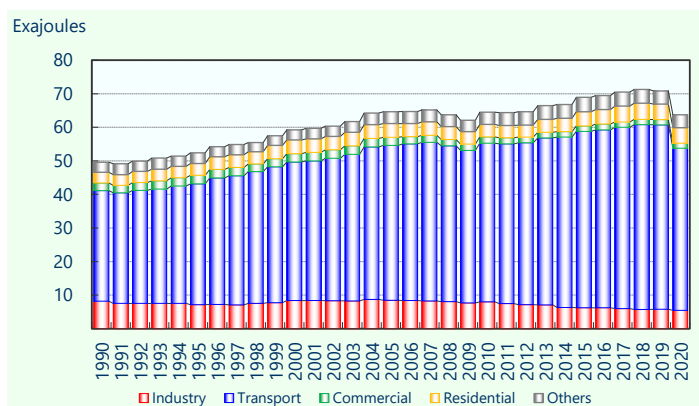


	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	14.9	11.0	18.1	25.9	25.4	21.2
Transport	0.5	0.2	0.2	0.1	0.1	0.1
Commercial	1.2	0.4	0.8	0.9	1.0	0.6
Residential	4.9	2.5	2.6	2.3	2.5	1.6
Others	1.5	0.6	1.1	1.2	1.6	1.1
Total	23.0	14.8	22.8	30.5	30.5	24.5

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	64.7	74.5	79.4	85.0	83.2	86.4
Transport	2.0	1.3	0.8	0.4	0.4	0.2
Commercial	5.3	2.8	3.7	2.9	3.3	2.4
Residential	21.3	17.0	11.3	7.6	8.1	6.5
Others	6.6	4.3	4.8	4.1	5.1	4.5

*Coal and Coal Products

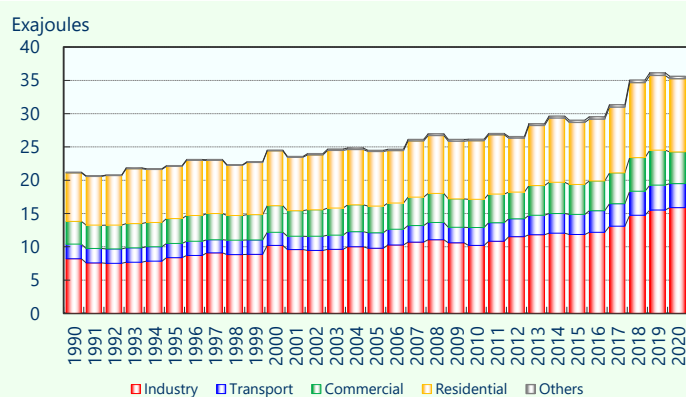
Oil demand by sector APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	8.2	8.4	8.4	8.0	6.3	5.5
Transport	32.9	41.3	46.2	47.2	52.5	48.3
Commercial	2.2	2.5	2.4	1.9	1.6	1.5
Residential	3.2	4.1	4.1	3.7	4.2	4.6
Others	3.0	3.0	3.5	3.6	4.3	3.8
Total	49.6	59.2	64.6	64.5	68.9	63.7

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	16.6	14.1	13.1	12.4	9.1	8.6
Transport	66.4	69.7	71.4	73.2	76.2	75.8
Commercial	4.5	4.2	3.7	2.9	2.4	2.4
Residential	6.4	6.9	6.3	5.8	6.1	7.2
Others	6.0	5.0	5.4	5.6	6.2	6.0

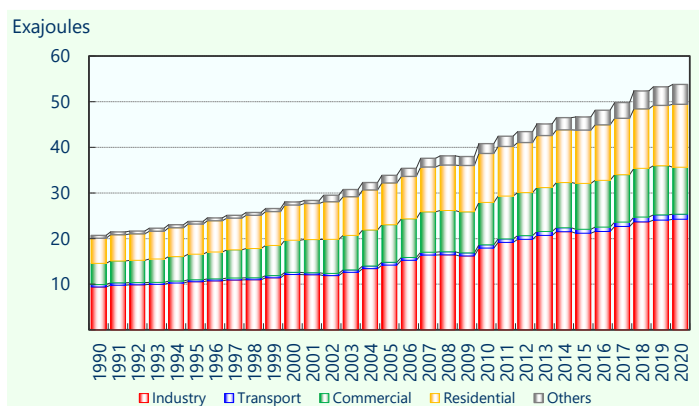
Gas demand by sector APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	8.2	10.2	9.8	10.2	11.8	15.9
Transport	2.2	2.0	2.3	2.7	3.0	3.6
Commercial	3.4	4.0	4.0	4.2	4.5	4.8
Residential	7.3	8.2	8.2	8.8	9.3	11.0
Others	0.1	0.1	0.2	0.2	0.3	0.4
Total	21.2	24.5	24.5	26.1	29.0	35.6

	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	38.8	41.6	39.9	39.1	40.8	44.6
Transport	10.4	8.1	9.6	10.2	10.5	10.1
Commercial	16.0	16.3	16.3	16.2	15.5	13.4
Residential	34.4	33.6	33.4	33.6	32.1	30.9
Others	0.4	0.5	0.7	0.8	1.1	1.0

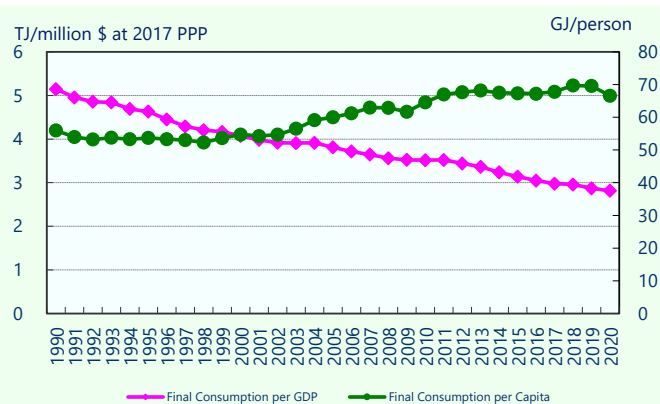
Electricity demand by sector APEC



	Exajoules					
	1990	2000	2005	2010	2015	2020
Industry	9.4	12.1	14.2	17.9	21.2	24.2
Transport	0.5	0.4	0.6	0.7	0.9	1.1
Commercial	4.6	7.1	8.2	9.3	10.0	10.3
Residential	5.5	7.7	9.1	10.7	11.7	13.8
Others	0.6	0.7	1.7	2.1	2.9	4.3
Total	20.7	28.0	33.9	40.8	46.7	53.8

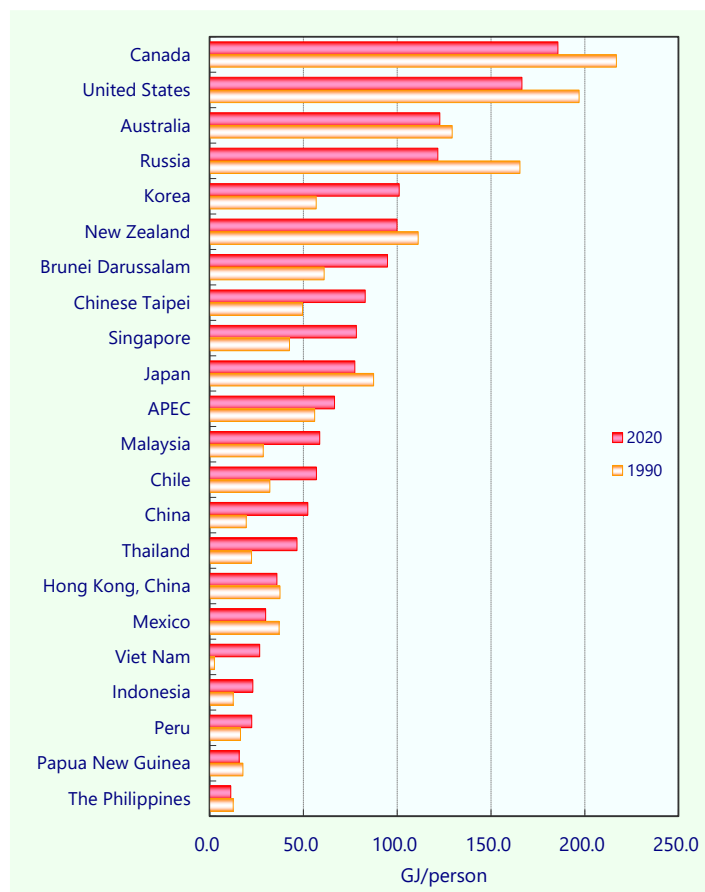
	Share (%)					
	1990	2000	2005	2010	2015	2020
Industry	45.5	43.3	41.9	43.9	45.3	45.0
Transport	2.5	1.6	1.8	1.8	1.9	2.0
Commercial	22.4	25.2	24.3	22.8	21.5	19.2
Residential	26.7	27.6	27.0	26.3	25.1	25.7
Others	2.9	2.3	5.0	5.3	6.2	8.1

Final energy consumption per capita and GDP APEC



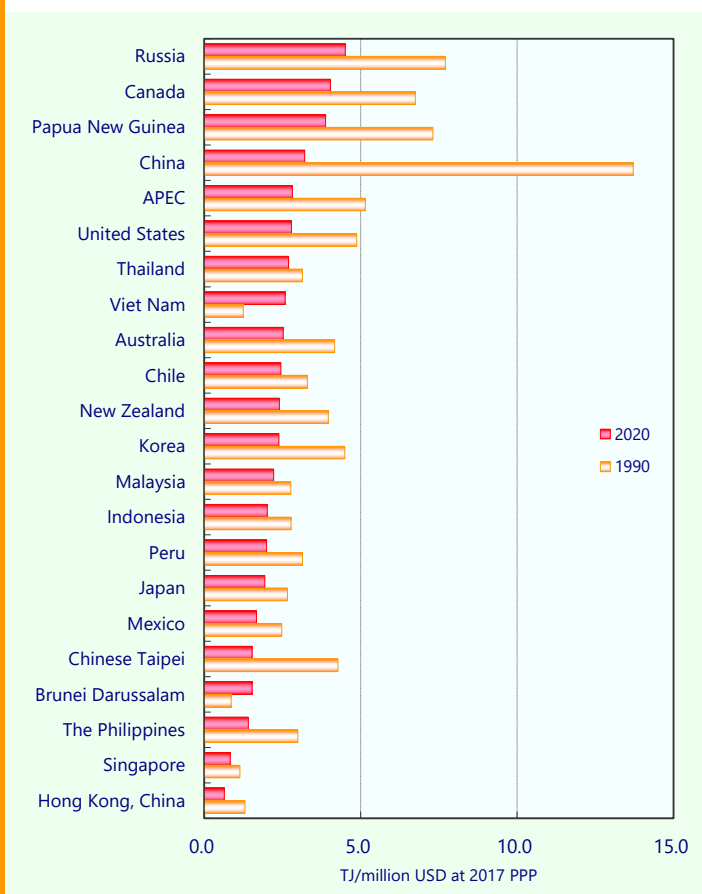
	1990	2000	2005	2010	2015	2020
Population (million)	2 286	2 554	2 654	2 750	2 854	2 943
Final Consumption per Capita (GJ/Person)	55.98	54.73	60.06	64.61	67.36	66.62
GDP (billion \$ at 2017 PPP)	24 859	34 292	41 826	50 513	61 239	69 642
Final Consumption per GDP (TJ/million \$ at 2017 PPP)	5.15	4.08	3.81	3.52	3.14	2.82

Final energy consumption per capita

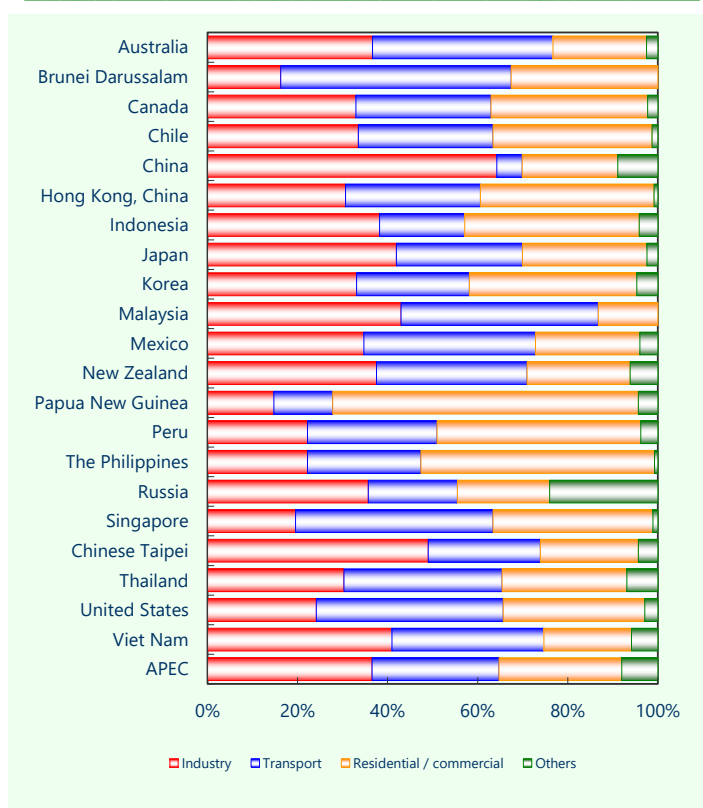


Final Energy Consumption

Final energy intensity

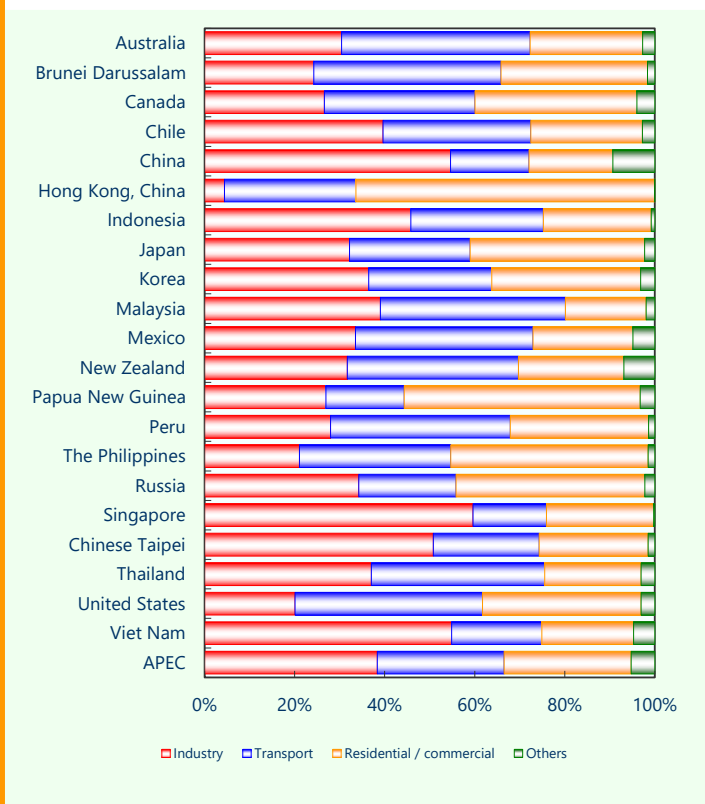


Final energy consumption by sector 1990

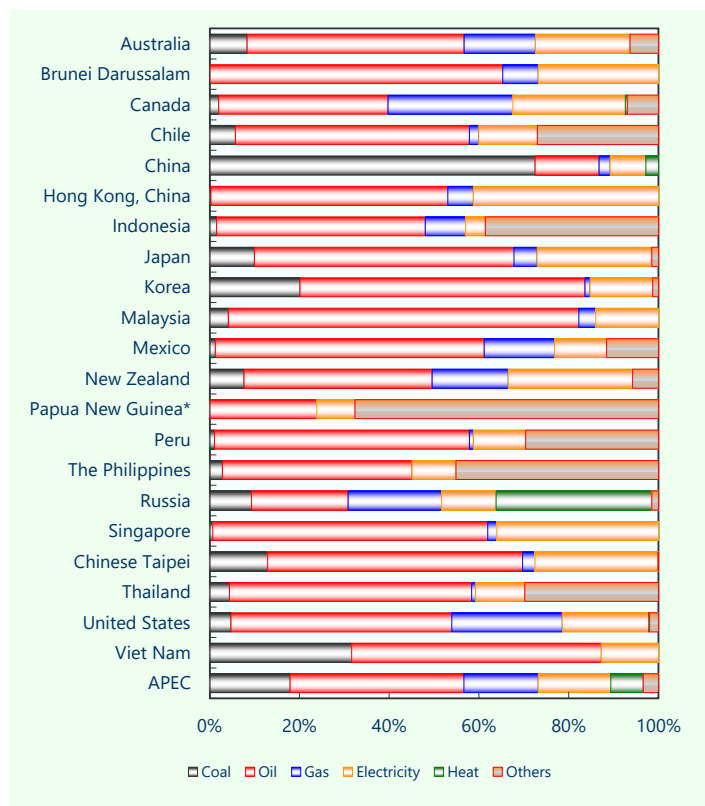


Final Energy Consumption

Final energy consumption by sector 2020

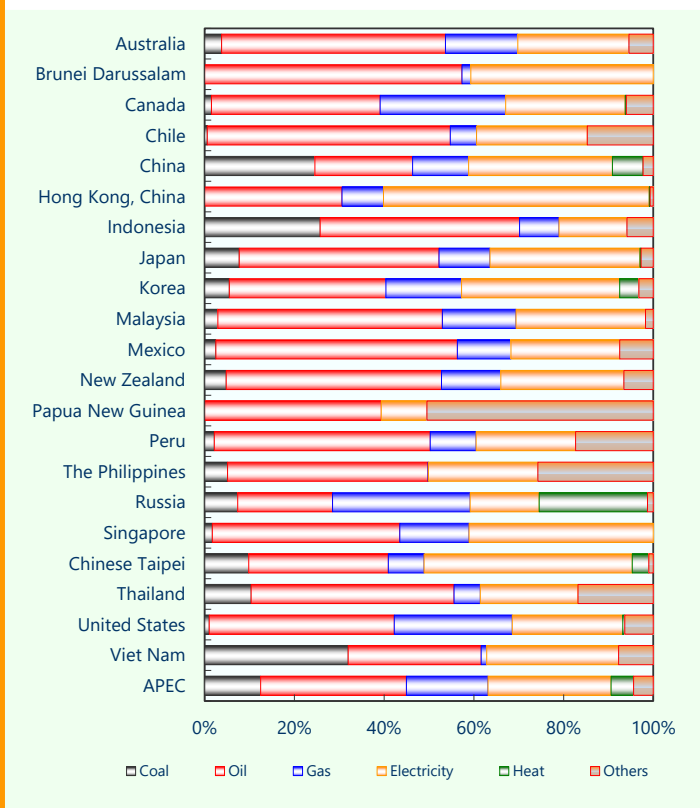


Final energy consumption by energy 1990



Final Energy Consumption

Final energy consumption by energy 2020



APEC, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	129 223		80 552	
2 Import	19 094	599	57 243	21 580
3 Export	- 28 788	- 322	- 30 191	- 26 036
4 International marine and aviation bunkers				- 5 971
5 Stock change	- 1 368	- 15	- 1 651	- 1 087
6 Total energy supply	118 161	263	105 954	- 11 514
7 Transfers			- 5 731	2 223
8 Main activity producers	- 71 219	- 2 409	- 18	- 1 538
9 Autoproducers	- 1 281	- 388	- 20	- 609
10 Gas processing	- 819	- 77		- 8
11 Petroleum refineries			- 100 703	103 698
12 Coal transformation	- 23 275	12 504		- 15
13 Other transformation			999	- 720
14 Loss & own-use	- 1 065	- 804	- 408	- 4 873
15 Discrepancy	- 1 364	325	602	- 3 176
16 Total final consumption	19 138	9 414	675	83 467
17 Total final energy consumption	15 999	8 512	50	63 662
18 Industry sector	12 793	8 384	50	5 426
19 Transport sector	54			48 292
20 Other sector	3 152	127	1	9 944
20.1 Residential & Commercial	2 062	118		6 117
20.2 Agriculture	512	7		2 059
20.3 Other	579	2		1 768
21 Non-energy	3 139	902	625	19 804

Australia, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	12 335		866	
2 Import	8	11	631	1 276
3 Export	- 10 483	- 22	- 595	- 165
4 International marine and aviation bunkers				- 191
5 Stock change	- 220			26
6 Total energy supply	1 641	- 11	902	946
7 Transfers			- 87	224
8 Main activity producers	- 1 515			- 8
9 Autoproducers				- 35
10 Gas processing				
11 Petroleum refineries			- 930	921
12 Coal transformation	- 118	65		
13 Other transformation				
14 Loss & own-use		- 35	- 1	- 187
15 Discrepancy	91		118	- 113
16 Total final consumption	99	20		1 748
17 Total final energy consumption	99	20		1 572
18 Industry sector	98	20		181
19 Transport sector				1 274
20 Other sector	1			118
20.1 Residential & Commercial	1			42
20.2 Agriculture				74
20.3 Other				1
21 Non-energy				176

Unit: PJ

Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
85 454	9 292	19 016	7 248	13 020	2	343 808	28 017
19 433				252	491	118 692	251
- 22 847				- 235	- 458	- 108 877	- 232
				- 15		- 5 987	- 15
- 7				- 4		- 4 131	- 5
82 034	9 292	19 016	7 248	13 017	35	343 505	28 015
						- 3 508	
- 28 016	- 9 166	- 19 016	- 6 518	- 3 106	70 558	- 70 449	- 17 903
- 4 489	- 126		- 523	- 1 002	6 809	- 1 629	- 1 347
147						- 757	
						2 995	
				- 5		- 10 790	
- 752				- 541	3	- 1 012	- 541
- 8 177				- 27	- 11 144	- 26 499	- 21
- 1 694				45	- 2 593	- 7 854	39
39 053			207	8 382	63 667	224 002	8 241
35 618			207	8 382	63 667	196 097	8 241
15 890			6	3 207	29 498	75 255	2 931
3 606				2 156	1 101	55 210	2 156
16 121			200	3 018	33 068	65 632	3 154
15 748			193	2 686	28 404	55 328	28 017
166			2	263	1 172	4 181	263
208			5	70	3 492	6 124	54
3 435						27 906	

Unit: PJ

Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
5 331	53		168	198		18 950	415
162						2 088	
- 3 905						- 15 169	
						- 191	
						- 194	
1 588	53		168	198		5 485	415
						137	
- 327	- 53		- 98	- 19	810	- 1 210	- 170
- 202			- 52	- 26	143	- 171	- 77
						- 9	
						- 52	
						- 794	
- 397					- 173	- 794	
- 103						- 8	
558			18	153	780	3 377	168
509			18	153	780	3 152	168
279				101	280	959	97
20				4	23	1 321	4
210			18	48	478	872	66
209			18	48	470	788	415
1					7	83	
						1	
49						224	

Brunei Darussalam, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production			244	
2 Import	29		281	18
3 Export			- 178	- 295
4 International marine and aviation bunkers				- 3
5 Stock change			2	- 15
6 Total energy supply	29		349	- 295
7 Transfers			31	
8 Main activity producers				
9 Autoproducers	- 29			
10 Gas processing				1
11 Petroleum refineries			- 380	318
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy				1
16 Total final consumption				24
17 Total final energy consumption				24
18 Industry sector				5
19 Transport sector				17
20 Other sector				1
20.1 Residential & Commercial				1
20.2 Agriculture				
20.3 Other				1
21 Non-energy				

Canada, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	1 005		11 030	
2 Import	160	21	1 703	394
3 Export	- 793	- 2	- 8 211	- 957
4 International marine and aviation bunkers				- 34
5 Stock change	- 10	3	- 73	- 2
6 Total energy supply	362	22	4 449	- 598
7 Transfers			- 141	228
8 Main activity producers	- 353			- 48
9 Autoproducers		- 2		- 18
10 Gas processing				
11 Petroleum refineries			- 4 345	4 181
12 Coal transformation	- 83	51		
13 Other transformation			147	- 15
14 Loss & own-use				- 537
15 Discrepancy	107	3	- 110	245
16 Total final consumption	34	74		3 439
17 Total final energy consumption	32	73		2 658
18 Industry sector	31	73		230
19 Transport sector				2 119
20 Other sector	1			309
20.1 Residential & Commercial				110
20.2 Agriculture	1			199
20.3 Other				
21 Non-energy	2	1		781

							Unit: PJ	
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables	
415						659		
						329		
- 306						- 780		
						- 3		
2						- 10		
111						194		
						31		
- 49					18	- 32		
- 6					6	- 29		
11						12		
						- 62		
- 38					- 7	- 45		
- 3						- 3		
25					17	66		
1					17	42		
					5	10		
						17		
1					12	14		
1					12	13		
						1		
24						24		

							Unit: PJ	
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables	
6 488	1 391	1 071	148	548		21 682	2 077	
831				48	35	3 192	48	
- 2 492				- 69	- 243	- 12 768	- 69	
						- 34		
- 114				- 1		- 196	- 1	
4 713	1 391	1 071	148	526	- 207	11 877	2 054	
						87		
- 427	- 1 291	- 1 071	- 136	- 40	2 144	- 1 223	- 1 464	
- 266	- 100		- 9	- 69	221	- 243	- 179	
						- 164		
						- 32		
- 130						2		
- 1 650					- 318	- 2 505		
- 155				7	61	158	7	
2 085			2	423	1 901	7 957	418	
1 977			2	423	1 901	7 065	418	
638				229	678	1 879	222	
139				80	27	2 365	80	
1 200			2	114	1 196	2 821	116	
1 161				114	1 157	2 542	2 077	
39					38	276		
			2		1	3	2	
109						892		

Chile, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	8		17	
2 Import	266		318	339
3 Export		- 4		- 25
4 International marine and aviation bunkers				- 19
5 Stock change	11	1	2	- 3
6 Total energy supply	285	- 3	337	299
7 Transfers			36	- 34
8 Main activity producers	- 295			- 11
9 Autoproducers				- 5
10 Gas processing				
11 Petroleum refineries			- 362	367
12 Coal transformation	- 15	10		
13 Other transformation				
14 Loss & own-use		- 7		- 9
15 Discrepancy	30		- 11	1
16 Total final consumption	6			607
17 Total final energy consumption	6			589
18 Industry sector	6			151
19 Transport sector				352
20 Other sector				86
20.1 Residential & Commercial				69
20.2 Agriculture				7
20.3 Other				10
21 Non-energy				18

China, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	79 809		8 155	
2 Import	5 414	85	22 693	2 642
3 Export	- 80	- 100	- 69	- 2 785
4 International marine and aviation bunkers				- 344
5 Stock change	- 1 279	49	- 1 484	- 823
6 Total energy supply	83 864	34	29 295	- 1 310
7 Transfers				- 4 280
8 Main activity producers	- 48 022	- 2 185	- 7	- 371
9 Autoproducers				- 12
10 Gas processing	- 745	- 77		- 12
11 Petroleum refineries			- 28 899	33 684
12 Coal transformation	- 17 755	9 406		- 1
13 Other transformation				
14 Loss & own-use	- 1 028	- 382	- 133	- 2 105
15 Discrepancy	- 1 376	357	- 206	- 2 594
16 Total final consumption	14 939	7 153	50	23 010
17 Total final energy consumption	11 837	6 315	50	16 034
18 Industry sector	8 764	6 203	50	1 829
19 Transport sector	54			10 446
20 Other sector	3 019	112		3 758
20.1 Residential & Commercial	1 933	103		1 502
20.2 Agriculture	507	7		759
20.3 Other	579	2		1 498
21 Non-energy	3 102	838		6 976

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
41	79		60	331		535	469
159						1 082	
						- 29	
						- 19	
2						19	
202	79		60	331		1 589	469
						1	
- 101	- 79		- 57	- 25	279	- 289	- 160
- 4				- 155	24	- 141	- 156
						4	
						- 5	
				- 6		- 6	- 6
- 14					- 23	- 52	
6				13	- 12	28	13
88			3	157	268	1 130	160
64			3	157	268	1 087	160
36				76	161	431	76
					5	357	
27			3	81	102	299	84
26				80	93	269	469
1					9	16	
			3			14	3
25						42	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
7 172	4 879	3 996	2 618	3 004		109 633	9 929
5 210					17	36 061	
- 192					- 78	- 3 304	
						- 344	
						- 3 537	
12 190	4 879	3 996	2 618	3 004	- 61	138 509	9 929
						- 4 280	
- 2 172	- 4 879	- 3 996	- 2 618	- 1 378	35 251	- 30 377	- 8 291
					1 278	1 278	
103						- 731	
						4 785	
						- 8 350	
- 1 175				- 18	- 5 191	- 10 032	- 18
540				60	- 2 562	- 5 782	47
9 486				1 668	28 715	85 021	1 668
9 231				1 668	28 715	73 851	1 668
5 283				278	17 949	40 357	278
1 292				453	630	12 875	453
2 656				937	10 136	20 618	937
2 444				694	7 065	13 740	9 929
5				195	513	1 986	195
207				48	2 558	4 892	48
254						11 171	

Hong Kong, China, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production				
2 Import	145			632
3 Export				- 6
4 International marine and aviation bunkers				- 445
5 Stock change	- 7			- 26
6 Total energy supply	138			155
7 Transfers				
8 Main activity producers	- 138			- 4
9 Autoproducers				
10 Gas processing				- 11
11 Petroleum refineries				
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy				- 58
16 Total final consumption				82
17 Total final energy consumption				82
18 Industry sector				3
19 Transport sector				75
20 Other sector				4
20.1 Residential & Commercial				4
20.2 Agriculture				
20.3 Other				
21 Non-energy				

Indonesia, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	13 878		1 534	
2 Import	216		467	1 277
3 Export	- 9 972		- 184	- 120
4 International marine and aviation bunkers				
5 Stock change	78		5	- 26
6 Total energy supply	4 200		1 822	1 131
7 Transfers				
8 Main activity producers	- 2 581			- 83
9 Autoproducers				
10 Gas processing				99
11 Petroleum refineries			- 1 787	1 863
12 Coal transformation	- 1	1		
13 Other transformation				- 96
14 Loss & own-use			- 35	- 5
15 Discrepancy				
16 Total final consumption	1 618	1		2 909
17 Total final energy consumption	1 618	1		2 795
18 Industry sector	1 618	1		122
19 Transport sector				1 851
20 Other sector				821
20.1 Residential & Commercial				772
20.2 Agriculture				
20.3 Other				49
21 Non-energy				115

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
				4		5	5
192					46	1 014	
						- 6	
						- 445	
						- 33	
192				5	46	535	5
- 178					127	- 193	
				- 2	1	- 2	- 2
						- 11	
				- 1		- 1	- 1
					- 13	- 13	
11						- 47	
25				2	160	268	2
25				2	160	268	2
1					7	12	
					3	78	
24				2	149	178	2
24				2	149	178	5

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
2 132	82		563	926		19 115	1 571
					6	1 966	
- 716				- 1		- 10 993	- 1
				- 6		51	- 6
1 417	82		563	918	6	10 139	1 563
- 408	- 82		- 563	- 231	1 045	- 2 903	- 876
- 84						15	
						76	
				- 319		- 415	- 319
- 192					- 125	- 357	
- 40					27	- 13	
694				367	952	6 542	367
554				367	952	6 288	367
548				272	318	2 879	272
					1	1 853	
6				95	633	1 555	95
6				95	633	1 506	1 571
						49	
140						254	

Japan, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	18		18	
2 Import	4 325	26	4 904	1 841
3 Export		- 94		- 403
4 International marine and aviation bunkers				- 325
5 Stock change			154	5
6 Total energy supply	4 342	- 69	5 076	1 118
7 Transfers			- 53	57
8 Main activity producers	- 2 340	- 109	- 11	- 208
9 Autoproducers	- 162	- 94		- 143
10 Gas processing				- 73
11 Petroleum refineries			- 5 150	5 270
12 Coal transformation	- 1 450	818		- 14
13 Other transformation			173	- 179
14 Loss & own-use	- 17	- 102		- 230
15 Discrepancy	- 6	- 27	- 34	- 50
16 Total final consumption	366	417		5 548
17 Total final energy consumption	366	387		4 349
18 Industry sector	366	382		689
19 Transport sector				2 534
20 Other sector		5		1 126
20.1 Residential & Commercial			5	943
20.2 Agriculture				129
20.3 Other				54
21 Non-energy		30		1 199

Korea, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	20		41	
2 Import	3 045	8	5 636	1 692
3 Export			- 3	- 2 582
4 International marine and aviation bunkers				- 543
5 Stock change	37		- 5	6
6 Total energy supply	3 101	8	5 669	- 1 427
7 Transfers			287	- 253
8 Main activity producers	- 1 712	- 77		- 24
9 Autoproducers	- 133	- 92		- 57
10 Gas processing				- 5
11 Petroleum refineries			- 6 519	6 358
12 Coal transformation	- 938	459		
13 Other transformation			480	- 445
14 Loss & own-use		- 133		- 244
15 Discrepancy	- 168	- 8	83	- 21
16 Total final consumption	150	157		3 882
17 Total final energy consumption	150	136		1 828
18 Industry sector	150	127		172
19 Transport sector				1 349
20 Other sector		10		307
20.1 Residential & Commercial		10		206
20.2 Agriculture				19
20.3 Other				83
21 Non-energy		21		2 054

Unit: PJ							Total	Total Renewables
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat			
81	284	423	437	556		1 816		1 037
3 761				84		14 941		84
						- 497		
						- 325		
16						175		
3 858	284	423	437	639		16 109		1 120
						4		
- 2 595	- 273	- 423	- 169	- 268	3 072	- 3 323		- 587
- 143	- 11		- 256	- 111	576	- 344		- 345
70						- 3		
						119		
				- 5		- 651		
				- 1		- 3		- 1
- 39					- 379	- 766		
- 29				- 2	16	- 133		- 2
1 123			12	253	3 289	11 009		185
1 113			12	253	3 289	9 770		185
424				140	1 145	3 146		96
1				18	62	2 615		18
688			12	94	2 082	4 008		71
688			12	73	2 070	3 791		1 037
			1		10	140		
				22	2	78		1
9						1 239		

Unit: PJ							Total	Total Renewables
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat			
7	14	1 747	90	286	2	2 206		247
2 012						12 392		
						- 2 585		
						- 543		
53				- 1		89		- 1
2 072	14	1 747	90	284	2	11 560		246
						34		
- 1 093	- 14	- 1 747	- 73	- 80	2 057	- 2 763		- 154
- 59			- 5	- 50	250	- 146		- 21
4						- 1		
						- 162		
						- 479		
						34		
- 6					- 211	- 593		
- 34				1	- 26	- 173		1
884			12	156	2 071	7 313		73
884			12	156	2 071	5 238		73
290				97	1 073	1 910		17
45				27	12	1 433		27
548			12	32	987	1 896		28
548			10	32	926	1 732		247
			1		50	70		1
					11	93		
						2 075		

Malaysia, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	79		1 205	
2 Import	931		295	527
3 Export			- 444	- 443
4 International marine and aviation bunkers				- 23
5 Stock change	30		- 1	54
6 Total energy supply	1 039		1 055	115
7 Transfers			- 83	84
8 Main activity producers	- 982			- 7
9 Autoproducers				- 2
10 Gas processing				21
11 Petroleum refineries			- 965	869
12 Coal transformation				
13 Other transformation				
14 Loss & own-use			- 5	- 7
15 Discrepancy	- 1		- 2	- 11
16 Total final consumption	56			1 060
17 Total final energy consumption	56			950
18 Industry sector	56			110
19 Transport sector				744
20 Other sector				97
20.1 Residential & Commercial				63
20.2 Agriculture				11
20.3 Other				23
21 Non-energy				109

Mexico, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	184		4 099	
2 Import	149	29	18	1 846
3 Export			- 2 590	- 306
4 International marine and aviation bunkers				- 88
5 Stock change	7		- 64	- 27
6 Total energy supply	340	29	1 464	1 425
7 Transfers			- 166	194
8 Main activity producers	- 184			- 382
9 Autoproducers		- 3		- 54
10 Gas processing				- 29
11 Petroleum refineries			- 1 430	1 369
12 Coal transformation	- 46	11		
13 Other transformation			3	- 2
14 Loss & own-use		- 14		- 131
15 Discrepancy	- 34	1	130	- 142
16 Total final consumption	76	24		2 247
17 Total final energy consumption	76	20		2 069
18 Industry sector	76	20		201
19 Transport sector				1 512
20 Other sector				356
20.1 Residential & Commercial				277
20.2 Agriculture				79
20.3 Other				
21 Non-energy		3		178

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
2 322	98		7	54		3 766	160
358						2 111	
- 1 159				- 12	- 6	- 2 065	- 12
						- 23	
				7		90	7
1 521	98		7	49	- 6	3 879	155
						1	
- 412	- 98		- 7	- 8	604	- 910	- 114
- 59				- 8	23	- 47	- 8
- 64						- 43	
						- 96	
- 37					- 49	- 98	
- 253					- 25	- 292	
696				33	548	2 393	33
311				33	548	1 899	33
308					267	741	
3				33	1	781	33
1					279	376	
1					277	340	160
					2	13	
						23	
385						494	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
1 138	97	89	225	367		6 199	688
2 212					36	4 289	
					- 21	- 2 917	
7						- 88	
3 357	97	89	225	367	14	7 407	688
						28	
- 977	- 94	- 89	- 163		892	- 997	- 257
- 318	- 3		- 46	- 80	240	- 263	- 128
10						- 19	
						- 62	
						- 35	
- 574					- 164	- 884	
- 1 027				- 16	- 51	- 1 140	- 16
470			16	271	932	4 035	287
459			16	271	932	3 843	287
425			1	53	511	1 287	54
2					4	1 517	
32			15	218	418	1 039	233
32			15	218	310	852	688
					44	123	
					64	64	
11						192	

New Zealand, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	70		49	
2 Import	25		159	128
3 Export	- 33		- 39	
4 International marine and aviation bunkers				- 30
5 Stock change	4		- 4	- 6
6 Total energy supply	66		165	92
7 Transfers			29	- 27
8 Main activity producers	- 16			- 1
9 Autoproducers		- 7		
10 Gas processing				
11 Petroleum refineries			- 200	200
12 Coal transformation	- 17	11		
13 Other transformation				
14 Loss & own-use		- 3		- 11
15 Discrepancy	- 10		6	4
16 Total final consumption	23	2		257
17 Total final energy consumption	23	2		244
18 Industry sector	20	2		18
19 Transport sector				193
20 Other sector	3			33
20.1 Residential & Commercial	1			13
20.2 Agriculture	2			17
20.3 Other				2
21 Non-energy				13

Papua New Guinea, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production			33	
2 Import			61	47
3 Export			- 31	- 29
4 International marine and aviation bunkers				
5 Stock change			2	1
6 Total energy supply			65	19
7 Transfers				2
8 Main activity producers				- 5
9 Autoproducers				- 21
10 Gas processing				2
11 Petroleum refineries			- 62	59
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy			- 3	
16 Total final consumption				55
17 Total final energy consumption				55
18 Industry sector				24
19 Transport sector				25
20 Other sector				7
20.1 Residential & Commercial				3
20.2 Agriculture				4
20.3 Other				
21 Non-energy				

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
163	87		210	38		617	334
				3		315	3
						- 72	
						- 30	
- 1						- 7	
162	87		210	41		824	337
						2	
- 47	- 87		- 200	- 2	155	- 199	- 289
- 2			- 2	- 20	7	- 24	- 20
						- 5	
					- 1	- 1	
- 8					- 18	- 40	
2				6	- 3	6	6
109			8	25	140	563	33
67			8	25	140	508	33
52			5	16	48	161	21
						193	
15			3	9	91	154	13
14			3	9	79	119	334
1					10	30	
					2	4	
42						55	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
474	3		14	72		597	90
						107	
- 438						- 499	
						4	
35	3		14	72		209	90
						2	
- 5	- 2				5	- 7	- 3
- 6	- 1		- 14		10	- 32	- 15
- 13						- 11	
						- 3	
						- 1	- 1
- 12					- 1	- 14	
						- 3	
				71	14	141	71
				71	14	141	71
				4	10	38	4
						25	
				67	4	78	67
				67	4	74	90
						5	

Peru, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	3		232	
2 Import	8	1	86	210
3 Export	- 1		- 24	- 98
4 International marine and aviation bunkers				- 21
5 Stock change	9	1	8	- 9
6 Total energy supply	20	2	302	82
7 Transfers			- 86	87
8 Main activity producers				- 4
9 Autoproducers	- 5			- 2
10 Gas processing				
11 Petroleum refineries			- 205	220
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				- 3
15 Discrepancy			- 12	- 20
16 Total final consumption	14	2		361
17 Total final energy consumption	14	2		356
18 Industry sector	14	2		40
19 Transport sector				263
20 Other sector				53
20.1 Residential & Commercial				49
20.2 Agriculture				2
20.3 Other				2
21 Non-energy				5

The Philippines, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	286		19	
2 Import	652		185	537
3 Export	- 166		- 29	- 40
4 International marine and aviation bunkers				- 28
5 Stock change	- 46		41	21
6 Total energy supply	726		216	491
7 Transfers				
8 Main activity producers	- 658			- 21
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 195	186
12 Coal transformation				
13 Other transformation				
14 Loss & own-use			- 5	
15 Discrepancy	- 6		- 16	- 101
16 Total final consumption	63			555
17 Total final energy consumption	63			549
18 Industry sector	63			64
19 Transport sector				395
20 Other sector				89
20.1 Residential & Commercial				81
20.2 Agriculture				3
20.3 Other				6
21 Non-energy				6

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
487	110		11	153		997	274
				15		320	15
- 220				- 1		- 342	- 1
- 1						- 21	
						7	
266	110		11	168		961	288
						1	
- 140	- 108		- 9	- 27	182	- 106	- 144
- 10	- 2			- 6	8	- 18	- 8
						15	
				- 8		- 8	- 8
- 39					- 26	- 68	
- 1				- 1		- 34	- 1
76			2	126	164	745	128
76			2	126	164	740	128
41				18	92	207	18
21				12		296	12
14			2	96	72	237	98
14			2	96	66	227	274
					5	7	
					1	3	
						5	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
138	26		396	430		1 295	852
				6		1 380	6
						- 235	
						- 28	
				3		19	3
138	26		396	438		2 430	860
- 129	- 26		- 396	- 21	366	- 884	- 442
						- 8	
				- 102		- 102	- 102
- 7					- 67	- 79	
						- 123	
2				316	300	1 235	316
2				316	300	1 229	316
2				38	92	259	38
				18		413	18
				260	207	557	260
				260	198	539	852
					8	11	
					1	7	
						6	

Russia, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	9 713		21 719	
2 Import	607	2		62
3 Export	- 5 536	- 78	- 9 948	- 5 079
4 International marine and aviation bunkers				- 486
5 Stock change	60	17	8	- 5
6 Total energy supply	4 844	- 58	11 779	- 5 509
7 Transfers				
8 Main activity producers	- 1 845			- 27
9 Autoproducers	- 614	- 135	- 20	- 190
10 Gas processing				
11 Petroleum refineries			- 11 531	11 173
12 Coal transformation	- 2 148	1 301		
13 Other transformation				
14 Loss & own-use	- 19	- 49	- 227	- 162
15 Discrepancy	21	1		146
16 Total final consumption	238	1 060	1	5 431
17 Total final energy consumption	230	1 060	1	3 702
18 Industry sector	131	1 060		404
19 Transport sector				2 512
20 Other sector	99		1	785
20.1 Residential & Commercial	97			652
20.2 Agriculture	2			108
20.3 Other				25
21 Non-energy	9			1 729

Singapore, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production				
2 Import	18		1 970	3 926
3 Export			- 40	- 3 162
4 International marine and aviation bunkers				- 1 902
5 Stock change				- 67
6 Total energy supply	18		1 929	- 1 204
7 Transfers			70	70
8 Main activity producers	- 10			- 4
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 1 845	1 893
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy			- 154	- 331
16 Total final consumption	8			423
17 Total final energy consumption	8			186
18 Industry sector	8			120
19 Transport sector				62
20 Other sector				3
20.1 Residential & Commercial				3
20.2 Agriculture				
20.3 Other				
21 Non-energy				237

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
24 843	765	2 368	16	444		59 868	901
309				1	13	994	
- 8 216				- 4	- 44	- 28 906	- 2
						- 486	
175				3		258	2
17 111	765	2 368	16	444	- 31	31 729	902
- 5 454	- 761	- 2 368	- 16	- 6	5 976	- 4 500	- 777
- 2 684	- 5			- 203	3 043	- 809	- 28
						- 358	
						- 847	
- 450				- 3		- 452	- 3
- 960				- 6	- 2 056	- 3 480	
- 263				- 1		- 95	4
7 300				225	6 933	21 187	98
5 375				225	6 933	17 524	98
1 518				128	2 761	6 002	9
995					279	3 786	
2 862				97	3 893	7 737	90
2 805				94	3 707	7 355	901
57				3	184	355	1
					2	27	
1 925						3 663	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
			2	23		25	13
415				3		6 332	3
						- 3 202	
						- 1 902	
						- 67	
415			2	26		1 186	16
						139	
- 311			- 2	- 26	174	- 175	- 16
- 49				- 1	17	- 36	- 1
						48	
						- 8	
14						- 472	
69					183	682	
69					183	445	
62					75	265	
					10	73	
7					97	107	
7					96	106	13
					1	1	
						237	

Chinese Taipei, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production				
2 Import	1 480	7	1 536	640
3 Export		- 3		- 487
4 International marine and aviation bunkers				- 122
5 Stock change	- 31	- 4	- 26	- 6
6 Total energy supply	1 449		1 511	25
7 Transfers				- 27
8 Main activity producers	- 777			- 32
9 Autoproducers	- 299	- 40		- 13
10 Gas processing				
11 Petroleum refineries			- 1 511	1 591
12 Coal transformation	- 265	152		
13 Other transformation				
14 Loss & own-use		- 48		- 70
15 Discrepancy	33	- 2		- 7
16 Total final consumption	142	61		1 467
17 Total final energy consumption	140	51		609
18 Industry sector	140	51		68
19 Transport sector				455
20 Other sector				87
20.1 Residential & Commercial				70
20.2 Agriculture				3
20.3 Other				14
21 Non-energy	1	10		858

Thailand, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	139		690	
2 Import	224	406	1 851	79
3 Export	- 1	- 1	- 54	- 391
4 International marine and aviation bunkers				- 68
5 Stock change	- 38	- 80	129	- 136
6 Total energy supply	323	325	2 616	- 516
7 Transfers			- 248	248
8 Main activity producers	- 278	- 33		- 2
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 2 117	1 920
12 Coal transformation				
13 Other transformation				17
14 Loss & own-use				- 89
15 Discrepancy			- 8	
16 Total final consumption	45	292	243	1 578
17 Total final energy consumption	45	292		1 469
18 Industry sector	45	292		170
19 Transport sector				1 102
20 Other sector				197
20.1 Residential & Commercial				100
20.2 Agriculture				96
20.3 Other				
21 Non-energy			243	109

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
3	11	343	35	62		454	74
803						4 466	
						- 491	
						- 122	
2						- 64	
808	11	343	35	62		4 244	74
						- 27	
- 635	- 11	- 343	- 12	- 1	860	- 951	- 22
- 3			- 19	- 45	243	- 177	- 39
61						61	
						80	
						- 113	
- 2						- 2	
- 18					- 120	- 257	
- 54					- 3	- 32	
156			4	16	980	2 825	12
156			4	16	980	1 956	12
112				16	606	993	9
					5	460	
44			4		368	502	4
44			4		356	474	74
					8	11	
					4	18	
						869	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
906	17		30	965		2 746	1 001
540				2	106	3 207	2
				- 1	- 9	- 457	- 1
						- 68	
				1		- 124	1
1 445	17		30	967	97	5 305	1 003
- 882	- 17		- 30	- 364	668	- 937	- 404
						- 198	
						- 42	- 60
- 265				- 60	- 57	- 411	
- 76						- 84	
222				544	708	3 633	540
190				544	708	3 249	540
143				283	271	1 204	278
47				100	1	1 251	100
				161	437	794	161
				161	435	697	1 001
					2	98	
32						384	

United States, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	10 788		30 208	
2 Import	107	4	13 947	3 021
3 Export	- 1 702	- 18	- 7 555	- 8 569
4 International marine and aviation bunkers				- 1 302
5 Stock change	103	- 1	- 339	- 9
6 Total energy supply	9 295	- 15	36 261	- 6 860
7 Transfers			- 5 303	5 635
8 Main activity producers	- 8 283	- 6		- 292
9 Autoproducers	- 38	- 15		- 66
10 Gas processing	- 74			
11 Petroleum refineries			- 31 595	30 692
12 Coal transformation	- 439	219		
13 Other transformation			196	
14 Loss & own-use		- 33		- 1 083
15 Discrepancy	- 55		822	- 63
16 Total final consumption	405	151	381	27 963
17 Total final energy consumption	405	151		22 773
18 Industry sector	391	151		761
19 Transport sector				20 495
20 Other sector	14			1 518
20.1 Residential & Commercial	14			1 065
20.2 Agriculture				453
20.3 Other				
21 Non-energy			381	5 190

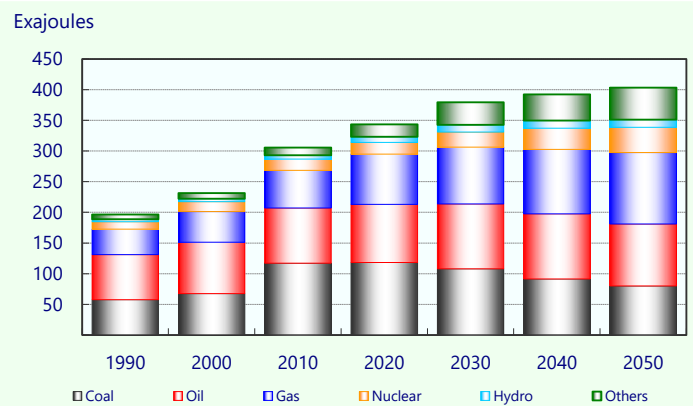
Viet Nam, 2020

	Coal	Coal products	Crude oil, NGL	Petroleum products
1 Production	890		394	
2 Import	1 285		503	445
3 Export	- 21		- 196	- 94
4 International marine and aviation bunkers				
5 Stock change	- 76		- 9	- 46
6 Total energy supply	2 078		691	306
7 Transfers			- 17	17
8 Main activity producers	- 1 230			- 8
9 Autoproducers				
10 Gas processing				
11 Petroleum refineries			- 674	566
12 Coal transformation				
13 Other transformation				
14 Loss & own-use				
15 Discrepancy	9			- 61
16 Total final consumption	856			821
17 Total final energy consumption	831			769
18 Industry sector	815			64
19 Transport sector				517
20 Other sector	16			188
20.1 Residential & Commercial	16			93
20.2 Agriculture				95
20.3 Other				
21 Non-energy	25			52

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
32 984	1 034	8 980	2 181	4 263		90 437	7 286
2 471				82	221	19 852	82
- 5 203				- 146	- 51	- 23 244	- 146
				- 15		- 1 318	- 15
- 147				- 10		- 403	- 10
30 105	1 034	8 980	2 181	4 173	170	85 324	7 196
						332	
- 11 426	- 1 029	- 8 980	- 1 932	- 570	14 997	- 17 522	- 3 393
- 678	- 4		- 119	- 226	720	- 425	- 320
49						- 25	
						- 903	
						- 221	
- 169						27	
- 2 746				- 3	- 2 038	- 5 904	- 3
- 209				1		495	1
14 925			129	3 375	13 850	61 178	3 480
14 524			129	3 375	13 850	55 206	3 480
5 697				1 336	2 755	11 090	1 319
1 040				1 408	37	22 980	1 408
7 787			129	630	11 059	21 136	753
7 725			129	566	9 957	19 456	7 286
62				64	265	844	64
					836	836	
401						5 973	

Unit: PJ							
Natural gas, LNG	Hydro	Nuclear	Geothermal, solar, etc.	Others	Electricity and Heat	Total	Total Renewables
327	262		38	296		2 207	596
				9	11	2 253	9
					- 6	- 317	
						- 131	
327	262		38	305	5	4 012	605
- 247	- 262		- 38	- 39	874	- 951	- 339
						- 108	
						- 42	- 42
				- 42		- 101	
- 18				- 22	- 16	- 107	- 22
63				201	763	2 704	201
33				201	763	2 597	201
32				120	394	1 424	120
1				3		521	3
				78	369	651	78
				78	342	529	596
					17	113	
					9	9	
30						107	

PES* outlook by energy (Reference)



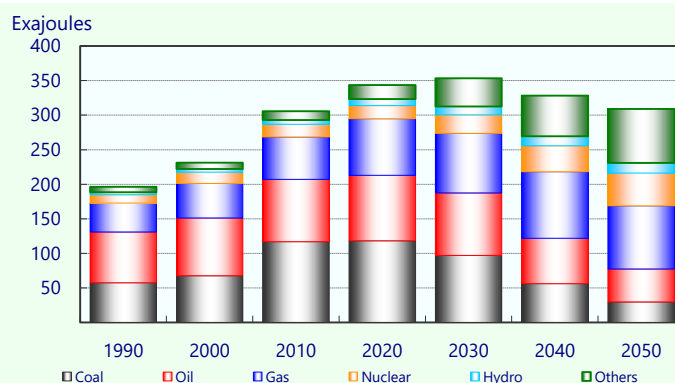
	Exajoules						
	1990	2000	2010	2020	2030	2040	2050
Coal	57.7	67.8	117.1	118.4	108.0	91.5	80.1
Oil	73.3	83.6	90.0	94.4	105.9	106.1	100.9
Gas	41.8	49.9	61.5	82.0	92.4	105.1	116.4
Nuclear	12.0	16.3	18.1	19.0	24.5	34.4	41.1
Hydro	3.9	4.5	6.4	9.3	12.0	12.4	12.5
Others	7.8	9.2	12.6	20.3	36.7	42.9	52.2
Total	196.4	231.3	305.7	343.5	379.5	392.4	403.2

	Share (%)						
	1990	2000	2010	2020	2030	2040	2050
Coal	29.4	29.3	38.3	34.5	28.5	23.3	19.9
Oil	37.3	36.1	29.5	27.5	27.9	27.0	25.0
Gas	21.3	21.6	20.1	23.9	24.3	26.8	28.9
Nuclear	6.1	7.1	5.9	5.5	6.5	8.8	10.2
Hydro	2.0	1.9	2.1	2.7	3.2	3.2	3.1
Others	4.0	4.0	4.1	5.9	9.7	10.9	12.9

Source: Asia Pacific Energy Research Centre, Sep 2022.

*PES: Primary energy supply

PES* outlook by energy (CN Scenario**)



	Exajoules						
	1990	2000	2010	2020	2030	2040	2050
Coal	57.7	67.8	117.1	118.4	97.1	56.2	30.0
Oil	73.3	83.6	90.0	94.4	90.3	65.7	47.6
Gas	41.8	49.9	61.5	82.0	86.3	96.4	91.5
Nuclear	12.0	16.3	18.1	19.0	26.6	37.3	47.2
Hydro	3.9	4.5	6.4	9.3	12.1	13.7	14.7
Others	7.8	9.2	12.6	20.3	40.8	58.8	77.8
Total	196.4	231.3	305.7	343.5	353.3	328.1	308.8

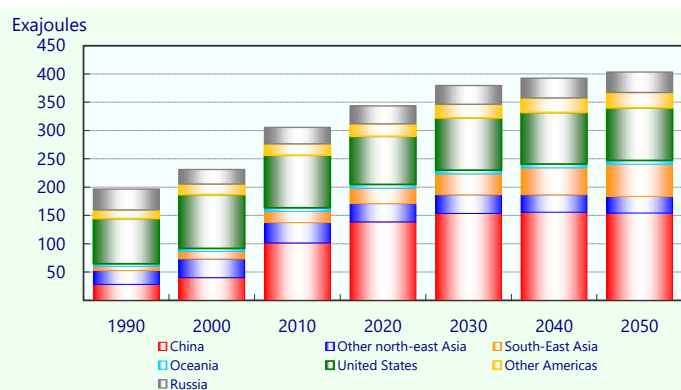
	Share (%)						
	1990	2000	2010	2020	2030	2040	2050
Coal	29.4	29.3	38.3	34.5	27.5	17.1	9.7
Oil	37.3	36.1	29.5	27.5	25.6	20.0	15.4
Gas	21.3	21.6	20.1	23.9	24.4	29.4	29.6
Nuclear	6.1	7.1	5.9	5.5	7.5	11.4	15.3
Hydro	2.0	1.9	2.1	2.7	3.4	4.2	4.8
Others	4.0	4.0	4.1	5.9	11.6	17.9	25.2

Other north-east Asia includes Hong Kong, China; Japan; Republic of Korea and Chinese Taipei.

Other Americas includes Canada; Chile; Mexico and Peru.

*PES: Primary energy supply **CN Scenario: Carbon Neutrality Scenario

PES* outlook by region (Reference)



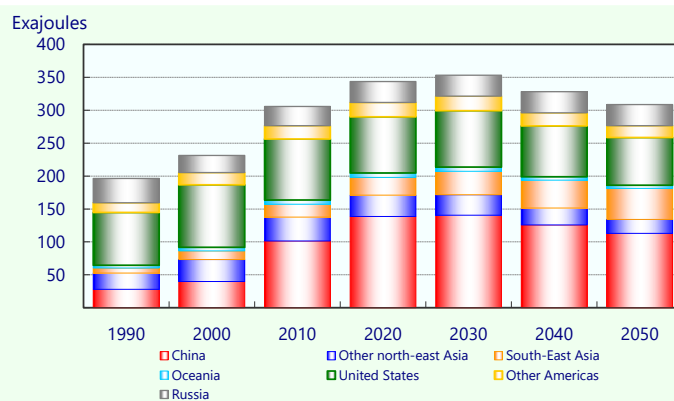
	Exajoules						
	1990	2000	2010	2020	2030	2040	2050
China	28.1	39.8	101.5	138.5	153.5	155.6	154.3
Other north-east Asia	24.4	33.3	36.0	32.4	33.1	31.2	29.2
South-East Asia	7.7	13.2	19.8	27.1	36.8	47.4	56.9
Oceania	4.2	5.4	6.2	6.5	6.7	6.5	6.5
United States	80.2	95.2	92.8	85.3	92.1	91.4	93.2
Other Americas	15.0	18.5	20.4	21.8	24.3	25.7	27.1
Russia	36.8	25.9	29.0	31.7	33.1	34.6	35.9
APEC 21	196.4	231.3	305.7	343.5	379.5	392.4	403.2

	Share (%)						
	1990	2000	2010	2020	2030	2040	2050
China	14.3	17.2	33.2	40.3	40.4	39.6	38.3
Other north-east Asia	12.4	14.4	11.8	9.4	8.7	7.9	7.2
South-East Asia	3.9	5.7	6.5	7.9	9.7	12.1	14.1
Oceania	2.2	2.3	2.0	1.9	1.8	1.7	1.6
United States	40.8	41.1	30.3	24.8	24.3	23.3	23.1
Other Americas	7.7	8.0	6.7	6.4	6.4	6.5	6.7
Russia	18.7	11.2	9.5	9.2	8.7	8.8	8.9

Source: Asia Pacific Energy Research Centre, Sep 2022.

*PES: Primary energy supply

PES* outlook by region (CN Scenario**)



	Exajoules						
	1990	2000	2010	2020	2030	2040	2050
China	28.1	39.8	101.5	138.5	140.7	125.8	112.8
Other north-east Asia	24.4	33.3	36.0	32.4	30.8	25.8	21.3
South-East Asia	7.7	13.2	19.8	27.1	35.9	42.2	47.3
Oceania	4.2	5.4	6.2	6.5	6.2	5.3	4.6
United States	80.2	95.2	92.8	85.3	85.8	77.3	72.8
Other Americas	15.0	18.5	20.4	21.8	21.9	19.8	17.9
Russia	36.8	25.9	29.0	31.7	31.9	31.9	32.1
APEC 21	196.4	231.3	305.7	343.5	353.3	328.1	308.8

	Share (%)						
	1990	2000	2010	2020	2030	2040	2050
China	14.3	17.2	33.2	40.3	39.8	38.4	36.5
Other north-east Asia	12.4	14.4	11.8	9.4	8.7	7.9	6.9
South-East Asia	3.9	5.7	6.5	7.9	10.2	12.8	15.3
Oceania	2.2	2.3	2.0	1.9	1.8	1.6	1.5
United States	40.8	41.1	30.3	24.8	24.3	23.6	23.6
Other Americas	7.7	8.0	6.7	6.4	6.2	6.0	5.8
Russia	18.7	11.2	9.5	9.2	9.0	9.7	10.4

Source: Asia Pacific Energy Research Centre, Sep 2022.

*PES: Primary energy supply **CN Scenario: Carbon Neutrality Scenario

Selected energy indicators APEC region

	Population			Real GDP			Real GDP		
	Millions			Billion (constant 2015 USD)			Billion, PPP at constant 2017 USD		
	1990	2005	2020	1990	2005	2020	1990	2005	2020
APEC	2 286	2 654	2 943	19 208	32 033	49 945	24 859	41 826	69 642
Other north-east Asia	192	206	209	4 193	5 846	6 915	4 998	7 216	8 937
Hong Kong, China	5.7	6.8	7.5	122	221	310	164	298	418
Japan	123	128	126	3 510	4 229	4 363	4 056	4 887	5 042
Korea	43	48	52	401	1 021	1 624	543	1 380	2 195
Chinese Taipei	20	23	24	161	375	618	235	651	1 282
South-East Asia	389	492	589	721	1 474	2 834	1 944	3 941	7 635
Brunei Darussalam	0.3	0.4	0.4	9.1	12.6	13.4	18.4	25.5	27.2
Indonesia	181	226	274	270	498	1 028	823	1 516	3 131
Malaysia	18	26	32	75	187	344	186	465	857
The Philippines	62	86	110	107	179	359	261	436	872
Singapore	3.0	4.3	5.7	71	178	335	114	286	537
Thailand	57	65	70	144	289	432	402	805	1 204
Viet Nam	68	84	97	45	131	323	140	407	1 006
Oceania	25	31	40	726	1 184	1 714	634	1 034	1 499
Australia	17	20	26	631	1 027	1 491	529	861	1 251
New Zealand	3.3	4.1	5.1	88	145	200	93	154	212
Papua New Guinea	4.6	6.5	8.9	7.4	12.3	23.9	11.2	18.7	36.4
Other Americas	147	182	219	1 567	2 458	3 196	2 391	3 749	4 874
Canada	28	32	38	810	1 244	1 607	891	1 356	1 752
Chile	13	16	19	72	165	246	129	298	444
Mexico	84	106	129	626	941	1 150	1 255	1 886	2 305
Peru	22	28	33	60	108	191	116	210	372
China	1 135	1 304	1 411	1 027	4 421	14 617	1 616	6 955	22 996
Russia	148	144	144	1 161	1 051	1 422	3 179	2 877	3 893
United States	250	296	332	9 811	15 600	19 247	10 097	16 056	19 809

Energy Indigenous Production			Net Import			Total Primary Energy Supply			
Petajoules			Petajoules			Petajoules			
1990	2005	2020	1990	2005	2020	1990	2005	2020	
197 079	249 290	343 808	6 087	28 605	9 815	196 426	272 613	343 505	
4 495	6 592	4 480	20 768	30 153	29 235	24 434	35 129	32 447	
3 106	3.4	4.6	474	981	1 008	392	590	535	HKC
947	4 258	1 816	15 754	18 157	14 443	18 293	21 754	16 109	JPN
441	1 799	2 206	2 937	7 350	9 807	3 890	8 804	11 560	ROK
	531	454	1 603	3 664	3 976	1 859	3 981	4 244	CT
10 962	19 675	29 813	-2 454	-1 711	-471	7 689	16 664	27 146	
655	921	659	-604	-794	-451	48	120	194	BD
6 317	9 552	19 115	-3 042	-3 825	-9 027	3 138	5 881	10 139	INA
1 948	3 926	3 766	-1 084	-1 190	46	857	2 745	3 879	MAS
685	885	1 295	468	718	1 145	1 110	1 589	2 430	PHL
2.9	16.5	25.1	1 027	2 079	3 130	483	880	1 186	SGP
1 110	2 351	2 746	790	2 043	2 750	1 826	4 237	5 305	THA
243	2 025	2 207	-7	-742	1 936	227	1 212	4 012	VN
7 317	11 808	20 164	-2 768	-6 059	-13 229	4 226	5 591	6 518	
6 595	11 102	18 950	-2 701	-6 228	-13 081	3 606	4 751	5 485	AUS
481	527	617	89	207	243	536	698	824	NZ
240	179	597	-156	-38	-392	83	142	209	PNG
20 539	28 639	29 413	-5 142	-7 771	-7 173	15 029	20 734	21 833	
11 575	16 762	21 682	-2 484	-5 421	-9 576	8 846	11 405	11 877	CDA
332	391	535	294	858	1 053	587	1 188	1 589	CHL
8 187	11 032	6 199	-2 927	-3 333	1 372	5 179	7 561	7 407	MEX
446	454	997	-25	125	-22	418	580	961	PE
30 453	63 943	109 633	-1 358	5 754	32 757	28 077	70 165	138 509	PRC
54 145	50 383	59 868	-17 274	-22 580	-27 912	36 816	27 287	31 729	RUS
69 169	68 248	90 437	14 315	30 820	-3 392	80 155	97 044	85 324	USA

	Total Final Energy Consumption			Final Consumption of Electricity			Primary Energy Supply per capita	
	Petajoules			TWh			GJ / Person	
	1990	2005	2020	1990	2005	2020	1990	2005
APEC	127 981	159 372	196 097	5 744	9 413	14 937	86	103
Other north-east Asia	14 454	19 467	17 232	960	1 621	1 716	127	171
Hong Kong, China	214	282	268	24.5	40.1	44.2	69	87
Japan	10 800	12 703	9 770	765	1 025	907	148	170
Korea	2 436	4 609	5 238	94	358	513	91	183
Chinese Taipei	1 005	1 873	1 956	77	199	252	92	175
South-East Asia	5 158	10 570	15 747	128	438	964	20	34
Brunei Darussalam	15.8	27.5	41.5	1.2	2.6	4.7	187	328
Indonesia	2 282	4 232	6 288	28	107	265	17	26
Malaysia	514	1 512	1 899	20	81	152	48	107
The Philippines	780	942	1 229	21.2	45.2	83.2	18	18
Singapore	130	299	445	13.0	35.5	50.8	158	206
Thailand	1 261	2 536	3 249	38	121	197	32	65
Viet Nam	175	1 022	2 597	6	46	212	3	14
Oceania	2 646	3 411	3 802	159	230	259	169	180
Australia	2 207	2 815	3 152	129	189	217	211	233
New Zealand	370	483	508	29	38	39	161	169
Papua New Guinea	70	112	141	2	3.2	4.0	18	22
Other Americas	9 903	12 577	12 736	546	749	902	102	114
Canada	6 005	7 110	7 065	418	488	523	319	354
Chile	426	813	1 087	15.5	48.3	74.5	44	73
Mexico	3 108	4 190	3 843	100	190	259	62	71
Peru	363	464	740	11.8	22.7	45.6	19	21
China	22 159	39 063	73 851	491	1 992	6 568	25	54
Russia	24 487	15 395	17 524	827	650	750	249	190
United States	49 173	58 890	55 206	2 634	3 732	3 778	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				
	2020	1990	2005	2020	1990	2005	2020	1990	2005		2020
	117	7.9	6.5	4.9	5.1	3.8	2.8	56	60	67	
	155	4.9	4.9	3.6	2.9	2.7	1.9	75	95	82	
	72	2.4	2.0	1.3	1.3	0.9	0.6	37	41	36	HKC
	128	4.5	4.5	3.2	2.7	2.6	1.9	87	99	77	JPN
	223	7.2	6.4	5.3	4.5	3.3	2.4	57	96	101	ROK
	180	7.9	6.1	3.3	4.3	2.9	1.5	50	82	83	CT
	46	4.0	4.2	3.6	2.7	2.7	2.1	13	21	27	
	443	2.6	4.7	7.1	0.9	1.1	1.5	61	75	95	BD
	37	3.8	3.9	3.2	2.8	2.8	2.0	13	19	23	INA
	120	4.6	5.9	4.5	2.8	3.2	2.2	29	59	59	MAS
	22	4.3	3.6	2.8	3.0	2.2	1.4	13	11	11	PHL
	209	4.2	3.1	2.2	1.1	1.0	0.8	43	70	78	SGP
	76	4.5	5.3	4.4	3.1	3.2	2.7	22	39	47	THA
	41	1.6	3.0	4.0	1.2	2.5	2.6	3	12	27	VN
	164	6.7	5.4	4.3	4.2	3.3	2.5	106	110	96	
	213	6.8	5.5	4.4	4.2	3.3	2.5	129	138	123	AUS
	162	5.7	4.5	3.9	4.0	3.1	2.4	111	117	100	NZ
	23	7.4	7.6	5.8	6.2	6.0	3.9	15	17	16	PNG
	100	6.3	5.5	4.5	4.1	3.4	2.6	67	69	58	
	312	9.9	8.4	6.8	6.7	5.2	4.0	217	221	186	CDA
	83	4.5	4.0	3.6	3.3	2.7	2.4	32	50	57	CHL
	57	4.1	4.0	3.2	2.5	2.2	1.7	37	40	30	MEX
	29	3.6	2.8	2.6	3.1	2.2	2.0	16	17	22	PE
	98	17.4	10.1	6.0	13.7	5.6	3.2	20	30	52	PRC
	220	11.6	9.5	8.2	7.7	5.4	4.5	165	107	122	RUS
	257	7.9	6.0	4.3	4.9	3.7	2.8	197	199	167	USA

	Energy Combustion Related CO ₂ Emission			CO ₂ Emission per Capita		
	Mt-CO ₂			t-CO ₂ / Person		
	1990	2005	2020	1990	2005	2020
APEC	12,186	16,318	19,780	5.33	6.15	6.72
Other north-east Asia	1,453	1,962	1,857	7.55	9.55	8.88
Hong Kong, China	33	38	29	5.80	5.50	3.82
Japan	1,079	1,218	987	8.74	9.54	7.81
Korea	232	457	586	5.41	9.49	11.30
Chinese Taipei	109	248	256	5.39	10.93	10.85
South-East Asia	362	884	1,568	0.93	1.80	2.66
Brunei Darussalam	3.5	6.8	9.4	13.43	18.66	21.51
Indonesia	130	351	664	0.72	1.55	2.43
Malaysia	57	143	213	3.14	5.56	6.57
The Philippines	38	69	119	0.61	0.80	1.08
Singapore	29	37	39	9.50	8.65	6.90
Thailand	88	201	250	1.56	3.07	3.58
Viet Nam	17	77	273	0.26	0.92	2.81
Oceania	53	74	87	2.13	2.39	2.18
Australia	29	37	50	1.70	1.81	1.93
New Zealand	22	32	30	6.62	7.77	5.85
Papua New Guinea	2.3	5.0	7.3	0.50	0.77	0.82
Other Americas	717	1,011	957	4.88	5.55	4.37
Canada	411	515	479	14.85	15.98	12.60
Chile	29	54	84	2.22	3.36	4.39
Mexico	257	412	351	3.06	3.89	2.72
Peru	20	29	43	0.89	1.04	1.29
China	2,480	5,152	9,463	2.18	3.95	6.71
Russia	2,264	1,341	1,373	15.30	9.34	9.5
United States	4,856	5,894	4,477	19.45	19.95	13.50

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	2020	1990	2005	2020	1990	2005	2020	
634	509	396	490	390	284	62	60	58	
346	336	268	291	272	208	59	56	57	
271	170	92	201	126	68	84	64	53	HKC
307	288	226	266	249	196	59	56	61	JPN
577	448	361	427	331	267	60	52	51	ROK
681	662	414	465	381	200	59	62	60	CT
503	600	553	186	224	205	47	53	58	
382	542	701	189	267	346	72	57	49	BD
481	706	646	158	232	212	41	60	66	INA
759	764	618	305	307	248	66	52	55	MAS
355	383	331	146	157	136	34	43	49	PHL
408	207	117	255	129	73	60	42	33	SGP
611	695	579	219	249	208	48	47	47	THA
387	592	847	124	190	272	77	64	68	VN
73	63	51	84	72	58	13	13	13	
46	36	33	55	43	40	8	8	9	AUS
251	222	149	236	209	140	41	46	36	NZ
314	406	308	206	267	202	28	35	35	PNG
458	411	299	300	270	196	48	49	44	
508	414	298	462	380	274	46	45	40	CDA
410	329	340	227	183	189	50	46	53	CHL
410	438	305	205	219	152	50	55	47	MEX
330	270	223	170	139	114	47	50	44	PE
2 414	1 165	647	1 534	741	411	88	73	68	PRC
1 949	1 276	965	712	466	353	61	49	43	RUS
495	378	233	481	367	226	61	61	52	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 C₉ to C₁₆ 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 (C₃H₈) and butane (C₄H₁₀) 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.